Irish Medical Journal
Established 1867

September 2020 Vol. 113 No. 8

COMMENTARY

EDITORIALS

ORIGINAL PAPERS

Brennan et al report on an initiative by 24 clinical specialist physiotherapists (CSPs) across 18 hospital sites. In a 7- year period, 125,852 patients were removed from the orthopaedic and rheumatology waiting list following triage. The authors emphasise the system's effectiveness.

Smith and Carragher surveyed the quality of 33 GP outgoing answering machine messages. There were technical and communication defects. The problems noted were low volume, excessively fast delivery, mixed instructions, and multiple phone numbers. The authors suggest how the content could be improved.

Hania et al report that in a survey of 67 hospitals, 52 hospitals use 2222 as a cardiac arrest number. Overall, 14 different cardiac arrest numbers were in use. The authors urge the standard use of 2222 across all hospitals.

ORIGINAL PAPERS (Continued)

THE EFFECT OF MAINTAINING BASELINE HEART RATE AND BLOOD PRESSURE ON CARDIAC OUTPUT CHANGES DURING SPINAL ANAESTHESIA FOR CAESAREAN SECTION

ffrench-O'Carroll et al measured the cardiac output in 30 women undergoing elective caesarean section under spinal anaesthesia. They found that the cardiac output was preserved when the heart rate was maintained at baseline. They also describe the indications for the use of vasopressors.

TREATING RHINITIS WITH TOPICAL NASAL SPRAYS - PATIENT KNOWLEDGE, USE AND SATISFACTION

Corbett et al surveyed the use of nasal corticosteroid sprays for rhinitis. Among 100 patients, 89 had no knowledge of the duration of treatment, 55 did not know that the spray contained steroids, 39 stopped treatment in under 2 weeks, and 80 had poor spray technique. The authors urge better instructions for patients.

AN IBS PATHWAY TO IMPROVE PATIENT EXPERIENCE AND REDUCE ENDOSCOPY DEMAND

McNally et al reviewed the irritable bowel syndrome (IBS) management pathway. A group of patients were recruited from the endoscopy waiting list and assessed for IBS. The selected group was commenced on a low FODMAP diet with a good response. The pathway resulted in 30 cancelled colonoscopies.

THE NATIONAL HEALTHCARE COMMUNICATION PROGRAMME: AN AUDIT OF INITIAL PERFORMANCE

Gillen et al report on the programme to improve the communication skills of healthcare workers. Six pilot sites delivered modules to 586 participants. The modules employed a skills-based approach using a combination of didactic teaching, role play, group discussion, and video demonstrations. When surveyed, 90% of respondents stated that they would recommend the training to colleagues.

THE EARLY IMPACT OF COVID-19 ON UROLOGICAL SERVICE PROVISION

Jain et al state that the number of urological admissions during the 3-month period from March 2020 decreased by 23.1% compared with the corresponding period in 2019. However, the Covid-era outpatient activity increased due in part to the use virtual clinics.

OCCASIONAL PIECES

DIAGNOSTIC ERROR

"SMEYES THOUGH YOUR HEART IS BREAKING" PRE-COVID VACCINE VACILLATIONS

AN IRISH DERMATOLOGY DEPARTMENT IN THE ERA OF COVID-19

LILY FARRELL WINS 2020 NATIONAL DOM COLBERT PRIZE IN TRAVEL MEDICINE

CASE REPORTS

PULMONARY EMBOLISM AND COVID-19

Farrell et al report that among 61 patients with Covid-19, 12 (19.6%) had a suspected pulmonary embolus. The outcome for this sub-group was 3 died, 6 remain inpatients, and 3 have been discharged on anticoagulants. The authors discuss the emerging concept of pulmonary intravascular coagulopathy in patients with Covid-19.

OOPHORECTOMY FOR FERTILITY PRESERVATION

Hartigan et al report an oophorectomy performed for ovarian tissue preservation (OTC) in a 14-year-old girl with mosaic Turners Syndrome. This technique offers the potential to preserve fertility for girls with premature ovarian insufficiency.

ANTI-TIF1-γ PARANEOPLASTIC DERMATOMYOSITIS: A NOVEL ASSOCIATION WITH MANTLE CELL LYMPHOMA

Cheung et al describe the value of anti-TIF1-γ, a highly specific antibody for myositis, in a patient with dermatomyositis and an underlying lymphoma.

CASE SERIES

CEREBRAL AMYLOID ANGIOPATHY RELATED INFLAMMATION

Menon et al describe 5 cases of cerebral amyloid angiopathy related inflammation (CAA-ri). The presenting symptoms include episodic sensory disturbances, seizures, and encephalopathy. It responds to prompt treatment with immunosuppression.

LETTERS TO THE EDITOR

SHEEHAN'S SYNDROME: A SYNDROME BECOMING RARE DUE TO IMPROVED OBSTETRIC CARE

LETTERS TO THE EDITOR (Continued)

CONTINUAL PROFESSIONAL DEVELOPMENT

IMO Members can take our CPD Quiz to earn CPD/CME points.

CPD QUIZ

THE IRISH MEDICAL JOURNAL MAILING LIST

Subscribe below to receive the Irish Medical Journal newsletter.

(There are 10 newsletters sent each year with new research updates.)

SUBSCRIBE

Irish Medical Journal
Established 1867

Issue: Ir Med J; Vol 113; No. 8; P147

Covid-19: New Developments in Vaccines and Testing

J.F.A. Murphy - Editor of the Irish Medical Journal

We have now been living with Covid-19 for over 8 months. The initial measures that we had to understand were relatively straightforward including handwashing, social distancing, and lockdown directives. We are now being challenged by new, more sophisticated concepts. These include vaccine developments and the new array of testing choices.

The race to produce a Covid-19 vaccine continues to gather pace. The U.S. government launched 'Operation Warp Speed (OWS)' on May 11th, 2020. It is a partnership between the Department of Health and Human Services, the Department of Defense, and the private sector. It has pledged $10 billion to deliver 300 million doses of a safe and effective vaccine by January 2021. The term 'warp speed' was popularized by the TV series Star Trek, where spacecrafts could travel at speeds greater than the speed of light by many orders of magnitude[1].

The aim of the project is to do with speed without sacrificing on safety. The U.S. government will take on the financial risk while avoiding harm. Normally pharmaceutical companies do not manufacture hundreds of millions of doses of a vaccine until they get FDA approval. This time, parallel processes are in operation. Manufacturing to scale is taking place while the safety and efficacy trials continue. If it works, it will save 6 – 12 months of time in the production of a Covid-19 vaccine. If it doesn't work billions of dollars will be lost[2].

In normal circumstances it can take 10 years to bring a new vaccine to the market. The fastest vaccine to be developed was the Mumps vaccine which was developed in 4 years. There are many phases and speed bumps in production of a product. Phases 1 and 2 involve small numbers of participants. The purpose is to test the safety and immune response to the vaccine. The pointers include antibody response, T cell response, and neutralization of wild type virus[3]. Phase 3 tests the efficacy in thousands of individuals. This phase is important to determine how effective the vaccine will be in preventing the disease. If it works, the next question will be for how long the vaccine will provide protection.

There are 8 vaccines in the OWS portfolio. These vaccines had to use one of four vaccine technologies in order to be considered. The platforms were mRNA, replication-defective live vector, recombinant-subunit-adjuvant protein or the attenuated replicating live-vector type[1]. The following three vaccines have received some prominence and are better known[4]. There is the AstraZeneca collaboration with the University of Oxford. The vaccine is a SARS-CoV-2 spike protein. It is a viral vector vaccine, which uses a modified adenovirus as the vector. So far it has triggered a strong immune response with increased antibody levels and T cell reaction.

The side-effects have been minor, fatigue and headaches. In phase three, 50,000 participants will be recruited across the U.K., Brazil, U.S. and South Africa. Moderna is a Massachusetts-based biotech company that is working in collaboration with the NIH. It is an mRNA vaccine. If successful it would be the first mRNA vaccine approved for human use. The Moderna phase 3 trial involves 30,000 U.S. participants. Pfizer in collaboration with the German biotech company BioNTech has developed an mRNA vaccine. They are doing a combined phase 2/3 trial involving 30,000 participants across Germany, Brazil and Argentina.

The vaccine approval process will be a major challenge. The FDA stated that the evaluation processes will be based on the science and the data. Safety and efficacy are key requirements. If the approval process is not thorough, the acceptability of the vaccine will be damaged. It is a big task to be able to combine speed, accuracy, and balance.

WHO has recently stressed the point that a weakly effective vaccine (reducing the Covid-19 incidence by only 10-20%) could actually worsen the pandemic[5]. It would create false reassurance leading to the relaxation of other measures. A successful vaccine should show an estimated risk reduction of at least one-half, although more would be better. The example quoted of a satisfactory outcome is an evenly randomised trial with 50 cases arising in those vaccinated, and 100 cases arising in those given placebos. A vaccine that has 50% efficacy would appreciably reduce the incidence of Covid-19 and provide useful herd immunity.

Many medical commentators are concerned about the press release culture in relation to Covid-19 at the present time. If the initial headlines are over-optimistic, it can damage trust when there is a subsequent need for revision. The medical and scientific community must try to do a better job of communicating uncertainty. This is why the word 'balance' is so important.

There remains much discussion about the testing methodology for the SARS-CoV-2 virus. Nasopharyngeal swabs have historically been considered the reference method for respiratory virus detection. However, it is labour intensive and requires health care workers (HCWs) and personal protective equipment (PPEs). The other methods, anterior nasal swabs (ANS) and saliva specimens are being considered. The advantages of ANS and saliva are that they less invasive, more suitable for children, and have the potential for patients' self-collection.

A study[6] from the Meyer Children's Hospital, Florence compared paired samples of nasal and oropharyngeal swabs taken every 1-3 days on a group of 11 children with proven Covid-19. Among a total of 52 paired specimens, 24/26 of the nasal swabs were positive, and 20/26 of the oropharyngeal swabs were positive. The authors concluded that the nasal swabs were superior.

The other testing method is the use of saliva specimens to identify Covid-19 infection. Preliminary findings show promise. In 70 patients with confirmed Covid-19 infection, saliva sample were taken. In all cases the saliva tested positive for SARS-CoV-2. In another exercise 495 asymptomatic health care workers provides saliva samples for SARS-CoV-2. There were 13 positives. All were confirmed on nasopharyngeal swabs[7].

A Utah study compared nasopharyngeal swabs (NPS) with self-collected anterior nasal swabs (ANS) and saliva samples among 354 adult participants. The positive agreement rate between NPS and saliva was 93.8% and the positive agreement rate between NPS and ANS was 86.3%. The negative agreement rates were 97.8% and 99.6% respectively[8].

However, one of the potential problems about saliva testing is the presence of food particles in the sample. This can affect the technology and lead to reruns. The saliva protocols require the avoidance of food, water, and tooth brushing prior to testing and/or rely on RNA stabilization reagents as part of the collection device. ANS may also be preferable to a saliva test in a young child, as febrile toddlers won't open their mouths for sufficient time to take a salivary swab (R. Drew personal communication).

The coming weeks and months will undoubtedly witness further developments in the strategies against Covid-19.

References:

1. Slaoui M, Hepburn M. Developing safe and effective Covid vaccines- operation warp speed's strategy and approach. N Engl J Med 2020;383:Aug 26.
2. Rubin EJ, Baden LR, Morrissey S. Operation warp speed and Covid-19. N Engl J Med 2020;383:Aug 27.
3. Rubin EJ, Baden LR, Morrissey S. Understanding antibody testing in Covid-19. N Engl J Med 2020;383:Sept 3
4. McKeever A. Dozens of Covid-19 vaccines are in development, here are the ones to follow. National Geographic 2020;Aug 27
5. Krause P, Fleming TR, Longini I, Henao-Restrepo AM, Peto R. Covid-19 vaccine trials should seek worthwhile efficacy. Lancet 2020;Aug 27
6. Palmas G, Moriondo M, Trapani S et al. Nasal swab as preferred clinical specimen for Covid-19 testing in children. The Pediatric Infectious Disease Journal 2020;39:e267-269, Sept
7. Wyllie AL, Fournier J, Casanoves-Massana A, Campbell M. Saliva or nasopharyngeal swab specimens for detection of SARS-CoV-2. N Engl J Med 2020;383: Aug 28
8. Hanson KE, Barker AP, Hillyard DR, Gilmore JW, Orlandi RR, Shakir SM. Self-collected anterior nasal and saliva specimens versus healthcare worker-collected nasopharyngeal swabs for the molecular detection of SARS-CoV-2 Journal of Clinical Microbiology 2020;Aug 12

Irish Medical Journal
Established 1867

Issue: Ir Med J; Vol 113; No. 8; P148

New Technologies in the Field of Orthopaedic and Spine Surgery – Navigating the Learning Curve

A.J. Hughes[1], I.H. Feeley[1], D.P. Ahern[1], M.K. Dodds[1], N. Cassidy[1], M. Timlin[1], S. Morris[1], K. Synnott[1], J.S. Butler[1,2]

1. National Spinal Injuries Unit, Department of Trauma and Orthopaedic Surgery, Mater Misericordiae University Hospital, Dublin, Ireland.
2. UCD School of Medicine & Medical Science, Mater Misericordiae University Hospital, Dublin, Ireland.

The last thirty years have seen significant advancements in surgical techniques and emerging technologies within the fields of orthopaedic and spine surgery[1]. Computer-assisted navigation is a supportive intraoperative technology, used as an adjunct by spine and arthroplasty surgeons since the 1990's[2]. Navigation utilises three-dimensional (3D) reconstructed imaging, such that surgical instruments can be tracked within the surgical field. This technology is of particular benefit in spine surgery, a high-risk discipline with a low margin for error. Navigation systems enable accurate placement of pedicle screws, between the spinal cord and neurovascular structures, during trauma, deformity, tumour and revision cases, where anatomical landmarks may be difficult to appreciate. Intraoperative navigation has been reported to improve implant accuracy, enhance surgical reproducibility, reduce adverse events, minimise radiation exposure and result in a relative cost efficiency[3].

The procurement of an intraoperative navigation system requires significant capital investment. Adequate staff education and training is crucial prior to safely introducing a new technology into the live surgical environment. The operative theatre workflow is initially disturbed, with an associated learning curve. The resultant instrumentation accuracy, reduction in surgical duration and reduction in radiation dosage leads to 80% of spine surgeons preferring navigation to freehand techniques, disproving initial reported scepticism[4,5]. Complex cervical and upper thoracic anatomy makes pedicle access a technical challenge. Navigation allows for reliable cervical pedicle screw instrumentation, which has been consistently proven to be biomechanically superior to more traditional techniques[6]. High volume spine centres benefit from the use of navigation due to the reduction in reoperation rates, which carries important cost-effectiveness implications and thus offsets high acquisition and maintenance costs[7].

The National Spinal Injuries Unit (NSIU) at the Mater Misericordiae University Hospital (MMUH), Dublin, introduced the O-Arm imaging and StealthStation navigation system (Medtronic, Minneapolis, Minnesota, USA) in August 2018. The NSIU receives a high volume of complex referrals annually that often require surgical management. This system was introduced to improve surgical precision, minimise risk and increase patient safety, particularly for the more complex surgical cases.

Navigated spinal surgery usually involves prone positioning of a patient with careful attention to pressure points and superficial nervous structures. This is followed by meticulous dissection to expose the posterior elements of the spine, placement of self-retaining retractors and rigid application of a reference frame clamp to a fixed bony landmark, such as a spinous process. Anatomic registration is performed via a three-dimensional cone beam scan. The position of the reference frame clamp must remain constant throughout the operation. The entry point for the pedicle is identified anatomically, and a navigated drill is used. The integrity of the drill tract is assessed using a ball tipped probe, to gain tactile feedback, both before and after this pathway is prepared, using a tap, prior to pedicle screw insertion.

Awareness of the reference frame's position, most commonly at the proximal limit of the wound in cervical surgeries, or at the distal extent for thoracolumbar surgeries, is paramount to avoid registration disruption. Any suspicion of frame disturbance requires recalibration by way of a repeat scan. Mobile hands, limbs, instruments and drapes threaten the stability of the reference frame. Self-retaining forceps, taped to the drapes, ensure protection of the frame from surrounding soft tissues. Bony decompression and resection compromise the intraoperative stability of the spine and are deferred until all navigated screws have been inserted. Loss of registration, by way of altered anatomy, or loss of reference frame position, can result in a screw breaching the cortical pedicle wall, with potential neurovascular or dural injury, loss of fixation strength, and the need for revision surgery.

Early papers describe a learning curve associated with navigated spine surgery that affect the first fifteen to thirty patients[4, 8]. Saw bone education sessions have been shown to demonstrate adequate pedicle screw accuracy using computer navigation within a surgeon's very first case[5]. Cadaveric training sessions have been shown to result in satisfactory instrumentation accuracy after just eight total pedicle screws[9]. Studies have suggested up to a 30% breech-rate with freehand techniques, as compared to a more consistent 6% rate using navigation, based upon post-operative radiological analysis, however clinically significant implant misplacement rates are both similarly low[8]. There have been no differences identified in length of stay, blood loss or adverse events throughout the learning curve period[7]. Thus, even in the hands of novice surgeons, navigated spine surgery provides high levels of patient safety, even within the early stages of its introduction.

Extensive multidisciplinary training took place prior to commencing navigated surgery at our institution. Surgical simulation using saw bones familiarised surgical team members with registration and instrumentation processes. The senior author, JB, underwent fellowship training in a navigated spine surgery centre, thus facilitating on-site proctorship training. Perceptorship training, whereby surgeons would visit a specialised centre to observe an experienced surgeon, as well as cadaveric sessions, have been described as safe methods ahead of introducing new techniques in to live surgical practice[10]. Subsequent training was carried out with theatre nursing staff, radiographers and porters to improve workflow and reduce the time and hazards associated with theatre setup, patient transfer and scanning. Dual surgeon cases were prioritised throughout the learning curve, to maximise surgeon exposure to the new technology and minimise risk. Initial workflow disturbances were accomodated, serving as training opportunities with on site industry technical support staff, and reduced in frequency alongside the experience of the entire theatre team. A pedicle breach rate of 3.5% was seen throughout the first 18 cases, comparable to that quoted in the literature.

All consultant spine surgeons in our centre were fellowship trained in freehand instrumentation techniques. Surgeons could call on their cumulative experience when accessing a pedicle, determining screw trajectory and interpreting tactile feedback.

If a pedicle was compromised, surgeons could refer to their freehand techniques and safely reposition the screw. The learning curve was thus navigated with extensive surgical experience, and the technology initially served as an intraoperative adjunct. The navigated system earned the trust of the surgeon body throughout this introductory period.

Navigation is particularly beneficial to trainees. Pedicle entry points can be identified clinically, trajectory verified using the 3D image, and instrumentation supervised live by the trainer. Subtle adjustments can be made, with real time feedback provided, to improve trainee technique throughout each case. Freehand accuracy amongst trainee surgeons has been shown to improve post navigation training due to an acquired appreciation of accurate entry point location, awareness of optimal drill trajectory and comprehensive tactile judgement throughout the pedicle prior to screw insertion[5].

Introducing state-of-the-art technology into the Irish healthcare environment poses challenges, which are worth sharing with the widespread medical community. By mitigating risk during the initial learning curve, the tangible benefits of improved surgical precision, alongside greater patient safety, particularly for more challenging surgical cases, has resulted in navigation becoming an integral part of the surgical armamentarium of the National Spinal Injuries Unit. The successful introduction of this surgical technology will lead to a safer surgical environment and further strengthen the care afforded to Irish spine patients for many years to come.

Corresponding Author:
Andrew Hughes
Specialist Registrar in Trauma and Orthopaedic Surgery
Mater Misericordiae University Hospital,
Dublin,
Ireland.
Email: hughesajk@gmail.com

References:

1. F. S. Haddad, Horriat S. Robotic and other enhanced technologies: Are we prepared for such innovation? Bone Joint J. 2019;101-B(12):1469-71.
2. Karkenny AJ, Mendelis JR, Geller DS, Gomez JA. The Role of Intraoperative Navigation in Orthopaedic Surgery. J Am Acad Othop Surg. 2019;27:e849-58.
3. D. T. Cawley, R. Dhokia, J. Sales, N. Darwish, Molloy S. Ten techniques for improving navigated spinal surgery. Bone Joint J. 2020;102-B(3):371-5.
4. D. T. Cawley, V. Rajamani, M. Cawley, S. Selvadurai, A. Gibson, Molloy S. Using lean principles to introduce intraoperative navigation for scoliosis surgery. Bone Joint J. 2020;102-B(1):5-10.
5. Leitner L, Bratschitsch G, Sadoghi P, Adelsmayr G, Puchwein P, Leithner A, et al. Navigation versus experience: providing training in accurate lumbar pedicle screw positioning. Arch Orth Trauma Surg. 2019;139:1699-704.
6. Chachan S, Razak HRBA, Loo WL, Allen JC, Kumar DS. Cervical pedicle screw instrumentation is more reliable with O‐arm‐based 3D navigation: analysis of cervical pedicle screw placement accuracy with O‐arm‐based 3D navigation. European Spine J. 2018;27:2729–36.
7. Dea N, Fisher CG, Batke J, Strelzow J, Mendelsohn D, Paquette SJ, et al. Economic evaluation comparing intraoperative cone beam CT-based navigation and conventional fluoroscopy for the placement of spinal pedicle screws: a patient-level data cost-effectiveness analysis. Spine J. 2016;16:23-31.

8. Rivkin MA, Yocom SS. Thoracolumbar instrumentation with CT-guided navigation (O-arm) in 270 consecutive patients: accuracy rates and lessons learned. Neurosurg Focus. 2014;36(3):E7.
9. Sclafani JA, Regev GJ, Webb J, Garfin SR, Choll W. Kim. Use of a quantitative pedicle screw accuracy system to assess new technology: Initial studies on O-arm navigation and its effect on the learning curve of percutaneous pedicle screw insertion. SAS J. 2011;5:57-62.
10. Garneau P, Ahmad K, Carignan S, Trudeau P. Preceptorship and proctorship as an effective way to learn laparoscopic sleeve gastrectomy. Obes Surg. 2014;24(12):2021-4.

Irish Medical Journal
Established 1867

Issue: Ir Med J; Vol 113; No. 8; P149

The National Cerebral Palsy Register

M. Craig, L. Baker, O. Hensey

Central Remedial Clinic, Clontarf, Dublin.

In Southern Ireland Cerebral Palsy (CP) Registers had, in the past, been established in the Eastern (Counties Dublin, Meath, Kildare), Western (Counties Galway, Mayo, Roscommon) and Southern (Counties Cork, Kerry)Regions, which recorded CP cases arising in 61.5% of total national births. Currently only the Eastern Region Register remains active, and therefore information on epidemiological trends in recorded CP cases are now confined to that geographical area only.

Based on 59,796 births per annum (CSO, 2019) with a CP rate of 1.77 per 1000 births it is estimated that nationally there should be approximately 110 new cases per year.[1] Recognising the need for reliable national CP prevalence data, a feasibility study is now being undertaken to look at the establishment of a National Cerebral Palsy Register to monitor prevalence of CP cases, to include the identification of trends in aetiological factors of importance and those causes that are preventable. The development of a complete national dataset will facilitate the planning of appropriate rehabilitation and health services for affected children and permit Ireland to benchmark ourselves with other jurisdictions.

Cerebral palsy (CP) describes a group of disorders of the development of movement and posture attributed to non-progressive disturbances that occur in the developing infant or foetal brain.[2] The clinical manifestations are associated with distinct heterogeneity and the associated co-morbidities of CP present significant challenges for individuals and families. The epidemiology of CP is changing as a result of improved neonatal care which has increased the survival chances of low birth weight and premature babies who are at particular risk. Early research into aetiology attributed peri-natal factors as the primary cause of CP, with little recognition of other causes. However, many now believe that peri-natal causes do not account for as many cases of CP as was previously believed leading to a shift in understanding about true causes.[3]

A Register is a collection of information on individuals who share common characteristics in a defined population. Registries are particularly suited to monitoring outcomes of care where there is a known variation and where poor performance results in high cost.[4] A successful national register is dependent on close collaboration with key stakeholders such as Paediatricians, Neonatologists, Orthopaedic Surgeons, Maternity Hospitals, the HSE, Department of Health, and providers of services for children with physical disability. To address some of issues described above, it is important that mechanisms are developed that will facilitate research into the origins and management of CP here in the Republic of Ireland. We believe that complete national data will provide more accurate and valid surveillance trends and will provide an indispensable resource for research, free from the biases of other ascertainment methods.

The establishment of a National CP Register would be in keeping with the government's plan to develop a system for efficient electronic exchange of health information and increase the interoperability of all health data to improve care. In Ireland, the number of patient registries is growing which are increasingly being used to inform clinical and policy decision making and support health economic assessment. The most established of these is the Cancer Registry which was established in 1991 with a national mandate to collect data and now contains more than 500,000 registrants.[5] More than 90% of people with Cystic Fibrosis are contained on a register, allowing for an efficient mechanism to keep relevant records on CF patients nationally and monitor and assess a growing range of treatments that patients are on.[6]

Our understanding of the global prevalence of CP has been shaped by the existence of many successful registers internationally from countries such as Australia, Sweden and the United Kingdom, including Northern Ireland. The most recent report from the Australian Cerebral Palsy Register (ACPR, 2018) finds that rates of CP in Australia are decreasing across all cohorts examined. Pre/peri-natally acquired CP rates declined from 2.1 (1995-1997) to 1.4 (2010-2012) children per 1000 live births. The report also finds a reduction in the number children with moderate to severe Gross Motor Function (GMFCS) levels 3-5, as well as significantly larger numbers of children who do not have visual impairments and epilepsy.[7] Continued research must continue in order to ascertain that results are reflective of a true downward trend.

In Europe the Surveillance of Cerebral Palsy Network (SCPE) comprises a central database of CP registers using agreed standards, definitions and classifications. Data is available on more than 21,000 children with CP. The central database allows meaningful analysis and eliminates the challenges associated with interpretation of data when registers do not share the same harmonized methods and are dealing with small numbers. A recent large scale study, using the data from 26 population registers across Europe, confirmed previous reports, in that there is an overall reduction in prevalence of CP in Europe from 1.90 to 1.77 per 1000 live births in the 1980-2003 period.[1] In 2016 the SCPE database became part of the European Commission's Joint Research Centre to allow it to be utilised beyond epidemiological research as an evidence based resource for policy makers.

Critical developments in neonatal practice have significantly affected mortality, however effects on impairments are less obvious. Twenty percent of extremely premature babies (22-25 weeks) had a severe disability in 2006, which had remained constant since 1995. For term children the introduction of hypothermic treatment saw a marked decrease in mortality for those who suffered a hypoxic episode as well as a reduction in CP.[1]

In developing a National Cerebral Palsy Register it is proposed to draw on and develop the expertise of the existing Eastern Region Register and utilise the experience of the staff who were involved in the Western and Southern Registers. A variety of consent models are currently being explored. Multiple and over- lapping sources of ascertainment will be used. Prospective cases will be identified through both direct contact with professionals and agencies and through the use of a report card sent monthly to service professionals. Notified cases will remain unconfirmed until validated at age 5 and will be stored anonymously. Specific inclusion and exclusion criteria will be used. The dataset will be modelled on that agreed by the European Surveillance Network of Cerebral Palsy (SCPE) where formal agreements are already in place with the Eastern Register. As the Register develops additional fields may be incorporated that may be useful from a national perspective that take account of research requirements and service planning. The Register will be managed by a Registry Co-ordinator who will report to an Advisory Committee. Together they will identify a suitable storage location for the data and will ensure that confidentiality and data quality are maintained. Information will be provided to service planners and a scientific report will be produced annually.

Corresponding Author:
Margie Craig
Research Lead - Feasibility National CP Registry
Central Remedial Clinic,
Vernon Ave,
Clontarf,
Dublin 3.
E-mail: mcraig@crc.ie

References:

1. Sellier E., Platt, M., Andersen G., Krageloh-Mann, I., De La Cruz, J. & Cans, C. (2016) Decreasing prevalence in cerebral palsy: a multi-site European population-based study, 1980 to 2003, *Dev Med Child Neurology*, 58; 85-92.
2. Rosenbaum P., Paneth, N., Leviton A. *et al*. (2007) A report: the definition and classification of cerebral palsy, *Dev Med Child Neurology*; 109(Suppl.): 8–14.
3. Ellenberg, J. & Nelson K. (2013) The association of cerebral palsy with birth asphyxia: a definitional quagmire. *Dev Med Child Neurology*; 55: 210–16
4. Australian Commission on Safety and Quality in Health Care (ACSQHC) (2014) *Framework for Australian Clinical Quality Registries,* Sydney.
5. National Cancer Registry Ireland. (2016) National Cancer Registry Ireland website. Retrieved from http://www.ncri.ie
6. Cystic Fibrosis Registry of Ireland. (2016) Cystic Fibrosis Registry of Ireland website. Retrieved from http:// www.cfri.ie
7. Australian Cerebral Palsy Register Report (2018) available at https://cpregister.com/wp-content/uploads/2019/02/Report-of-the-Australian-Cerebral-Palsy-Register-Birth-Years-1995-2012.pdf

Irish Medical Journal
Established 1867

Issue: Ir Med J; Vol 113; No. 8; P150

Reduction of Orthopaedic and Rheumatology Outpatient Waiting Lists: The National Musculoskeletal Physiotherapy Triage Initiative

A. Brennan[1], J. Ashton[1,2], E. Callanan[1,3], C. Farrell[1,3], G. Killeen[1,2], O FitzGerald[2], D. Moore[1,3], P. Kenny[1,3], D. Kane[1,2]

1. National Musculoskeletal Steering Group
2. National Clinical Programme for Rheumatology (NCPR), RCPI, Setanta House, Setanta Place, Dublin 2
3. National Clinical Programme for Trauma and Orthopaedic Surgery (NCPTOS), RCSI Surgical Affairs, Prouds Lane, Dublin 2

Abstract

Aims

The NCPR and the NCPTOS implemented a novel musculoskeletal (MSK) physiotherapy triage initiative to reduce the Orthopaedic and Rheumatology outpatient waiting lists in Ireland.

Methods

In 2012, 24 MSK Clinical Specialist Physiotherapists (CSPs) were recruited across 18 hospital sites nationally, with a further 6 CSPs recruited in 2016. From 2012-2014 participating sites kept local summary data from MSK triage clinics with a centralised monthly data analysis system established in 2015.

Results

From 2012-2018, 125,852 patients were removed from Orthopaedic and Rheumatology waiting lists nationally. 71% of all new patients were discharged following assessment and treatment. 19% who attended an orthopaedic CSP clinic were referred for orthopaedic consultant review and 10% who attended a rheumatology CSP clinic were referred for consultant rheumatologist review.

Conclusion

The MSK physiotherapy triage initiative successfully reduced national Orthopaedic and Rheumatology waiting lists, producing more effective use of limited consultant resources with improved patient wait times.

Introduction

Musculoskeletal (MSK) diseases comprise over 200 conditions that encompass a wide spectrum of inflammatory and non-inflammatory diseases. These include age-related degenerative conditions such as osteoporosis and osteoarthritis; autoimmune inflammatory diseases such as rheumatoid arthritis; bony and soft tissue injuries from major trauma, falls, sports and occupational causes and very common but poorly understood conditions such as back pain and fibromyalgia.

Increasing lifespan, reduced physical activity and increasing obesity have resulted in an increasing prevalence of MSK diseases with an estimated 1.2 million Irish citizens affected[1]. The Irish LongituDinal study on Ageing (TILDA) noted a reported arthritis prevalence of 33% among the over 50's population[2], increasing to 51% in the over 75's population. This rising prevalence has led to increased waiting times to see orthopaedic and rheumatology consultants in Ireland. Since 2014 there has been a 17.6% average annual increase in orthopaedic outpatient (OPD) referrals and a 6.4% average annual increase in Rheumatology OPD referrals. As a consequence, many patients wait years for an appointment to get a specialist opinion resulting in delayed diagnosis, increased morbidity and poorer patient outcomes[3-5].

Clinical Specialist Physiotherapists (CSPs) are trained in diagnosing and triaging treatment for patients with common MSK disorders. They can select the most appropriate care pathway for selected groups of patients on orthopaedic and rheumatology waiting lists and improve the efficiency of care[6]. The MSK patient journey can be very complex with patients often requiring multiple interventions making CSP clinics an ideal place to direct patient care[7]. They function as a "one stop shop" for assessment, diagnosis, education and identification of an appropriate management pathway. Thus, patients with more common degenerative MSK disorders not requiring highly specialised consultant services such as orthopaedic surgery or rheumatological immunotherapy can be more rapidly diagnosed and treated. Those requiring specialist services can be identified and triaged more rapidly to the most appropriate specialist service. CSP's have been shown to be as effective as orthopaedic doctors in diagnostic accuracy, treatment choice, use of healthcare resources and patient satisfaction in selected patient groups[6-8].

The first CSP-led MSK triage clinic was established in the Ireland in 2001 where Clinical Specialist Physiotherapists (CSPs) worked in the triage of low back pain orthopaedic patients[9]. Of the patients who attended in the first 2 years of this service 85% of patients were discharged back to the care of their General Practitioner (GP). Since 2002, a small number of hospital sites across Ireland have established CSP triage clinics in the areas of neurosurgery, orthopaedics and rheumatology[8,10]. Each of these clinics were established based on local guidance and governance without any national governing structure providing support, direction and evaluation. In 2011 the National Clinical Programme for Rheumatology (NCPR) and the National Clinical Programme for Trauma and Orthopaedic Surgery (NCPTOS) collaborated in the development of a national MSK physiotherapy triage initiative in order to manage the Orthopaedic and Rheumatology outpatient waiting lists. An initial analysis of 6 months activity of this initiative suggested a positive impact of the service[11], and we now assess the long-term impact of the 7-year activity data.

Methods

In 2012, 24 CSPs were employed by the Health Service Executive (HSE) across 18 hospital sites and in 2016 a further 6 posts were recruited. CSPs were trained and employed in areas of advanced MSK practice at hospital sites in Ireland with formal training provided at a national level and all CSP's had a consultant mentor. These posts were to provide Orthopaedic and Rheumatology triage clinics across 18 hospital sites throughout the country to aid clearance of lengthy OPD waiting lists and improve long term MSK referral management. All participating sites were sent an implementation plan which listed all requirements deemed necessary for successful service delivery. All sites had to complete this implementation plan and return to the NCPTOS and NCPR programme managers. Subsequently, a meeting was held with all the key stakeholders from the allocated centres to discuss the implementation requirements for this initiative. From 2012-2014 participating sites kept local data sheets and provided a total number of patients seen and discharged by MSK triage clinics.

From 2015 a more robust data analysis system was established where each site submitted monthly excel spreadsheets that reported specific performance metrics which included new and return patients seen; access data; numbers that 'did not attend' (DNA) the visit and outcome data from the visit. All data was cleaned and verified prior to being included in the collective run charts. For the purpose of this study, data was anonymised in line with data protection and analysed using descriptive statistics.

This report outlines the first 7 years of national data on patients who attended clinics as part of the national MSK physiotherapy triage initiative. This study specifically examined the following: 1) numbers seen across 18 sites where CSP triage clinics were established; 2) outcome of patients who attended these clinics and 3) the impact of the national MSK physiotherapy triage initiative on collaborative orthopaedic and rheumatology national waiting lists.

Results

National MSK Physiotherapy Triage Initiative Activity 2012-2018

From January 2012 to December 2018, a total of 125,852 patients have been removed from orthopaedic and rheumatology waiting lists nationally by this initiative. 104,394 new patients attended for assessment and 21,458 people (17%) who were given an appointment 'did not attend' (DNA). Of the 104,394 new patients assessed, 73,694 (71%) were discharged at their initial clinic visit having been provided with a diagnosis and treatment plan and 15,759 (15%) of new patients returned for a review at the CSP MSK triage clinic. Between 2015 and 2018, 25% (n=18,127) of patients were seen within 3 months of receipt of referral at the hospital site. (Table 1)

Table 1. National MSK Physiotherapy Triage Initiative Activity 2012-2018.

	2012-2014*	2015	2016	2017	2018	Total
Total New Patients Seen at MSK Clinics	32,579	16,441	17,489	17,533	20,352	104,394
Total Return Patients Seen at MSK Clinics	5,469	2,386	2,518	2,854	2,532	15,759
Number Discharged from Service (n)	26,596	10,640	11,279	11,410	13,769	73,694
Average Discharge Rate (%)	82%	65%	65%	65%	68%	71%
Number of those who Did Not Attend (n)	5,946	3,909	3,586	3,551	4,466	21,458
Average DNA Rate (%)	13%	19%	17%	17%	18%	17%
Number of patients seen within 3 months of referral (n)	-	5,559	4,577	4,835	3,156	18,127**
Average rate of patients seen within 3 months of referral (%)	-	34%	27%	28%	27%	25%**
Total Removed from Orthopaedic & Rheumatology Waiting Lists	46,588	20,350	21,075	21,084	24,818	125,852

*Annual Data not available as robust reporting structure established in 2015

**Represents data 2015-2018 inclusive

Patient outcome data from the National MSK Physiotherapy Triage Initiative 2015-2018

Between January 2015 and December 2018, 60,850 orthopaedic patients have been seen at CSP MSK triage clinics. Of this, CSPs independently assessed and managed 65% (n=39,358) of the patients seen as these were discharged after their initial clinic visit. 19% (n=11,451) were referred for follow-up with an orthopaedic consultant and <1% (n=399) were referred for a rheumatology appointment. (Table 2)

Table 2. National MSK Physiotherapy Triage Initiative Orthopaedic Outcome Data 2015-2018.

Orthopaedic Only Data	2015	2016	2017	2018	Total
Total New Attendances at Orthopaedic MSK Clinics (n)	14,165	15,144	14,804	16,737	60,850
Total New Patients Discharged from Orthopaedic MSK Clinics (n)	9,032	9,630	9,428	11,268	39,358
Average Discharge Rate from Orthopaedic MSK Clinics (%)	64%	64%	64%	67%	65%
Total new patients referred onward to Specialist Orthopaedic service (n)	2,861	2,847	2,760	2,983	11,451
Average onward referral rate to Specialist Orthopaedic service (%)	20%	19%	19%	18%	19%
Total new patients referred onward to specialist Rheumatology Service (n)	109	114	98	78	399
Average onward referral rate to Specialist Rheumatology service (%)	0.8%	0.9%	0.7%	0.5%	0.7%

Over the same period of time 10,965 rheumatology patients were seen in CSP MSK clinics with 71% (n=7740) of these being assessed and discharged after their first appointment; 10% (n=1130) requiring follow-up with a consultant rheumatologist and 2% (n=229) referred for a follow-up with a consultant orthopaedic surgeon. (Table 3)

Table 3. National MSK Physiotherapy Triage Initiative Rheumatology Outcome Data 2015-2018.

Rheumatology Only Data	2015	2016	2017	2018	Total
Total New Attendances at Rheumatology MSK Clinic (n)	2,276	2,345	2,729	3,615	10,965
Total New Patients Discharged at Rheumatology MSK Clinic (n)	1,608	1,649	1,982	2,501	7,740
Average Discharge Rate from Orthopaedic MSK Clinics (%)	71%	70%	73%	69%	71%
Total new patients referred onward to Specialist Orthopaedic service (n)	48	56	56	69	229
Average onward referral rate to Specialist Orthopaedic service (%)	2%	2%	2%	2%	2%
Total new patients referred onward to specialist Rheumatology Service (n)	229	181	296	424	1,130
Average onward referral rate to Specialist Rheumatology service (%)	10%	8%	11%	12%	10%

Impact of the National MSK Physiotherapy Triage Initiative Activity 2015-2018

The national MSK physiotherapy triage Initiative has made significant inroads into assisting in the management of both Orthopaedic and Rheumatology waiting lists. Figure 1 outlines a graphical illustration comparing the combined national Orthopaedic and Rheumatology waiting lists with the projected waiting list figures in the absence of the national MSK physiotherapy triage initiative between 2015 and 2018.

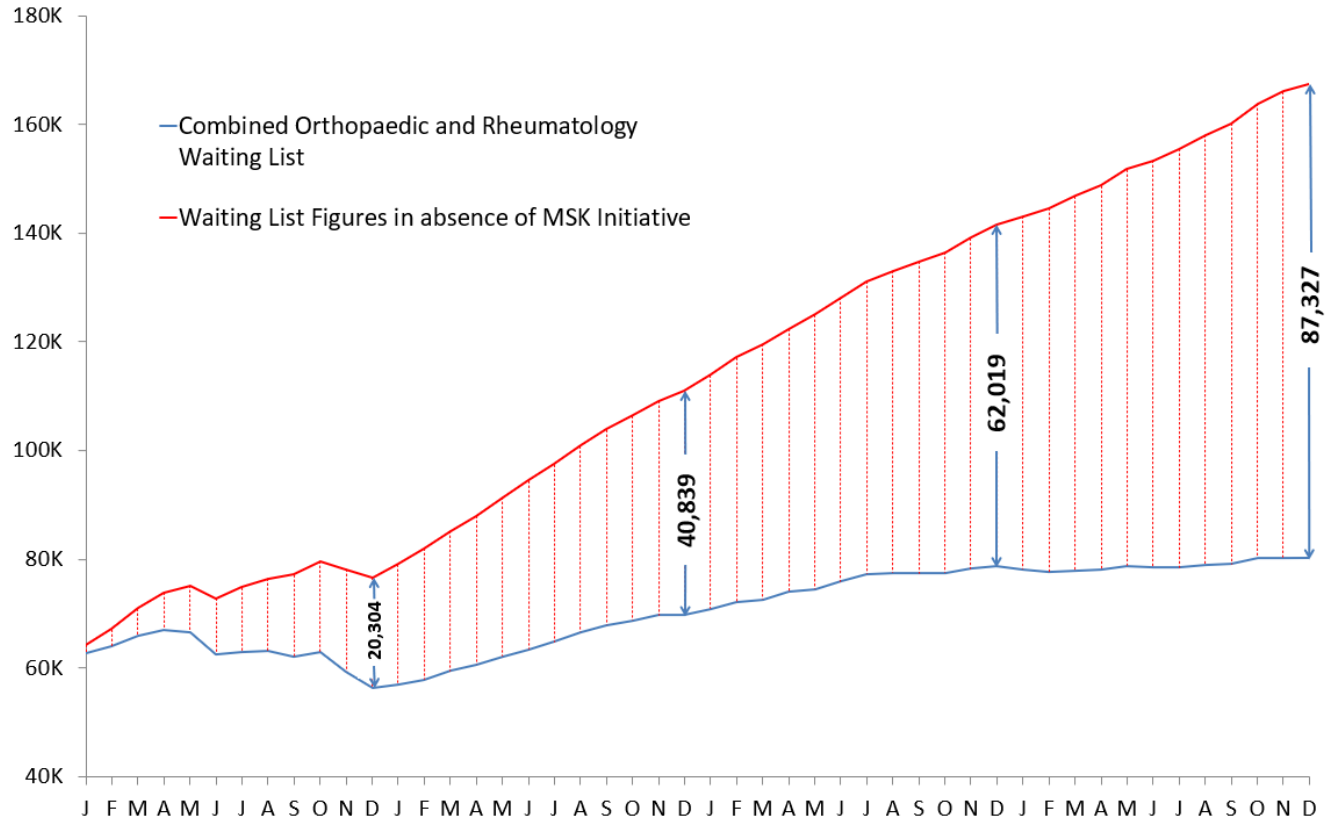


Figure 1. National MSK Physiotherapy Triage Initiative Impact on Orthopaedic and Rheumatology Waiting Lists 2015-2018

Discussion

Increased patient expectations of good health combined with an older, more obese and less physically active population has resulted in a rising MSK disease prevalence and demand for MSK health services in the developed world[1,2]. Patients with MSK diseases who cannot be diagnosed and treated in primary care are usually referred to specialist Orthopaedic or Rheumatology outpatient services. Ireland has one of the lowest population ratios of consultant rheumatologists and orthopaedic surgeons in the EU and waiting lists for specialist consultation are unacceptably long [4,5]. Modern orthopaedic surgery and rheumatology immunotherapy treatments for patients with arthritis are highly effective for selected patients but this study confirms that many patients with MSK diseases can be managed by a Musculoskeletal Clinical Specialist in Physiotherapy without a specialist consultation and intervention. These would usually be patients with non-inflammatory, less advanced degenerative conditions as seen in the initial 6 analysis of this initiative [8,10,11]. This study confirms the sustained effectiveness of a national collaborative initiative between the NCPR and the NCPTOS in the management of those groups of MSK patients by CSPs.

Over a seven-year period from 2012 to 2018, 125,852 patients were removed from both Orthopaedic and Rheumatology waiting lists due to the national MSK physiotherapy triage initiative. The positive impact of this on current waiting times is demonstrated in Figure 1 but waiting lists for Orthopaedic and Rheumatology outpatient appointments remain unacceptably high and continue to rise (Figure 1). This study confirms that CSPs can independently manage 71% of selected patients on these outpatient waiting lists but are not the sole solution to Orthopaedic and Rheumatology waiting lists. For example, in most sites the CSPs would only see referrals selected by the supervising consultant as appropriate with the remainder waiting for a specialist clinic. In the Rheumatology referral pathway for example, patients with suspected inflammatory arthritis, connective tissue disease or vasculitis would bypass a CSP and this may account for the lower onward referral rate of 10% of those seen by a CSP in the triage clinic. The NCPR and NCPTOS have both published models of care approved by the HSE[4,5] confirming there is still a need for increased numbers of consultant appointments in both specialties as being critical to further improve access and quality of care in Orthopaedics and Rheumatology.

From 2015 and 2018 a new data collection system allowed monthly key performance indices to be analysed. At a time when the national waiting list figures for orthopaedics and rheumatology were over 12 months, 25% of patients accessed MSK services via CSP triage clinics within 3 months of receipt of referral at their hospital site. While this is a clear improvement, the programme target is to have 100% of patients assessed within 3 months of referral and there is a requirement for more capacity in the National MSK Triage programme. The publication of the SlainteCare report in 2017 supports the management of more patients in primary care[12]. Given 71% of patients were managed independently by the CSP at the MSK triage clinic, the question arises as to whether some or all of these patients could have been managed at primary care level[13,14]. The NCPR and NCPTOS has proposed that the next phase of the triage programme should focus on establishing integrated clinics between primary and secondary care services managing patients as close to their home as possible. It is estimated that 12 additional CSP posts would meet current referral demand allowing 100% of patients to be seen within 3 months. This study confirms the success of MSK physiotherapy triage clinics with an operational model that is transferable to primary care with correct planning in relation to structure and governance. In order to successfully implement an integrated pathway of care for patients with MSK disorders we conclude that there is a need to invest in MSK training for GPs and in community physiotherapy treatment services and community MSK specialist assessment clinics with appropriate access to laboratory and radiological investigations.

The removal of 125,852 patients from both orthopaedic and rheumatology national waiting lists in the past 7 years by the national MSK physiotherapy initiative was the first systematic HSE initiative to manage selected consultant referrals with specialised health care professionals. This has successfully improved access to Rheumatology and Orthopaedic services in Ireland. Prior to the introduction of the MSK triage programme, these patients would have waited for an appointment to be seen at either a consultant orthopaedic or rheumatology clinic that in some sites could be 5 years. The success of this cross-programme initiative between the NCPR and NCPTOS has had a positive impact on patient outcomes by reducing waiting times for diagnosis and treatment. This allowed consultant time to be used more effectively for patients that require their expertise. Further research into patient centred qualitative health outcomes for patients managed through this pathway are required. This new way of working should be further developed to improve patient access but will need to be supported by the implementation of the NCPR and NTPOS models of care.

Declarations of Conflicts of Interest:
The authors declare no conflicts of interest

Corresponding Author:
Prof David Kane,
Dept of Rheumatology,
Tallaght University Hospital,
Dublin 24.
Phone: 01-4143350
Email: david.kane@tuh.ie

References:

1. Woolf, A. D.; Pfleger, B., Burden of major musculoskeletal conditions. *Bull World Health Organ* 2003, *81* (9), 646-56.
2. Donoghue, O. A.; McGarrigle, C. A.; Foley, M.; Fagan, A.; Meaney, J.; Kenny, R. A., Cohort Profile Update: The Irish Longitudinal Study on Ageing (TILDA). *International journal of epidemiology* 2018, *47* (5), 1398-1398l.
3. Morris, J.; Twizeyemariya, A.; Grimmer, K., What is the current evidence of the impact on quality of life whilst waiting for management/treatment of orthopaedic/musculoskeletal complaints? A systematic scoping review. *Quality of Life Research* 2018, *27* (9), 2227-2242.
4. National Clinical Programme for Rheumatology, Model of Care for Rheumatology in Ireland. Health Service Executive: Dublin, 2018. https://www.hse.ie/eng/about/who/cspd/ncps/rheumatology
5. National Clinical Programme for Trauma and Orthopaedic Surgery, National Model of Care for Trauma and Orthopaedic Surgery in Ireland. Health Service Executive: Dublin, 2015. https://www.hse.ie/eng/about/who/cspd/ncps/trauma-and-orthopaedic-surgery/moc/
6. Desmeules, F.; Roy, J.-S.; MacDermid, J. C.; Champagne, F.; Hinse, O.; Woodhouse, L. J., Advanced practice physiotherapy in patients with musculoskeletal disorders: a systematic review. *BMC musculoskeletal disorders* 2012, *13* (1), 107.
7. Marks, D.; Comans, T.; Bisset, L.; Scuffham, P. A., Substitution of doctors with physiotherapists in the management of common musculoskeletal disorders: a systematic review. *Physiotherapy* 2017, *103* (4), 341-351.
8. Fennelly, O.; Blake, C.; FitzGerald, O.; Breen, R.; O'Sullivan, C.; O'Mir, M. et al, Advanced musculoskeletal physiotherapy practice in Ireland: A National Survey. *Musculoskeletal care* 2018, *16* (4), 425-432.
9. Curley, A. E.; Cassells, M.; Cooke, G.; Dowling, F., Physiotherapy-led low back pain triage: results of the first two years. *Physiotherapy Ireland* 2004, *25* (2), 3-9.
10. Fennelly, O.; Blake, C.; Desmeules, F.; Stokes, D.; Cunningham, C., Patient-reported outcome measures in advanced musculoskeletal physiotherapy practice: a systematic review. *Musculoskeletal care* 2018, *16* (1), 188-208.
11. Fennelly, O.; Blake, C.; FitzGerald, O.; Breen, R.; Ashton, J.; Brennan, A. et al, Advanced practice physiotherapy-led triage in Irish orthopaedic and rheumatology services: national data audit. *BMC musculoskeletal disorders* 2018, *19* (1), 181.
12. Houses of the Oireachtas, Slaintecare Report. Committee on the Future of Healthcare, Ed. Houses of the Oireachtas: Dublin, 2017; p 191.
13. Thorn, J.; Maun, A.; Bornhöft, L.; Kornbakk, M.; Wedham, S.; Zaffar, M. et al, Increased access rate to a primary health-care centre by introducing a structured patient sorting system developed to make the most efficient use of the personnel: a pilot study. *Health services management research* 2010, *23* (4), 166-171.
14. Bornhöft, L.; Larsson, M. E. H.; Nordeman, L.; Eggertsen, R.; Thorn, J., Health effects of direct triaging to physiotherapists in primary care for patients with musculoskeletal disorders: a pragmatic randomized controlled trial. *Therapeutic advances in musculoskeletal disease* 2019, *11*, 1-13.

Irish Medical Journal
Established 1867

Issue: Ir Med J; Vol 113; No. 8; P151

GP Answering Machines: A Barrier to Accessing Doctor-On-Call

S. Smith, L. Carragher

NetwellCASALA, Dundalk Institute of Technology, Dundalk, Co Louth, Ireland.

Abstract

Aim
GP out-of-hours services are an important part of primary care provision supporting people to live independently at home for longer. Older people mainly call their GP surgery for the out-of-hours service phone number, when needing a doctor at night. This study examines the impact of GP answering machine messages on older persons seeking to access GP out-of-hours.

Methods
A content analysis approach was used to examine audio recordings of all outgoing answering machine messages from GP practices (n=33) in two counties in Ireland.

Results
Both technical and interpretive issues were identified with outgoing answering machine recordings. Messages contained elements linked with information processing challenges including; low volume (82%, n=27); excessively fast delivery (51.5%, n=17); mixed instructions (21%, n=7); and multiple phone numbers (61%, n=20).

Conclusion
GP answering machines present a barrier for people requiring out-of-hours primary care. The information processing ability of older people, often in urgent need when seeking a doctor out-of-hours, may be compromised due to stress, as well as illness or age-related physical challenges. Answering machine messages, providing care directions, should be created to maximise the potential for all patients to acquire the necessary details for accessing primary care outside office hours.

Introduction

The UN Principles for Older Persons include the right to be able to reside at home[1]. This aspiration is echoed in the Irish National Positive Ageing Strategy[2] and underpins a commitment to independence, dignity and care in service delivery as well as goals to remove barriers and enable people to live in their own homes as long as possible. If people are to remain living in their communities into older age, availability of medical care at night is essential. The HSE Service Delivery Specification is that that GPs will provide an 'easily accessible urgent general practitioner out-of-hours service'[3].

GP out-of-hours (GPOOH) services, referred to locally as 'Doc-on-Call' (DOC), play a crucial role in supporting people to live independently at home for longer and are an important part of primary care provision.

Currently the only alternative to emergency care services, DOC can only be effective if people are both able and willing to use it. A recent study found that, for older people, needing to see a doctor outside office hours requires the ability to overcome multiple barriers[4]. Even accessing regularly scheduled health care is already difficult for some older people in Ireland, particularly in rural communities[5-8]. It is accepted that older people are reluctant to seek medical help unless in real need and their symptoms are severe[9,10] but being ill at night can be accompanied with more anxiety and stress than experiencing similar symptoms during the day.

In developing a set of principles for provision of age-friendly primary health care, the World Health Organisation (WHO) emphasised it is critical for primary care providers to understand the specific needs and challenges of older people if services are to be both adaptive and accessible[11]. Improving accessibility means that more thoughtful design of products, services and public engagement contexts is required, which takes into account common age-associated changes in sensory function, mobility, memory, attention and cognitive function, to meet the needs of all service users[12]. One of the main ways people find out how to contact a doctor out-of-hours is to call their local GP's surgery to hear the instructions and phone number provided in the outgoing phone recording. Older people report anxiety about needing to make several calls to their GP's surgery to successfully acquire the information necessary to contact DOC[4]. Previous research has drawn attention to the importance of how such messages are conveyed[12-14].

Ageing is associated with reduced information processing capacity and reduced ability to understand speech, particularly in challenging or distracting situations, such as severe illness[13,15]. Coordination abilities can be challenged, as older people may move more deliberately and, where conditions such as arthritis or tremor are present, there may be difficulty executing precise actions required for tasks such as dialling a phone or writing[12]. For effective content transmission, there are key elements required when sending a message. Comprehension, processing and recall are maximised where: a reasonable pace of speech is maintained with minimal background noise; fewer discrete pieces of information are presented; a predictable linguistic structure is present; and pauses are included at logical grammatical boundaries[12-14]. In situations requiring multi-tasking, common age-related cognitive and sensory decline (including hearing loss) can affect perceptual and cognitive performance and recall. In the context of a late-night illness, anxiety may become overwhelming for an older person resulting in an increased perceptual burden on processing resources[16]. This paper examines current outgoing GP office answering machine messages and their potential impact on accessibility of DOC for community dwelling older people.

Methods

To test the usability of GP surgery phone announcements, all GP surgeries (n=33) in two rural counties in Ireland were called on a Sunday night. Outgoing answering machine messages were recorded for analysis. Recorded messages were transcribed verbatim. Both the audio recordings and transcriptions were uploaded to Nvivo 12 software for analysis. Messages were evaluated for technical elements including; volume, pace (words-per-minute), background noise in the message, number of discrete information elements contained in the message and the number of times the DOC contact number was provided. Message length and volume were automatically captured in Nvivo (Figure 1). Words-per-minute were calculated manually, based on message length.

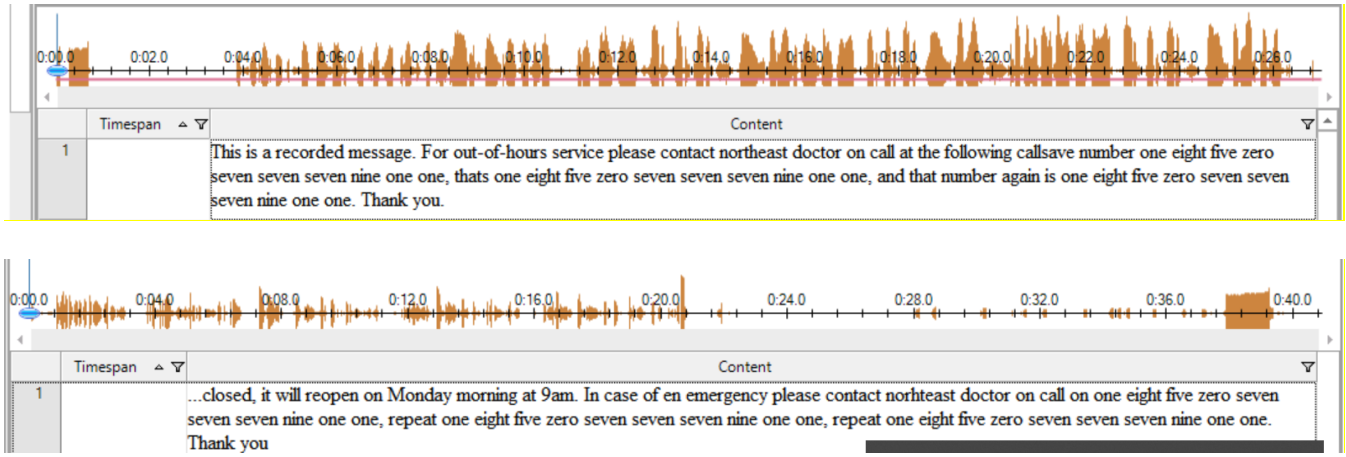
Interpretive elements were also evaluated including: presence of the correct explanation of the purpose of DOC (urgency level), clarity of naming DOC clearly as 'Doctor/Doc on Call' (the term most recognised for the GPOOH service) or alternatively as 'urgent GP out-of-hours' (the technically accurate term of the service) and linguistic structure when providing the DOC phone number (avoidance of 'double' or 'treble' when calling out the number).

Results

Technical Message Elements

Difficulty hearing the message, due to low volume or interfering noise, was identified in twenty-seven (82%) of the messages. In seventeen (51%) cases, the pace at which the message was delivered was faster than normal conversational pace of speech of 120-150 words per minute (wpm), with nine (27%) messages at a pace of over 170 wpm. At this pace, considered too fast for the message to be comfortably heard and processed for understanding, difficulties can be expected for the listener to retrieve and write down the relevant number for DOC. Furthermore, noise interference, either in the background of the recorded message or device-related noise, was often present in messages, adding to the factors to be overcome for auditory processing by the caller.

Figure 1. Answering machine message volume and content.



Interpretive Message Elements

In six (18%) cases, the phone number for DOC was given only once while twenty-one (64%) of the messages provided the number twice. The DOC number was repeated three times in six (18%) messages. However, in twenty cases (61%) multiple instructions, including additional phone numbers and surgery opening hours, were given within the message. Furthermore, more than half (N=18, 55%) of the messages listed at least two different phone numbers, to cover other circumstances such as lunch times or variations in surgery opening hours.

A third of the messages guided people to call DOC in case of an *emergency* and a third used the term *urgent* when directing callers to DOC and a third of the messages did not define any urgency level specifically required to call DOC. However, seven (21%) messages included both the terms *urgent* and *emergency*, as instructions for calling DOC or when to call other numbers listed (such as the GP's mobile number), with no indication of which level of urgency should warrant a call to DOC.

The phone number for DOC was provided in all cases but the service was referred to in a variety of ways across messages, including as 'Northeast Doc', 'NEDOC', 'doc on call', 'the northeast doctor' or 'our out-of-hours surgery'. The manner in which the number was given varied from practice to practice, with terms used which require interpretation and cognitive processing, such as 'treble seven' and 'double one', as well as in different formats such as 'eighteen fifty' compared to 'one eight five oh' when phone numbers were called out on the message recordings.

Table 1. Message Elements of outgoing GP practice out-of-hours messages.

Message Feature	Accessible	Poor Accessibility
Message volume	High volume = 6 (18%) Med volume = 11 (33%)	Low volume = 16 (48%) Background noise = 11 (33%)
Pace of message in words per minute (wpm)	wpm < 120 = 5 (15%)	wpm > 120-149 = 12 (36%) wpm> 150-170 = 8 (24%) wpm> 170 = 8 (24%)
Number of times the DOC number provided	Three or more = 6 (18%) Twice = 21 (64%)	Once = 6 (18%)
Urgency guidance for* calling *DOC	'Call for *emergencies'* = 7 (21%) 'Call for *urgent* care' = 10 (30%)	Multiple definitions of urgency used = 7 (21%) No urgency guidance = 5 (15%)

Discussion

People may call their GP surgery for guidance on what to do if they need a doctor while the surgery is closed. Ability of the caller to hear and decipher the information provided is fundamental to the accessibility of outgoing answering machine recorded messages. The researcher making the calls, was not ill or in distress when making the calls and had unimpaired hearing, vison, and writing coordination abilities, yet found it was necessary to listen to most of the messages more than once to collect the relevant information imparted in the messages. The message pace, volume, background noise and complexity of the message content all contributed to the inaccessibility of the information sought, the DOC number. If at least one repeat call to the surgery is required, a 'call-busy' signal may occur where the message has not completed prior to hang-up or full disconnection made from the previous call. In such cases, the GP surgery number would need to be dialled repeatedly and messages listened to multiple times to acquire the necessary details for accessing DOC. Given the context of urgent illness and caller stress, it may be understandable why a single call for an ambulance or going directly to the hospital Emergency Department (ED), may offer a simpler and more accessible alternative for people if ill out-of-hours[4].

Older people, already hesitant to call a doctor out-of-hours, lest they be perceived as misusing services by presenting with unjustifiable symptoms or conditions[4], require clear guidance about which service to use and when. The language used in the outgoing messages reflects how GPs instruct their patients to use DOC. A lack of clarity and consistency was found in how the purpose of the out-of-hours service was communicated in the messages, leaving patients to decide if, when and how to use DOC. This represents an additional information processing challenge for people looking to their GP for guidance on appropriate services, at a time of extreme distress. Uniformity is, therefore, required when defining the purpose of DOC (urgent) versus ED (emergency) as well as consistency in conveying this definition to patients as part of regular practice communications.

A range of factors are relevant for patient satisfaction with DOC and Smits et al.[17] suggest that more attention should be paid to the elements required to satisfy specific groups, such as older people. The issues of accessibility and adaptability remain central when considering DOC use by older people in Ireland[4]. The nature of GP surgery answering machine messages represent one specific barrier to accessing the necessary information to use DOC, physical or literacy challenges notwithstanding. However, as identified in this study, by attending to the format and content of outgoing GP surgery answering machine messages, GPs can take a practical step to remove one of the barriers facing people who may need to access a GP out-of-hours and who turn to their primary GP for direction on how to do so. A limitation of the study is the focus on older people; however, the learnings are applicable to all GP practice patients. Slowing the pace of the message, ensuring only essential information is provided and presenting this information in a simple and accessible manner could make all the difference to any panicked caller late at night. Furthermore, considering current advances in technology, using different recorded messages for different occasions, such as day-time closures, may reduce the complexity of messages and increase their accessibility for all callers. Further examination of out-of-hours primary care provision is required to evaluate the responsiveness of this essential service in adapting to the changing demographic of Irish communities and to ensure services are accessible to all.

Declaration of Conflicts of Interest:

The authors declare there is no conflict of interest.

Corresponding Author:
Suzanne Smith MSc
NetwellCASALA,
Dundalk Institute of Technology,
Dundalk,
Co Louth,
Ireland.
Email: suzanne.smith@dkit.ie
www.netwellcasala.org

References:

1. United Nations (UN). United Nations Principles for Older Persons, adopted by General Assembly resolution 46/91 on 16 December 1991. Geneva; UN Human Rights Office of the High Commissioner, 1991.
2. Department of Health (DoH). Positive ageing starts now: The national positive ageing strategy. Dublin: Department of Health, 2013.
3. Health Services Executive (HSE). National review of GP out of hours services. Dublin: HSE, 2010.
4. Smith S, Carragher L. Just lie there and die: barriers to access and use of GP out-of-hours for older people in rural Ireland. Rural Remote Health. 2019; 19(3):5088. doi: 10.22605/RRH5088.
5. Rural Community Network. Poverty and place: defining rural poverty an issues based approach. Tyrone: Rural Community Network, 2008.
6. Centre for Ageing Research and Development in Ireland (CARDI). Transport and rural ageing. Dublin: CARDI, 2010.
7. Centre for Ageing Research and Development in Ireland (CARDI). Focus on ageing and access to health services. Dublin: CARDI, 2011.
8. Nolan A, Smith S. The effect of differential eligibility for free GP services on GP utilisation in Ireland. Soc Sci Med [Internet]. 2012 [cited 2020 August 25]; 74(10):1644–1651. Available from: https://doi.org/10.1016/j.socscimed.2012.02.007

9. Fealy G, Treacy M, Drennan J, Naughton C, Butler M, Lyons I. A Profile of older emergency department attendees: findings from an Irish Study. J Adv Nurs [Internet]. 2011 [cited 2020 August 25]; 68(5):1003-1013. Available from: https://doi.org/10.1111/j.1365-2648.2011.05800.x
10. Keizer E, Smits M, Peters Y, Huibers L, Giesen P, Wensing M. Contacts with out-of-hours primary care for non-urgent problems: patients' beliefs or deficiencies in healthcare? BMC Fam Pract [Internet]. 2015 Oct [cited 2020 January 3]; 16:157. Available from: http://bmcfampract.biomedcentral.com/articles/10.1186/s12875-015-0376-9
11. World Health Organisation. Active ageing: towards age-friendly primary health care [Internet]. 2004 [cited 2020 January 31]. Available from: https://apps.who.int/iris/bitstream/handle/10665/43030/9241592184.pdf?sequence=1
12. Farage M, Miller K, Ajayi F, Hutchins D. Design Principles to Accommodate Older Adults. Glob J Health Sci [Internet]. 2012 Mar [cited 2020 February 5]; 4(2): 2–25. Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4777049/
13. Murphy D, Craik F, Li K, Schneider B. Comparing the effects of aging and background noise on short-term memory performance. Psychol Aging. 2000; 15(2):323-334. doi: 10.1037/0882-7974.15.2.323
14. Janse E. Processing of fast speech by elderly listeners. J Acoust Soc Am. 2009;125, 2361 doi.org/10.1121/1.3082117
15. Atcherson S, Nagaraj N, Kennett S, Levisee M. Overview of Central Auditory Processing Deficits in Older Adults. Semin Hearing. 2015; 36(03): 150-161. doi: 10.1055/s-0035-1555118
16. McCoy S, Tun P, Clarke Cox L, Colangelo M, Stewart A, Wingfield A. Hearing Loss and Perceptual Effort: Downstream Effects on Older Adults' Memory for Speech. Q J Exp Psychol A. 2005; 58(1): 22-33. doi: 10.1080/02724980443000151.
17. Smits M, Huibers L, Oude Bos A, Giesen P. Patient satisfaction with out-of-hours GP cooperatives: a longitudinal study. Scand J Prim Health Care. 2012; 30(4):206-13. doi: 10.3109/02813432.2012.735553

Irish Medical Journal
Established 1867

Issue: Ir Med J; Vol 113; No. 8; P152

Standardising the Use of "2222" for In-Hospital Cardiac Arrest Calls

A. Hania[1,2], O. Grant[1,2], B. Kinirons[1,2]

1. Anaesthesia Department, University Hospital Galway.
2. College of Anaesthesiologists of Ireland.

Abstract

Aims
This audit aimed to assess whether "2222" is the number used for cardiac arrest calls in Irish hospitals.

Methods
Between June and August 2019, 167 potential hospitals were contacted via telephone to assess whether they had cardiac arrest teams and to ask how such teams were activated.

Results
In total, 67 Irish hospitals with cardiac arrest teams were identified. All of these institutions completed the survey. Fifty-two hospitals (77.6%) use 2222 as a cardiac arrest number. The number 2222 is used in 82% of public hospitals (n=42), compared with 62% (n=10) of private hospitals. Overall, 14 different cardiac arrest numbers and various button systems are in use.

Discussion
As 15 Irish hospitals with cardiac arrest teams still do not use 2222 as a cardiac arrest call number, there remains a significant amount of work to be done to achieve compliance with European Resuscitation Council, Irish College of Anaesthesiologists and HSE recommendations.

Introduction

The European Resuscitation Council, European Board of Anaesthesiology & European Society of Anaesthesiology issued a joint statement in September 2016 recommending that all European hospitals use the same internal telephone number (2222) to summon help when a patient has a cardiac arrest.[1] This patient safety initiative is fully supported by the College of Anaesthesiologists of Ireland and the Health Service Executive (HSE).[2]

This audit aimed to assess compliance with the use of 2222 for cardiac arrest calls in Irish hospitals in 2019.

Methods

A list of Irish hospitals was compiled using sources including HSE websites, health insurance companies and an online telephone directory. Between June and August 2019, 167 potential hospitals were contacted via telephone to assess whether they had cardiac arrest teams. A cross-sectional survey was then conducted: all institutions with cardiac arrest teams were asked how such teams were activated.

Switchboard staff were the main personnel surveyed in the first instance. Nursing staff and/or resuscitation officers were then surveyed in case of uncertainty. If an answer other than "2222" was given, a follow-up question was asked to assess if 2222 was in use as an alternative.

Results

In total, 67 hospitals with cardiac arrest teams in Ireland were identified in 2019. All completed our survey.

Fifty-two hospitals (77.6%) use 2222 as a cardiac arrest number **(Figure1)**. This includes 9 hospitals (13.4%) which also use an alternative number.

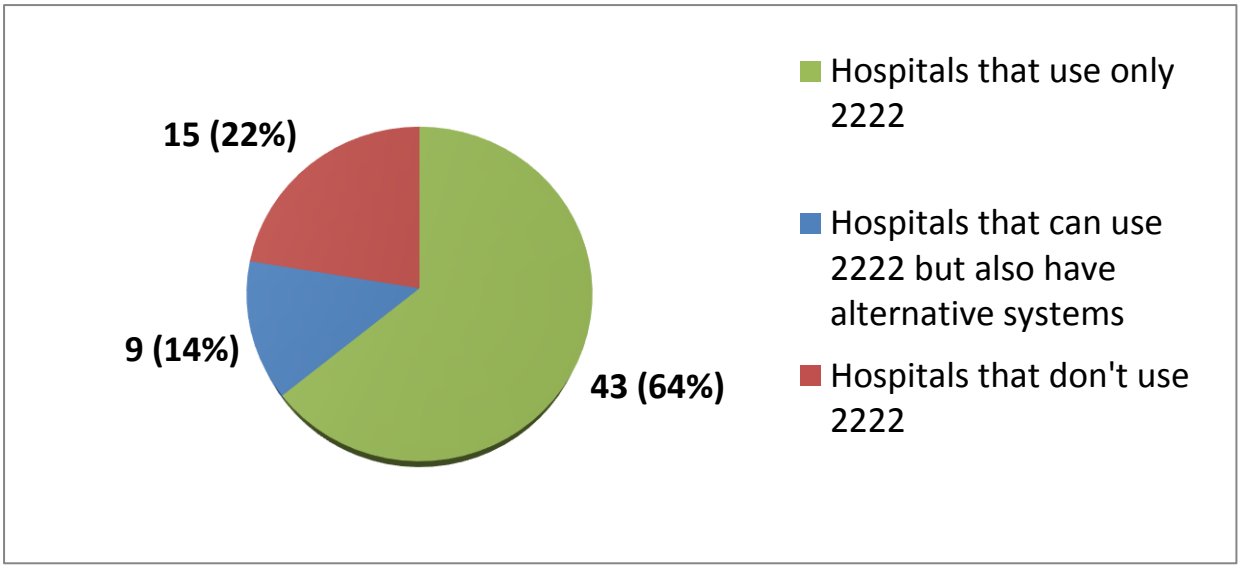


Figure 1: Overall summary of the use of 2222 in Ireland in 2019. Data label format is [number (percentage)].

Overall, 14 different cardiac arrest numbers and various button systems are in use in hospitals in Ireland **(Table 1).**

2222	5300	999
21	5221	5555
7777	555	7222
22	3333	777
410	22555	Specific button from every phone

Table 1: All cardiac arrest numbers in use in hospitals in Ireland.

A total of 51 public hospitals and 16 private hospitals had cardiac arrest teams. Of public hospitals, 82% (n=42) use 2222 as a cardiac arrest call number, compared with 62% (n=10) of private hospitals (**Figure 2**).

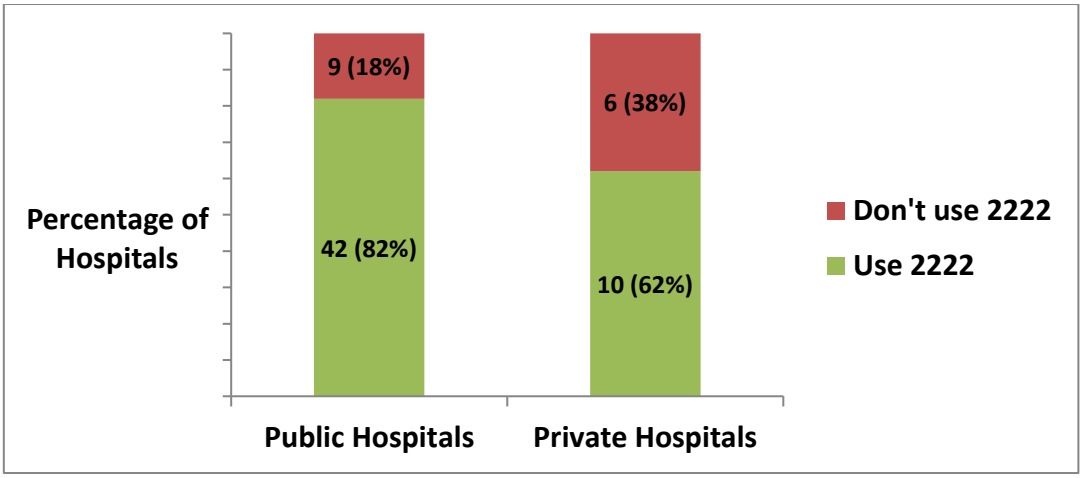


Figure 2: Percentage of Public and Private Hospitals in Ireland that use 2222. Data label format is [number (percentage)].

Discussion

Outside hospitals in Europe, there is a single standard emergency telephone number (112) that can be dialled to reach emergency services. In hospitals in Europe there is no single standard emergency telephone number for "cardiac arrest calls" to summon the resuscitation team[3]**.** Indeed, it has previously been published that at least 105 different numbers are in use across Europe.[3]

One study in Denmark showed that 49.5% of the staff could not remember the number to call in their own hospital.[4] Another study of patient safety incidents which involved cardiac arrests and resulted in death showed that miscommunication involving the telephone number occurred in more than 1 in10 incidents.[5] If healthcare professionals do not instinctively know the emergency number, it may delay the arrival of resuscitation teams. Delayed arrival of resuscitation teams beyond as little as three minutes has been shown to reduce survival after cardiac arrest**.**[6]

Standardisation reduces variation and assists in error proofing processes in healthcare.[7-8] Martin Bromiley, Chair of the Clinical Human Factors Group (CHFG) says "Standardisation has been shown to be an effective mechanism for reducing human error in complex processes or situations. The CHFG fully supports this Patient Safety initiative and encourages all European Hospitals to standardise their 'Cardiac Arrest Call' telephone number."[8-9]

Our national audit shows that there are 14 different cardiac arrest numbers in use in hospitals in Ireland. Standardising the number to 2222 will avoid confusion and delays during cardiac arrests, particularly given the mobility and rotating nature of the hospital workforce and the stressful and infrequent nature of these events. Furthermore, a standardised cardiac arrest number is an extremely low-cost measure to increase patient safety. According to the European Resuscitation Council, the estimated cost of converting to 2222 for those hospitals using different numbers is €7,500.[10] One Slovakian hospital provides an effective illustration of a smooth standardisation to 2222 at no cost.[11] The number 2222 was run in parallel with the existing cardiac arrest number for several months until the previous number was discontinued.

It is interesting to note the discrepancy between public and private hospitals in Ireland regarding the use of 2222. Ideally this number would be used by all hospitals, particularly given that many healthcare professionals work across both sectors.

Encouragingly, since 2016, three Irish hospitals have changed their cardiac arrest number to 2222 following recommendations by the HSE and College of Anaesthesiologists of Ireland. However, as 15 Irish hospitals with cardiac arrest teams still do not use 2222 as a common cardiac arrest call number, there remains a

significant amount of work to be done to achieve compliance with European Resuscitation Council, Irish College of Anaesthesiologists and HSE recommendations.

For any interested parties, a local implementation pack for establishing a standard hospital cardiac arrest call number can be found at: http://www.esahq.org/resources/ resources/cardiac-arrest-call/

Declaration of Conflicts of Interest:
The authors have no conflicts of interest to declare.

Corresponding Author:
Dr Amad Hania
Anaesthesia Department, University Hospital Galway.
College of Anaesthesiologists of Ireland.
Email: haniaa@tcd.ie

References:

1. Joint press release by the European Resuscitation Council, the European Board of Anaesthesiology and the European Society of Anaesthesiology 22nd September 2016. https://www.esahq.org/~/media/ESA/Files/Resources/Cardiac%20Arrest/Joint%20Press%20release%202222%2020-9-2016%20v6.ashx.
2. Clinical-strategy-and-programmes/national-clinical-programme-for-anaesthesia-newsletter-2017
3. David Whitaker A standard "Cardiac Arrest Call" – 2222, ESA Newsletter, Issue 65, 2016
4. Limited knowledge of the crash call number among hospital staff—A call for standardisation B. Løfgren et al Resuscitation 2010 , Vol. 81, Issue 2, S28
5. Errors in the management of cardiac arrests: an observational study of patient safety incidents in England. Resuscitation, Volume 85, Issue 12, December 2014 Panesar SS, Ignatowicz AM, Donaldson LJ.
6. In-hospital cardiac arrest: survival depends mainly on the effectiveness of the emergency response. Resuscitation Volume 62, Issue 3, Sept 2004 , Sandroni C; Ferro G; Santangelo S; Tortora F; Mistura L; Cavallaro F; Caricato A; Antonelli M
7. Croteau RJ, Schyve PM. Chapter 10, proactively error-proofing health care processes. In: Spath PL, editor. Error Reduction in Health Care: A Systems Approach to Improving Patient Safety. 2nd edition San Francisco: Jossey-Bass Publishers; 2010.
8. Implementing a standard internal telephone number 2222 for cardiac arrest calls in all hospitals in Europe. Resuscitation, Volume 115, Pages A14-A15, June 2017.
9. European Standardisation of the in-hospital 'Cardiac Arrest Call' Number 2222. Joint press release by the European Resuscitation Council, the European Board of Anaesthesiology and the European Society of Anaesthesiology 22nd September 2016. https://www.esahq.org/~/media/ESA/Files/Resources/Cardiac%20Arrest/Joint%20Press%20release%202222%2020-9-2016%20v6.ashx
10. https://www.erc.edu/projects/2222
11. Implementing the standardised cardiac arrest call telephone number for all European hospitals – 2222, S.Trenkler, J. Simonova, M. Grochova. Resuscitation. 112:e5. Published online: December 19, 2016

Irish Medical Journal
Established 1867
Issue: Ir Med J; Vol 113; No. 8; P153

The Effect of Maintaining Baseline Heart Rate and Blood Pressure on Cardiac Output Changes During Spinal Anaesthesia for Caesarean Section

R. ffrench-O'Carroll[1], T. Tan[1], S. Mac Colgáin[2]

1. Coombe Women and Infants University Hospital, Cork Street, Dublin 8, Ireland.
2. National Maternity Hospital, Holles Street, Dublin 2, Ireland.

Abstract

Introduction
Significant haemodynamic changes occur during caesarean section, which may affect uteroplacental perfusion. Anaesthetists should aim to keep blood pressure (BP) within 90% of baseline but maintenance of BP alone does not ensure cardiac output (CO) is maintained. We aimed to determine CO changes when heart rate (HR) in addition to BP is maintained at baseline.

Methods
CO was recorded using NICOM in 30 women undergoing elective caesarean section under spinal anaesthesia. Phenylephrine and ephedrine boluses were given to maintain BP and HR at baseline.

Results
CO was maintained with mean maximum increase of 0.8 $L.min^{-1}$ (95% CI 0.45 to 1.19 $L.min^{-1}$, P=0.002) immediately after spinal anaesthesia. Mean maximum decrease of systolic BP was 20.4 mmHg (95% CI 8.7 to 32, P<0.0001). There was no significant change in HR at any time point. CO correlated with HR (r=0.6, 95% CI 0.1 to 0.86, P=0.04) and stroke volume (r=0.7, 95% CI 0.3 to 0.9, P=0.006), while systolic BP correlated with total peripheral resistance (r=0.8, 95% CI 0.4 to 0.9, P=0.002) during the study period. Five patients required ephedrine boluses.

Conclusions
CO was preserved during elective caesarean section when HR was maintained at baseline. In a subset of patient's ephedrine boluses were required in addition to phenylephrine to maintain CO. BP fell in line with total peripheral resistance despite the increase in CO.

Introduction

Women undergoing caesarean section under spinal anaesthesia face significant haemodynamic challenges. Maintaining systolic blood pressure (SBP) at >90% of baseline is recommended to ensure uteroplacental perfusion and avoid maternal symptoms of hypotension. Currently guidelines recommend the use of phenylephrine, an alpha-1 agonist as the first line agent to manage hypotension secondary to spinal anaesthesia,[1] with use of ephedrine (a mixed alpha and beta agonist) recommended for the treatment of hypotension with low heart rate (HR).

Changes in cardiac output (CO) following spinal anaesthesia may be important for both the mother and fetus.[2] CO has been shown to correlate better with foetal umbilical artery pulsatility index and pH at delivery than blood pressure (BP)[2] and an inverse correlation exists between CO and the uterine resistance index during pregnancy.[3] Parturients in high risk groups such as those with significant cardiac disease may decompensate rapidly with changes in CO. The current practice of solely focusing on BP management may fail to appreciate a reduction in CO caused by bradycardia,[1] which can frequently occur secondary to phenylephrine infusion.[4]

HR changes during elective caesarean section have been shown to mirror CO changes[5] and can be used as a surrogate marker for CO[1]. Despite this observation few studies have focused on maintenance of CO by preservation of HR at baseline. The aim of this study was to observe the changes in CO when both HR and BP were maintained at baseline using a combination of phenylephrine and ephedrine boluses. We hypothesized that CO would be maintained in such instances.

Methods

This is a prospective observational cohort study. It is a hospital based, single centre study. The study was approved by the ethics committee of the Coombe Women and Infants University Hospital. This manuscript adheres to the applicable STROBE statement. Informed written consent was obtained from all participants.

Patients suitable for inclusion were women undergoing elective caesarean section, aged between 18 and 40 years with American Society of Anesthesiologists (ASA) physical status grade I or II, gestation ≥37 weeks, singleton pregnancy and non-smoker.

We used Non-Invasive Cardiac Output Monitor (NICOM, Cheetah Medical Inc, Portland, Oregon, USA), to measure CO. NICOM is non-invasive monitor using bioreactance technology involving transmission of a harmless high frequency current through the thorax. NICOM has been validated in human subjects in several clinical settings.[6,7]

The NICOM monitor was attached to all patients in addition to standard monitoring prior to spinal anaesthesia. We then placed patients in the supine position for three minutes with 10° left lateral tilt. Automated BP readings were taken three times at one minute intervals and baseline SBP was taken as the average of the SBP readings during this time.

All patients were coloaded with 1000 mL of crystalloid Hartmann's solution during spinal insertion. Patients received a single shot spinal anaesthetic using hyperbaric 0.5% bupivacaine 12.5 mg plus fentanyl 25 mcg and morphine 150 mcg injected in the lumbar region in the sitting position.

Following injection patients were placed supine with 10° left lateral tilt. Automated blood pressure readings were taken at 1 minute intervals using the NICOM monitor. CO, BP, HR, stroke volume (SV) and total peripheral resistance (TPR) were similarly assessed at 1 minute intervals throughout the procedure. Anaesthetists were instructed to administer phenylephrine 50 µg and ephedrine 6 mg boluses whenever HR or BP readings fell from baseline. A fall in the SBP of greater than 10 mmHg and a change in HR by greater than five beats/min from baseline, were used as cut off points to initiate intervention. Phenylephrine was administered when there was a sole drop in BP, with or without a rise in HR while ephedrine was administered when a drop in HR with an associated drop in BP occurred. Persistent bradycardia, as defined as HR less than 50 beats/min was treated with an atropine 500 mcg bolus.

Following delivery and cord clamping all patients received a bolus of 5 units of oxytocin, given slowly over one to two minutes. Umbilical arterial and venous cord blood, foetal weights and Apgar scores were recorded.

The primary outcome in this study was change in CO during caesarean section. Secondary outcomes included changes in SBP, SV, TPR and HR. A convenience sample of 30 was chosen for the purposes of the study. Statistical analyses were performed using Graph Pad Prism version 8. Comparisons between paired values were performed using paired t-tests or Wilcoxin signed-rank tests as appropriate. Repeated measures ANOVA was carried out for variables with normal distribution. Tukey adjustment was used for multiple comparisons. The Shapiro-Wilk test was used to test for normal distribution. Spearman's correlation analysis was performed to analyse the correlation between variables. Differences were considered significant if $P<0.05$. Results are presented at time intervals baseline (t0), 1 minute post spinal insertion (PS), 5 minutes post spinal insertion (PS+5min), 10 minutes post spinal insertion (PS+10min), delivery, time of oxytocin administration and then at 1 minute intervals following oxytocin administration until the time period 7 minutes post oxytocin administration. Results are analysed for post-spinal and post-delivery periods.

Results

Thirty patients were recruited for the study. The patient flow diagram is illustrated in figure 1. Thirty-five patients were assessed for eligibility at the preassessment clinic. Three patients were subsequently excluded as they didn't meet eligibility criteria while one patient refused to participate. The NICOM machine recorded inadequate data in one patient to allow full analysis, due to faulty electrode placement, so this patient was excluded. In cases where there were missing entry points (total of 24 missing entry points), the last data observation was carried forward.

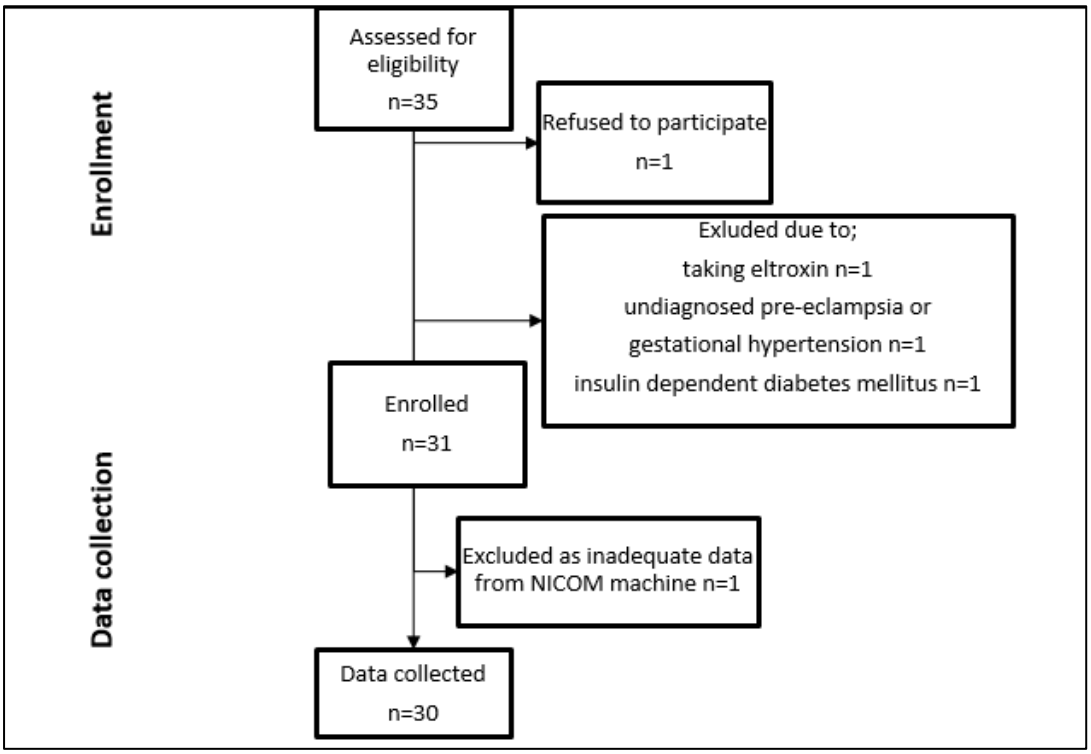


Figure 1. Flow diagram of the study

The indications for caesarean section included previous caesarean section in 66% of patients (n=20), previous 3rd degree tear in 13% of patients (n=4) and breech presentation in 20% of patients (n=6). Baseline patient characteristics are shown in table 1. Median (IQ range) ASA status was 1(0).

Table 1. Patient characteristics

Parameter	Mean (SD)
Age	34.57 (0.77) years
Weight	67.5 (2.08) kg
Height	160 (5.58) cm
BMI	26.17 (0.66) kg/m^2
Gestational age	38.9 (0.19) weeks
Parity	1.1 (0.11)
Preoperative Hg	12.04 (0.95) g/dl

BMI – body mass index. Hg - haemoglobin

Changes in CO, SV, TPR and BP following spinal anaesthesia

Changes in CO, HR, SV, SBP and TPR are illustrated in figure 2. Mean (SD) baseline CO was 5.6 (1.2) $L.min^{-1}$. CO increased following spinal anaesthesia. Mean maximum increase in CO was 0.8 $L.min^{-1}$ (95% CI 0.45 to 1.19 $L.min^{-1}$, P=0.002) (+14%) from baseline). This occurred immediately following administration of spinal anaesthesia and return of the patient to the supine position.

Baseline values for HR, SV, SBP and TPR were 90.6 (16.2) beats/min, 62.71 (14.3) ml, 123.03 (13.2) mmHg and 1417.6 (328.5) $dynes.sec.cm^{-5}$ respectively. TPR values decreased following spinal anaesthesia with the largest significant mean decrease of 313.4 dynes. sec. cm^{-5} (95% CI 196.7 to 430.0 dynes. sec. cm^{-5}, p<0.0001) (-22%) at the time interval 5 minutes post spinal anaesthesia. There was no significant difference in HR at any time point throughout the study. Max change in HR from baseline (t(0)) was at delivery (reduction by 7.3s CI -6.1 to 20.8, p = 0.84). Max change in HR at any one time point post-spinal was between PS+5min and PS+10min (reduction by 8.2s CI -5.2 to 21.6, p = 0.7). SV significantly increased following spinal anaesthesia with mean maximum increase at time period 1-minute post spinal anaesthesia of 7.9 ml (95% CI 2.81 to 12.94, P=0.0035) (+13%). There was a significant decrease in SBP following spinal anaesthesia with a mean maximum decrease at 5 minutes post spinal of 18.1 mmHg (95% CI 6.4 to 29.8 mmHg, P<0.0001) (-14%).

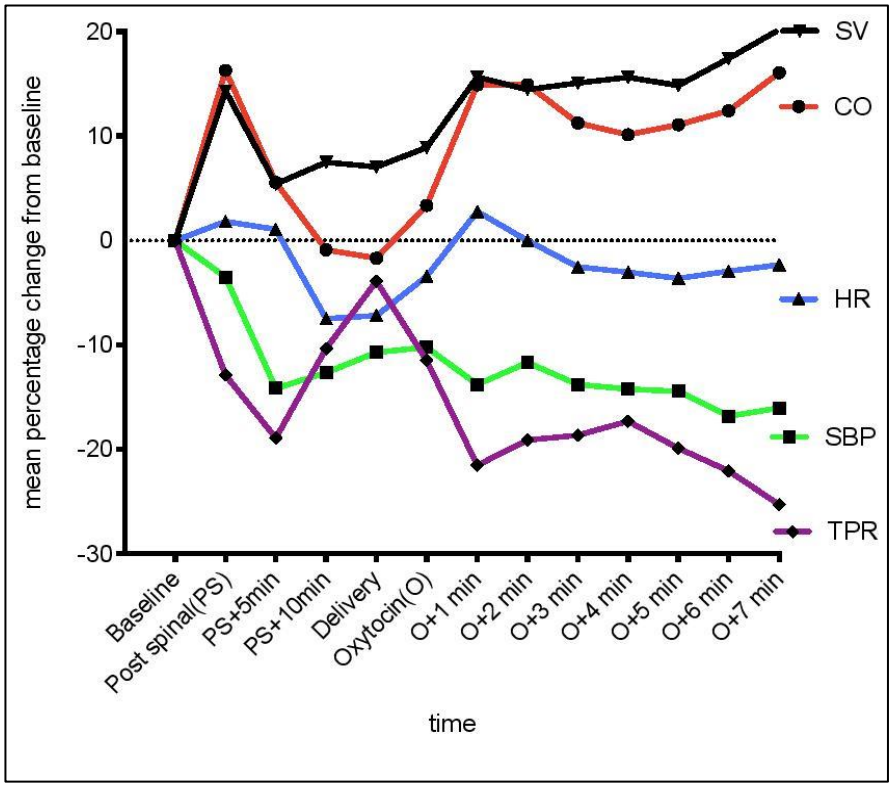


Figure 2. Haemodynamic changes during caesarean section. Post Spinal (PS) represent 1-minute post spinal administration.

Changes in CO, SV, TPR and BP following delivery

Mean (SD) baseline CO was 5.4 (1.2) $L.min^{-1}$ at delivery. Baseline values for HR, SV, SBP and TPR were 83.3 (17) beats/min, 65.8 (15.4) ml, 108.7 (13.6) mmHg and 1274.1 (649.6) $dynes.sec.cm^{-5}$ respectively.

There was no significant change in CO and SV after delivery. Following delivery there was a significant decrease in TPR with mean maximum decrease at time interval 7 minutes post oxytocin administration of 389 $dynes.sec.cm^{-5}$ (95% CI 87.1 to 690.9 $dynes.sec.cm^{-5}$, P=0.004) (-27%). There was no significant change in HR at any time point after delivery (max change between oxytocin administration (O) and 1-minute post oxytocin (O+1 min) administration (increase of 5.7s CI -19.5 to 7.7, p = 0.97)). There was a significant decrease in SBP after delivery with a mean maximal decrease of 20.4 mmHg (95% CI 8.7 to 32, P<0.0001) (-16%) at 7 minutes after delivery.

CO correlated with HR (r=0.6, 95% CI 0.1 to 0.86, P=0.04) and SV (r=0.7, 95% CI 0.3 to 0.9, P=0.006) during the study period. SBP correlated with TPR (r=0.8, 95% CI 0.4 to 0.9, P=0.002) and CO correlated negatively with TPR (r=0.7, 95% CI -0.9 to -0.2, P=0.01). There was no significant correlation between SBP and CO or the rest of the indices.

Mean (SD) phenylephrine doses administered were 151 (20.67) mcg while mean (SD) ephedrine dose administered was 2.2 (1.01) mg. Three patients (10%) received no phenylephrine or ephedrine boluses. Five patients (17%) received ephedrine boluses while 27 patients (90%) received phenylephrine boluses. In those patients that required ephedrine, mean (SD) doses were 15.6 (5.4) mg. No patient received atropine or glycopyrrolate. Mean (SD) blood loss during the procedure was 406.7 (163.9) mls.

Maternal symptoms experienced included nausea in 7 patients (23%), vomiting in 2 patients (7%), shivering in 1 patient (3%) and dizziness in 1 patient (3%). Mean (SD) foetal weight was 3.5 (0.09) kg. Mean (SD) arterial and venous cord pH values were 7.32 (0.05) and 7.34 (0.04) respectively. Mean (SD) Apgar scores at 1 and 5 minutes were 8.83 (0.91) and 9.93 (0.25).

Discussion

Significant haemodynamic changes occur in women undergoing caesarean section under spinal anaesthesia. These can be explained by physiological changes occurring after spinal anaesthesia and following delivery and oxytocin administration.[5,8,9] Our study showed that SBP correlated with TPR. The reduction in BP occurring immediately after spinal anaesthesia is due to sympathectomy causing vasodilatation which is reflected in the reduction of TPR resulting in a decrease in afterload. This, together with reduced preload from aortocaval compression and pooling of blood in the splanchnic bed and lower extremities results in the rapid decline of SBP after spinal anaesthesia.[10] CO was maintained following spinal anaesthesia due to the compensatory increase in HR and SV due to increased contractility and reduced afterload.[11] Our study demonstrated an increase in CO of 14% immediately after spinal anaesthesia. In an attempt to maintain SBP after spinal anaesthesia, boluses of phenylephrine, a pure alpha agonist, increased the TPR resulting in a reflex bradycardia. At delivery, there was a sustained increase in CO which can be attributed to the autotransfusion of blood from the placenta[9] and a reduction in TPR (CO correlated negatively with TPR). This is possibly due to the removal of the vascular placental bed and administration of oxytocin, which has a vasodilatory effect.[12]

Despite a fall in SBP (max change in SBP -16%), CO was maintained by preservation of HR at baseline. This was likely due in part to our approach of using a combination of phenylephrine and ephedrine boluses. It has been shown that CO is preserved when BP is maintained during caesarean section in both healthy parturients and those with pre-eclampsia[8,13,14] but little research has focused specifically on HR maintenance as was the case in our observational study. This is despite the fact that HR has previously been shown to highly correlate (r=0.87) with CO (observed also in our study).[5]

The use of vasopressors in the management of spinal hypotension during caesarean section has been extensively studied. Current international guidelines recommend that phenylephrine be the first line agent for managing hypotension following spinal anaesthesia[1] due to its effectiveness and favourable foetal cord pH values compared to ephedrine.[15,16] Phenylephrine however has a known risk of bradycardia with associated drop in CO[4,17] and the incidence of brady-arrythmias during caesarean section may be higher than expected, with severe bradycardia (HR < 50 beats/min) reported in 7% of cases.[18] Several approaches have been investigated to reduce the risk of bradycardias and associated drops in CO. These include use of glycopyrrolate,[19] altering phenylephrine infusion doses[20] and use of noradrenaline[21] or metaraminol[22] as first line agents. Similarly the effects of ephedrine and phenylephrine on CO during caesarean section have been studied[23] but the preservation of HR at baseline (rather than prevention of bradycardia) has not been the focus of these or other studies to our knowledge. The authors acknowledge that limited conclusions on vasopressor use can be drawn from our observational study, given its design. Nonetheless we are reassured that with our protocol of using a combination of ephedrine and phenylephrine boluses resulted in maintenance of CO with no incidences of severe bradycardia and no foetal cord pH value less than the acceptable threshold of 7.2. The authors agree with recommendations that ephedrine still has a role to play in managing hypotension associated with spinal anaesthesia during caesarean section.[1]

The main limitation of our study was that SBP was not maintained at baseline. This was due to our approach of reactive therapy where the vasopressors were only administered when a fall in BP was observed. Proactive vasopressor administration or administration by infusion as recommended by recent guidelines[1] (published after our study was conducted) would likely have resulted in tighter haemodynamic control but greater propensity for bradycardia and hypertension.[24] The effects of tighter BP and HR control on CO could be explored in future studies along with an examination in more at risk groups, such as those with pre-eclampsia and cardiac disease, where the impact of drops in CO may be more clinically significant.[25] Future studies could also make use of a fall of 10% from baselines HR and SBP readings as triggers for intervention versus our approach of using a change in HR and SBP of 5 beats/min and 10 mmHg respectively. This could take account for the wide variability in baseline haemodynamic values within a population. Furthermore, recording data at one-minute intervals following spinal anaesthesia (compared to the five-minute intervals in our study) may have resulted in more accurate plotting of haemodynamic changes immediately following spinal anaesthesia.

Declaration of Conflict of Interests:

The authors have no conflicts of interest to declare

Corresponding Author:

Dr Robert ffrench-O'Carroll
Anaesthetic Specialist Registrar
Coombe Women and Infants University Hospital,
Cork Street,
Dublin 8,
Ireland.
Email: robffrench@gmail.com

References:

1. Kinsella SM, Carvalho B, Dyer RA, et al. International consensus statement on the management of hypotension with vasopressors during caesarean section under spinal anaesthesia. *Anaesthesia.* 2018;73(1):71-92.
2. Robson SC, Boys RJ, Rodeck C, Morgan B. Maternal and fetal haemodynamic effects of spinal and extradural anaesthesia for elective caesarean section. *Br J Anaesth.* 1992;68(1):54-59.
3. Valensise H, Novelli GP, Vasapollo B, et al. Maternal cardiac systolic and diastolic function: relationship with uteroplacental resistances. A Doppler and echocardiographic longitudinal study. *Ultrasound Obstet Gynecol.* 2000;15(6):487-497.
4. Gambling DR, McLaughin KR. Ephedrine and phenylephrine use during cesarean delivery. *Anesthesiology.* 2010;112(5):1287-1288; author reply 1288-1294.
5. Dyer RA, Reed AR, van Dyk D, et al. Hemodynamic effects of ephedrine, phenylephrine, and the coadministration of phenylephrine with oxytocin during spinal anesthesia for elective cesarean delivery. *Anesthesiology.* 2009;111(4):753-765.
6. Squara P, Denjean D, Estagnasie P, Brusset A, Dib JC, Dubois C. Noninvasive cardiac output monitoring (NICOM): a clinical validation. *Intensive care medicine.* 2007;33(7):1191-1194.
7. Vinayagam D, Patey O, Thilaganathan B, Khalil A. Cardiac output assessment in pregnancy: comparison of two automated monitors with echocardiography. *Ultrasound in obstetrics & gynecology : the official journal of the International Society of Ultrasound in Obstetrics and Gynecology.* 2017;49(1):32-38.

8. Langesaeter E, Rosseland LA, Stubhaug A. Continuous invasive blood pressure and cardiac output monitoring during cesarean delivery: a randomized, double-blind comparison of low-dose versus high-dose spinal anesthesia with intravenous phenylephrine or placebo infusion. *Anesthesiology.* 2008;109(5):856-863.
9. Langesaeter E, Rosseland LA, Stubhaug A. Hemodynamic effects of oxytocin during cesarean delivery. *International journal of gynaecology and obstetrics: the official organ of the International Federation of Gynaecology and Obstetrics.* 2006;95(1):46-47.
10. Maayan-Metzger A, Schushan-Eisen I, Todris L, Etchin A, Kuint J. Maternal hypotension during elective cesarean section and short-term neonatal outcome. *American journal of obstetrics and gynecology.* 2010;202(1):56.e51-55.
11. Langesaeter E, Dyer RA. Maternal haemodynamic changes during spinal anaesthesia for caesarean section. *Current opinion in anaesthesiology.* 2011;24(3):242-248.
12. Rosseland LA, Hauge TH, Grindheim G, Stubhaug A, Langesaeter E. Changes in blood pressure and cardiac output during cesarean delivery: the effects of oxytocin and carbetocin compared with placebo. *Anesthesiology.* 2013;119(3):541-551.
13. Dyer RA, Piercy JL, Reed AR, Lombard CJ, Schoeman LK, James MF. Hemodynamic changes associated with spinal anesthesia for cesarean delivery in severe preeclampsia. *Anesthesiology.* 2008;108(5):802-811.
14. Auler JO, Torres ML, Cardoso MM, et al. Clinical evaluation of the flotrac/Vigileo system for continuous cardiac output monitoring in patients undergoing regional anesthesia for elective cesarean section: a pilot study. *Clinics (Sao Paulo).* 2010;65(8):793-798.
15. Smiley RM. Burden of proof. *Anesthesiology.* 2009;111(3):470-472.
16. Ngan Kee WD, Khaw KS, Tan PE, Ng FF, Karmakar MK. Placental transfer and fetal metabolic effects of phenylephrine and ephedrine during spinal anesthesia for cesarean delivery. *Anesthesiology.* 2009;111(3):506-512.
17. Campbell JP, Stocks GM. Management of hypotension with vasopressors at caesarean section under spinal anaesthesia – have we found the Holy Grail of obstetric anaesthesia? *Anaesthesia.* 2018;73(1):3-6.
18. Shen CL, Ho YY, Hung YC, Chen PL. Arrhythmias during spinal anesthesia for Cesarean section. *Canadian journal of anaesthesia = Journal canadien d'anesthesie.* 2000;47(5):393-397.
19. Ngan Kee WD, Lee SW, Khaw KS, Ng FF. Haemodynamic effects of glycopyrrolate pre-treatment before phenylephrine infusion during spinal anaesthesia for caesarean delivery. *International journal of obstetric anesthesia.* 2013;22(3):179-187.
20. Stewart A, Fernando R, McDonald S, Hignett R, Jones T, Columb M. The dose-dependent effects of phenylephrine for elective cesarean delivery under spinal anesthesia. *Anesthesia and analgesia.* 2010;111(5):1230-1237.
21. Ngan Kee WD, Lee SW, Ng FF, Tan PE, Khaw KS. Randomized double-blinded comparison of norepinephrine and phenylephrine for maintenance of blood pressure during spinal anesthesia for cesarean delivery. *Anesthesiology.* 2015;122(4):736-745.
22. McDonnell NJ, Paech MJ, Muchatuta NA, Hillyard S, Nathan EA. A randomised double-blind trial of phenylephrine and metaraminol infusions for prevention of hypotension during spinal and combined spinal-epidural anaesthesia for elective caesarean section. *Anaesthesia.* 2017;72(5):609-617.
23. Mon W, Stewart A, Fernando R, et al. Cardiac output changes with phenylephrine and ephedrine infusions during spinal anesthesia for cesarean section: A randomized, double-blind trial. *Journal of clinical anesthesia.* 2017;37:43-48.
24. Beilin Y. The treatment should not be worse than the disease. *Anesthesiology.* 2006;104(6):1348-1349; author reply 1349.
25. Butwick AJ, Columb MO, Carvalho B. Preventing spinal hypotension during Caesarean delivery: what is the latest? *British journal of anaesthesia.* 2015;114(2):183-186.

Irish Medical Journal
Established 1867

Issue: Ir Med J; Vol 113; No. 8; P154

Treating Rhinitis with Topical Nasal Sprays: Patient Knowledge, Use and Satisfaction

M. Corbett[1,2], S. Garry[1], E. Mc Gloughlin[1], K. Hinchion[2], I. Keogh[1,2]

1. Department of Otolaryngology, Head and Neck Surgery, University College Hospital Galway, Ireland.
2. School of Medicine, National University of Ireland Galway, Ireland.

Abstract

Aim

Nasal corticosteroid sprays are the recommended, first-line treatment in the management of allergic rhinitis. Patient compliance and spray technique appear to be significant issues. There is a paucity of information in medical literature, regarding patient knowledge, perception, and satisfaction of the use of nasal corticosteroid sprays

Methods

A prospective, questionnaire-based study was performed, Patient knowledge, perception, and technique of using nasal corticosteroid sprays was assessed.

Results

One hundred patients completed the questionnaire. Ages ranged from 16 to 68 years. 89%(n=89) had no knowledge of the required duration of treatment. 60%(n=60) were not shown how to administer the spray. 55%(n=55) did not know their spray contained steroids. 39%(n=39) gave up their treatment in under two weeks, primarily because they reported minimal or no improvement in nasal symptoms. 80%(n=80) of patients had poor spray technique. All patients complained of one or more side effects.

Conclusion

Patients administering corticosteroid intranasal sprays possess limited knowledge and awareness of the treatment for allergic rhinitis. They do not receive sufficient instruction regarding administering the spray or duration of use, and subsequently achieve suboptimal satisfaction with their management. A knowledge gap exists that could be bridged by better patient education.

Introduction

Allergic rhinitis (AR) affects up to 1 in 6 of people of all ages with peak prevalence in childhood and adolescence[1]. Given its prevalence, impact on quality of life, economic burden, and association with asthma it can be described as a major respiratory disease[2]. The 'Allergic Rhinitis and its Impact on Asthma' (ARIA) guideline document and its 2010 update provides clinicians with clear, evidence-based treatment options.

These include information on pharmacotherapy, immunotherapy, and patient education [3]. A substantial number of patients with AR have poorly controlled disease, even when using medication [4].

Patients presenting with AR commonly present to primary care physicians and can suffer from symptoms that affect quality of life, schoolwork or employment [5]. AR represents a significant cost burden and is among the most common reasons patients attend their general practitioners [6]. The Irish population has a high prevalence of AR and associated allergen mediated conditions including asthma and eczema [7]. Literature has highlighted the need for improvements in management strategies for AR patients [8].

There is a lack of research that specifically examines patient compliance to nasal sprays, however the available literature reflects that patient adherence to topical nasal sprays is poor. Forgetfulness during the prescribed medication duration and non-adherence are directly correlated with treatment failure [9]. Adherence to nasal sprays following sinus surgery has been reported as 57% regardless of the nasal spray regimen prescribed [10]. Despite recommended guidelines and prescribed regimes up to two thirds of patients reported using over-the counter (OTC), non-prescription medications [11]. A lack of patient education and awareness of the benefits of topical, intranasal steroids has been cited as a key barrier to compliance [10,11].

Intranasal glucocorticoid steroids are the first-choice pharmacologic treatment for AR, especially effective in moderate to severe, and persistent AR [3]. Nasal mucosa inflammation and hyperactivity are potently reduced, bringing significant, symptomatic improvement in nasal congestion, rhinorrhoea, hyposmia and post-nasal drip. Depending on dose and proper usage technique, efficacy can be observed after 12 hours with maximal effect after 72 hours [12]. Specific advice is provided by ARIA guidelines on the appropriate methods of administering topical, intranasal corticosteroids and also emphasizes the importance of correct usage technique in helping to alleviate symptoms [13].

Best practice mandates that both physicians and patients should be involved in the decision-making process of initiating and maintaining appropriate treatment for AR. According to recent European surveys, the awareness of and adherence to ARIA guidelines varies significantly between Otorhinolaryngology specialists and General Practitioners (GPs)[14,15]. Currently, there exists wide heterogeneity in patient expectation, preference and satisfaction with AR treatment internationally [16,17,18]. We conducted a prospective, questionnaire-based study, aiming to investigate patient knowledge, perception, and use of intranasal corticosteroid sprays.

Methods

Following local institutional ethical approval, this study was conducted in a tertiary university hospital, with a catchment population of approximately one million. Five consultant otorhinolaryngologists collaborated and designed an appropriate questionnaire. After informed consent, questionnaires were distributed to 100 patients attending the ENT clinic over a 3-month period. Each patient had been referred from primary care with symptoms of AR. The survey took approximately 10 minutes to complete and was returned following the patient's outpatient clinic appointment where spray technique was assessed.

The inclusion criteria were patients aged 16 years and over, who were currently using nasal sprays. Patients with immunosuppression, adrenocortical disorders, hepatic impairment, glaucoma or cataracts, as well as patients with a known nasal septal perforation or recurrent epistaxis were excluded from the study.

Following a full ENT history and examination including zero-degree rigid nasal sinoscopy, each patient was given a self-report questionnaire targeting five domains of using corticosteroid nasal sprays (Figure 1). These included patient demographics, treatment initiation and maintenance, patient knowledge, patient usage, and patient satisfaction. Each domain contained several questions to further explore

relevant details. Variables pertaining to treatment initiation and maintenance included length of treatment, type of nasal spray, initiator of treatment, and existence and timing of allergy testing. Variables regarding patient knowledge, included awareness of spray-type, awareness of difference to OTC non-steroidal sprays, and whether self-motivated research had been conducted. Nasal spray compliance and education of proper administration were also assessed. Questions regarding patient satisfaction, focused on level of symptomatic relief and potential reasons for discontinuing nasal spray.

Figure 1. Questionnaire on Usage of Nasal Spray - ENT Department University Hospital Galway.

Please take a few minutes to fill out this survey about your experience using nasal sprays.

Survey Number:

How often have you visited the ENT Department within the past year?
• First Visit • 2-5 Visits • More than 6

Reason for attending clinic today (briefly outline):
_____
Nasal Spray use:
When did you start using nasal spray?
_____

Why did you start using nasal spray?
_____

What is the name of the nasal spray are you currently using?
_____

Why did you choose this particular nasal spray?
• Doctor Prescription • Pharmacist Advice • Trial and Error• Price
• Easy to administer • Other

If other please explain:
_____

What is the longest period of time you used the spray for?
_____
Why did you stop using the spray?
_____
Do you know the difference between a steroid nasal spray and a decongestant nasal spray?
• Yes | • No

How often do you use your nasal spray?
_____

What level of relief do you gain from administering the nasal spray? (Mark the boxes most accurately describes your personal experience)
☐ Complete relief from symptoms after administration
☐ Substantial relief from symptoms after administration
☐ Some degree of relief but still severe persisting symptoms after administration
☐ Little to no relief from symptoms despite administration
☐ Increase in symptoms after administration

Were you ever shown how to administer your nasal spray?
• Yes | • No

If yes by whom: _____

Do you find the nasal spray easy to administer?
• Yes | • No

If no please explain

_____

Are you able to administer the spray yourself or do you need someone else to help administering the spray?

_____

Is there anything that you dislike about the sprays you have used in the past?

_____

Do you use any other method other than nasal sprays to help clear your nasal passages?
• Yes | • No
If yes what do you use?

_____

Do you use an antihistamine in addition to your nasal spray?
• Yes | • No
Do you suffer from any of the following conditions?
• Asthma • Eczema • Itchy Runny Eyes • Food Allergy

If yes does this condition usually worsen concurrently when your nasal symptoms worsen?
• Yes | • No

Have you ever had an allergy test? • Yes • No

If yes what type of allergy test? _____

Are you a smoker?
• Yes | • No How Many?_____ Age began_____

Have you undertaken any research into your condition or how to use nasal spray?

I consent for the data I provide to be stored for the purpose of research. I understand that all information I provide will be de-identified and has no impact on my clinical care. I understand that I may remove myself from this study at any time up until publication of results by keeping record of my survey number

Signed: _____ Date : _____

Results

One hundred patients were recruited to the survey. Results are summarised in Table 1. Patient ages ranged from 16 to 68 with a mean age of 42 years. The group comprised of 52 women and 48 men. Sixteen percent(n=16) of patients surveyed had been previously diagnosed with asthma. Five percent (n=5) of patients reported having an allergy assessment.

Five different corticosteroid nasal sprays were used by patients with Dymista® (azelastine/fluticasone) and Flixonase® (fluticasone) respectively, being the most and least commonly used nasal spray.

GPs were reported to be the principal, medical professional prescribing nasal steroid sprays (80% n=80) as well as other physicians (8% n=8) and pharmacists (12% n=12). Ten percent (n=10) of patients reported independently seeking remedies, mainly online without professional advice. Patients continued using their medication for 7.2 months on average, and up to 24 months in a small number of cases.

Fifty-five percent of patients (n=55) were unaware that the nasal sprays they were using, contained steroids. Very few patients (11% n=11) undertook any research into their condition and the nasal sprays they were using.

Sixty percent of patients (n=60) reported never receiving a demonstration of how to administer their nasal spray. Among those who received education on administration techniques, more than half received education on administration from pharmacist, and 12% (n=12) from their GP. Although almost all patients claimed to be able to administer the nasal spray by themselves, 40% (n=40) found it difficult to do so. Assessment in the outpatient clinic demonstrated that 80% (n=80) had poor or inadequate technique.

Fifty-eight percent of patients (n=58) reported to have gained little to no relief from symptoms despite using nasal sprays. When patients were further asked to list one or more reasons for stopping their sprays, “complications” (32% n=32), or “expensive” (23% n=23), were the most common reasons cited. Unpleasant taste of the spray was the most common complaint (67% n=67), followed by nasal irritation (12% n=12) and epistaxis (9% n=9). Drowsiness, headache, coughing and sore throat were other reasons mentioned.

Table 1. Survey Results.

Questions	Answers	Number of Respondents (n=100)
Nasal Spray	Dymista	42
	Avamys	35
	Nasonex	20
	flixonase	3
Source of Nasal spray	GP	80
	Pharmacist	12
	Other physician	8
Awareness of steroid content	Aware	45
	Unaware	55
Source of training on administration	Pharmacy	28
	Doctor	12
	No training	60
Ability to administer spray	Acceptable technique	20
	Poor technique	80
Symptomatic relief	Complete relief	9
	Substantial relief	13
	Some relief	20
	Little to no relief	58
	Worse	0
Reasons for stopping therapy	Complications	32
	Expense	23
Complaints about spray use	Unpleasant taste	67
	Nasal irritation	12
	Epistaxis	9

Discussion

Patient-centred care is crucial in improving health outcomes for patients with AR [19]. Our prospective, questionnaire-based study focused patient knowledge, patient practice, and patient satisfaction. Our results indicate that patients' knowledge about nasal sprays is insufficient. Half did not know that their sprays contained steroids. Our findings are consistent with other large-scale European surveys [20]. Patients may resort to testing various OTC nasal sprays before they finally have an opportunity to receive specialist opinions. Improvements in patient education has been proposed as a vital step toward improving treatment outcomes in AR [21].

Most (80%) of our study group did not receive any information or demonstration regarding the correct method of administering nasal sprays. This may partially explain the suboptimal practice reported, with patients frequently having difficulty using nasal sprays. It is the authors' view that both patients and healthcare providers should be actively involved in improving education on nasal spray use and proper technique.

Recent evidence shows that patients with AR have a low level of satisfaction with their therapy [22]. 58% of our patients reported minimal or no improvement of nasal symptoms despite use of nasal sprays. This dissatisfaction may be attributed to patients' prior bias of nasal sprays' perceived inefficacy, with subsequent, premature, discontinuation of treatment, however it may also be related to the subjective, adverse effects, which they experienced. It is well known that patients' concern of side effects from nasal sprays may hinder compliance with topical treatment [23]. Non-compliance is associated with higher healthcare costs, and reductions in health-related quality of life, and remains problematic on an individual, societal and economic level [24].

Our study demonstrates that patients receiving corticosteroid intranasal spray possess limited knowledge and awareness of spray ingredients treatment for allergic rhinitis, often receive insufficient instruction regarding administering the spray, and subsequently achieve suboptimal satisfaction with their management. It is the authors' belief that significant improvement in management could potentially be achieved by patient-motivated and clinician-assisted education and could have wide-reaching benefits[25]. Primary care physicians, otolaryngologists and allied health professionals may improve the disease and economic burden of AR by ensuring that patients have the best information available to them.

Declaration of Conflicts of Interest:
The authors report no conflicts of interest in this work.

Corresponding Author:
Mel Corbett
Dept of Otolaryngology, Head and Neck Surgery
University Hospital Galway.
Email: melcorbett@rcsi.ie

References:

1. Seidman M, Gurgel R, Lin S, Schwartz S. American Academy of Otolaryngology—Head and Neck Surgery Foundation Clinical Practice Guidelines: Allergic Rhinitis. Otolaryngology–Head and Neck Surgery. 2014;151(1_suppl):P24-P24.
2. Chivato T, Valorvita E, Dahl R, de Monchy J, Bloch A. Allergy, living and learning: diagnosis and treatment of allergic respiratory diseases in Europe. Journal of investigational allergology & clinical immunology. 2012;22:168-79.

3. Brożek J, Bousquet J, Baena-Cagnani C, Bonini S, Canonica G, Casale T et al. Allergic Rhinitis and its Impact on Asthma (ARIA) guidelines: 2010 Revision. Journal of Allergy and Clinical Immunology. 2010;126(3):466-476.
4. Hellings P, Muraro A, Fokkens W, Mullol J, Bachert C, Canonica G et al. A common language to assess allergic rhinitis control: results from a survey conducted during EAACI 2013 Congress. Clinical and Translational Allergy. 2015;5(1).
5. Angier E, Willington J, Scadding G, Holmes S, Walker S. Management of allergic and non-allergic rhinitis: a primary care summary of the BSACI guideline. Primary Care Respiratory Journal. 2010;19(3):217-222.
6. Malone D, Lawson K, Smith D, Arrighi H, Battista C. A cost of illness study of allergic rhinitis in the United States. Journal of Allergy and Clinical Immunology. 1997;99(1):22-27.
7. Duggan E, Sturley J, Fitzgerald A, Perry I, Hourihane J. The 2002-2007 trends of prevalence of asthma, allergic rhinitis and eczema in Irish schoolchildren. Pediatric Allergy and Immunology. 2012;23(5):464-471.
8. Lipworth B, Newton J, Ram B, Small I, Schwarze J. An algorithm recommendation for the pharmacological management of allergic rhinitis in the UK: a consensus statement from an expert panel. npj Primary Care Respiratory Medicine. 2017;27(1).
9. Loh C, Chao S, Chan Y, Wang D. A clinical survey on compliance in the treatment of rhinitis using nasal steroids. Allergy. 2004;59(11):1168-1172.
10. Nabi S, Rotnberg B, Vukin I, Payton K, Bureau Y. Nasal spray adherence after sinus surgery: problems and predictors. Journal of Otolaryngoly Head and Neck Surgery. 2012;41:49-55.
11. Fromer L, Ortiz G, Stoloff S. Insights on allergic rhinitis from the patient perspective. Journal of Family Practice. 2012;61:16-22.
12. Nielsen L, Mygind N, Dahl R. Intranasal Corticosteroids for Allergic Rhinitis. Drugs. 2001;61(11):1563-1579.
13. Scadding G, Durham S, Mirakian R, Jones N, Leech S, Farooque S et al. BSACI guidelines for the management of allergic and non-allergic rhinitis. Clinical & Experimental Allergy. 2007;38(1):19-42.
14. Baldacci S, Maio S, Simoni M, Cerrai S, Sarno G, Silvi P et al. The ARGA study with general practitioners: Impact of medical education on asthma/rhinitis management. Respiratory Medicine. 2012;106(6):777-785.
15. Van Hoecke H, Van Cauwenberge P, Thas O, Watelet J. The ARIA guidelines in specialist practice: a nationwide survey. Rhinology Journal. 2010;48:28-34.
16. Bunnag C, Suprihati D, Wang D. Patient Preference and Sensory Perception of Three Intranasal Corticosteroids for Allergic Rhinitis. Clinical Drug Investigation. 2003;23(1):39-44.
17. Canonica G, Triggiani M, Senna G. 360 degree perspective on allergic rhinitis management in Italy: a survey of GPs, pharmacists and patients. Clinical and Molecular Allergy. 2015;13(1).
18. Hellings P, Dobbels F, Denhaerynck K, Piessens M, Ceuppens J, De Geest S. Explorative study on patient's perceived knowledge level, expectations, preferences and fear of side effects for treatment for allergic rhinitis. Clinical and Translational Allergy. 2012;2(1).
19. Press V. Patient-centered care and its effect on outcomes in the treatment of asthma. Patient Related Outcome Measures. 2011;:81.
20. Maurer M, Zuberbier T. Undertreatment of rhinitis symptoms in Europe: findings from a cross-sectional questionnaire survey. Allergy. 2007;62(9):1057-1063.
21. Lum J, Ambizas E. Allergic Rhinitis: Assisting Patients in Achieving Optimal Outcomes. US Pharmacist. 2018;43(5):6-11.
22. Scadding G, Richards D, Price M. Patient and physician perspectives on the impact and management of perennial and seasonal allergic rhinitis. Clinical Otolaryngology and Allied Sciences. 2000;25(6):551-557.
23. Ganesh V, Banigo A, McMurran A, Shakeel M, Ram B. Does intranasal steroid spray technique affect side effects and compliance? Results of a patient survey. The Journal of Laryngology & Otology. 2017;131(11):991-996.19.

24. Mäkelä M, Backer V, Hedegaard M, Larsson K. Adherence to inhaled therapies, health outcomes and costs in patients with asthma and COPD. Respiratory Medicine. 2013;107(10):1481-1490.
25. Tan R, Cvetkovski B, Kritikos V, Yan K, Price D, Smith P et al. Management of allergic rhinitis in the community pharmacy: identifying the reasons behind medication self-selection. Pharmacy Practice. 2018;16(3):1332.

Irish Medical Journal
Established 1867

Issue: Ir Med J; Vol 113; No. 8; P155

An IBS Pathway to Improve Patient Experience and Reduce Endoscopy Demand

M. McNally[1], G. O'Loughlin[2], E. Copeland[2], I. Cretu[3]

1. Department of Gastroenterology, Naas General Hospital, UCD School of Medicine and Medical Science, Royal College of Physicians in Ireland.
2. Department of Dietetics, Naas General Hospital.
3. Department of Gastroenterology, Naas General Hospital.

Abstract

Aims
This study aims to evaluate the efficacy of an IBS management pathway, and to assess its impact on endoscopy services in a regional Irish hospital.

Methods
Patients recruited from Endoscopy Referrals over six months were medically assessed. Patients who fulfilled diagnostic criteria for IBS received dietician-led management. Treatment response was assessed using standardised questionnaires. Cancelled colonoscopies were recorded.

Results
Twenty-six patients met the criteria for IBS. Twenty-one patients (81%) received first-line dietary advice, and five patients (19%) proceeded directly to low FODMAP diet. Fourteen patients (14/21, 67%) demonstrated a positive response to first line advice and were discharged. Dietary intervention (either first-line advice and/or low FODMAP diet) resulted in a positive response in 73% (19/26) of patients. The pathway resulted in thirty cancelled colonoscopies.

Conclusion
The results suggest that an IBS Pathway can significantly reduce dependence on endoscopy resources whilst providing high-quality, patient-centred care.

Introduction

Irritable Bowel Syndrome (IBS) is a common functional condition characterised by chronic abdominal pain and altered bowel habit [1,2]. Current estimates suggest the prevalence in the general population is between 10% and 20% [3–5]. While GPs manage many IBS cases, approximately 30% are referred on to specialists [6]. The Rome diagnostic criteria for IBS are clear [7].

In patients who meet diagnostic criteria in the absence of alarm symptoms [8,9], minimal diagnostic investigations are required to rule out structural pathology and to safely establish the diagnosis of IBS [10,11]. Endoscopic investigation is rarely warranted.

A multidisciplinary approach is recommended in the treatment of IBS [8]. Guidelines advocate use of psychological and dietary interventions [8,12], with symptom-specific pharmacotherapy as an adjunct [8]. Evidence supports the efficacy of simple dietary advice [8], and emerging evidence favours a tailored low FODMAP diet in select patients [13–15]. FODMAPs (Fermentable Oligo-, Di-, and Monosaccharides and Polyols) are highly fermentable, short chain carbohydrates with poor small intestinal absorption. They lead to an increased osmotic load in the gut and increased gas production causing luminal distension[16]. This is thought to contribute to IBS symptoms. The British Dietetics Association recommends a low FODMAP diet for patients with persistent symptoms after first line dietary advice, with planned re-introduction of high FODMAP foods after approximately 6 weeks [17].

Currently, in the Irish system, access to dietetics is limited, and psychotherapy is not routinely available to Irish patients. Failure to address IBS symptoms with these recognised approaches means patients have longstanding symptoms and unmet clinical needs. It is likely that this contributes to over-investigation of patients and referral for unnecessary endoscopy. This study reviews the design and implementation of a pilot IBS Pathway in a regional Irish hospital. It reports on patient experience using patient reported outcome measures (PROMs) and details the reduction in number of patients awaiting outpatient colonoscopy as a direct result of the pathway.

Methods

Patients for the IBS Pathway were selected from Direct Access GP Referrals to a Regional Endoscopy Unit between May and November 2019. Consecutive referrals were reviewed by a Specialist Registrar (SpR) or Consultant Gastroenterologist, and all patients who met inclusion criteria were invited to partake in the study. Inclusion criteria included: Age <40 years, longstanding history of gastrointestinal symptoms, and individuals with a suspected diagnosis of IBS. Patients excluded from the study included individuals <18 years or >40 years, pregnant women, and patients with new onset gastrointestinal symptoms, significant PR bleeding, weight loss, nocturnal symptoms or pre-existing family history concerning for alternative diagnosis. Patients living in institutions or sheltered accommodation were also excluded from the study due to concerns regarding their ability to modify or restrict their diet if dietary intervention was deemed appropriate.

A letter was sent to patients informing them they had been selected for clinical review prior to proceeding with colonoscopy. Included in the correspondence was a laboratory form, stool sample container with advice on correct use, and an instruction sheet advising patients to book a phlebotomy appointment and provide a stool specimen within the next four weeks. Patients were advised that if they failed to reply or provide blood and stool samples within the allocated time period, they would not be offered a clinical appointment and their name would be removed from the endoscopy waiting list.

Each patient had a full blood count, urea and electrolytes, liver function tests, bone profile, thyroid function tests, Vitamin B12, Ferritin, Folate, CRP and Tissue Transglutaminase Antibodies performed. This is a wider array of blood tests than is routinely recommended for evaluation of IBS symptoms [3]. It was intended to allow for a full medical assessment and discharge within a single consultation. Faecal calprotectin levels were measured for each patient. Patients with iron deficiency anaemia, calprotectin levels >50mcg/g, or results suggesting an alternative diagnosis were automatically excluded from the IBS Pathway and directed to Gastroenterology OPD for early review.

Eligible patients were scheduled to attend for medical and dietetic reviews on the same day. Each patient was reviewed by a Gastroenterology SpR who conducted a standard medical history, clinical examination, review of test results and explanation of diagnosis.

If a diagnosis of IBS was established, the patient was offered symptom-directed pharmacotherapy as necessary and referred to the dietician-led IBS Pathway. No additional routine medical reviews were scheduled but patients were reassured that the dietician could re-refer for medical review if clinically indicated.

Patients who did not fit diagnostic criteria for IBS following medical review were to be directed to Gastroenterology Outpatient Clinic or Endoscopy as appropriate. A standard letter was sent to each patient's GP at the medical review with an update on planned management.

Each patient completed the IBS Quality of Life Questionnaire [18], the IBS Symptom Severity Score [19], and IBS-Adequate Relief Question [20]. These Patient-Reported Outcome Measures (PROMs) were used to monitor patient progress on the Pathway. At the initial one-hour dietician appointment, diet, lifestyle and symptoms were assessed. Basic dietary advice was provided. Four weeks later, patients were contacted by telephone, and a review of symptoms was conducted using the PROMs. Individuals who had a suboptimal response to first-line advice were directed to receive tailored low FODMAP dietary advice.

Patients for low FODMAP advice received a one-hour dietician appointment to explain the concept of FODMAP Restriction. Six weeks later patients received a follow-up clinical appointment for advice regarding FODMAP reintroduction and re-assessment of symptoms. Finally, ten weeks after re-introduction of specific high FODMAPs, patients were contacted by telephone to assess response. At this point the dietician assessed if the patient was suitable for discharge, warranted a final dietician review appointment to ensure diet was nutritionally adequate, or required further medical assessment.

PROMs were recorded before and after completion of the IBS Pathway, and numbers of endoscopic or medical interventions warranted during the IBS Pathway were recorded.

Results

First assessment clinics took place between July and December 2019. Thirty-one patients were invited to attend. Five patients did not engage and were consequently removed from endoscopy waiting lists. Twenty-six patients were reviewed for suitability for the IBS pathway. The patients ranged in age from twenty-one to forty years and the median age was thirty. There were six males (23%) and twenty females (77%). Of note, eight patients (8/26, 31%) had a pre-existing diagnosis of depression or anxiety. They were receiving either pharmacological treatment or GP-led support for their mental illness. All twenty-six patients who attended for initial medical review were eligible for the IBS Pathway. Eight patients (8/26, 31%) had diarrhoea-predominant IBS, eleven patients (11/26, 42%) had mixed-type IBS, and seven patients (7/26, 27%) had constipation-predominant IBS.

Once referred to the IBS Pathway, twenty-one patients (21/26, 81%) received first-line dietary advice, and five patients (5/26, 19%) proceeded directly to low FODMAP diet. A reduction of fifty points on the IBS Symptom Score was used to indicate treatment response. Fourteen (14/21, 67%) patients who received first-line advice were successfully treated and discharged from the pathway. Two patients (2/21, 10%) did not follow up after first-line advice. It is possible these patients had a positive response to treatment as they agreed to inform dieticians regarding treatment failure. Five patients (5/21, 24%) were referred for low FODMAP advice after first-line treatment.

FODMAP Cohort

In total, ten patients (10/26, 38%) on the IBS Pathway were referred for low FODMAP advice. One patient was lost to follow-up at this point. One patient declined to make changes to her diet during the Coronavirus pandemic due to concerns that it might increase susceptibility to the virus. One patient was hospitalised with an unrelated illness and follow-up was deferred. Both of these patients have been offered review when clinically appropriate. Only two patients had an inadequate response to treatment and were referred to Gastroenterology OPD. The remaining five patients indicated a positive response to treatment.

Table 1: Summary of Outcomes

73% (19/26) had a positive response to dietary intervention
11 % (3/26) were lost to follow-up
8% (2/26) had inadequate response to all dietary intervention
8% (2/26) had unknown response to dietary intervention and are awaiting follow-up

Additional Investigations Required

One patient who entered the IBS pathway was referred for colonoscopy due to the emergence of nocturnal bowel motions. The investigation was normal, and symptoms subsequently settled. In a small number of cases (n=4), the Gastroenterology SpR requested additional, history-specific, non-invasive investigations at the initial assessment. This did not interfere with progression onto the IBS Pathway. For example, three patients who reported significant upper GI symptoms were tested non-invasively for H. Pylori, and an elevated ferritin was further evaluated. Additional test results were followed appropriately and did not interfere with patient flow on the pathway.

Over the course of the study, an average reduction of 160 on the IBS Symptom Score was observed in the Diarrhoea-Predominant Group, with an average reduction of 122 and 128 in the Mixed-Type and Constipation-Predominant Groups respectively. In total, the pathway resulted in direct removal of thirty patients from Colonoscopy waiting lists over a 6-month period.

Discussion

Although this is a small study, the results are encouraging. Patients were recruited in real-time from Direct Access GP Endoscopy Referrals. Additional eligible patients could be readily accessed by applying inclusion criteria to patients on existing endoscopy waiting lists.

The positive outcomes in this study echo the literature on integrated care for IBS patients [21]. The authors believe the improvements in PROMs in this study reflect improvements in diet and lifestyle but may also relate to the positive psychological impact of receiving a clear diagnosis with appropriate management in a timely manner. It is recognised that a strong patient-provider relationship contributes to positive outcomes for IBS patients [21], and the experience of having healthcare professionals listen with compassion to their experiences likely contributed to improved physical and psychological wellbeing in this patient cohort. The high burden of psychological distress in this study is reflective of the known association between IBS and psychological conditions [6,22,23], and emphasises the need to offer comprehensive management strategies in supporting IBS patients.

Given the current dramatic increase in mental illness in Ireland [24], and our understanding of IBS as a functional disorder with exacerbation of symptoms at times of stress and poor mental health, it is likely that IBS will increase demand on Gastroenterology Services into the future.

From a service planning perspective, this study indicates that strategies can be introduced in Irish hospitals using pre-existing resources to reduce waiting times for endoscopy services and outpatient clinics, while achieving an overall outcome of higher quality, patient-centred care.

No extra funding was required to establish this Pilot IBS Pathway. An SpR who was already in post ran the medical clinic on a fortnightly basis. Two dieticians were re-directed from ward-based duties to facilitate dietetics review. Expansion of the Pathway to cater for larger numbers of patients would require additional dietetic support, but it is estimated that the associated cost would be significantly offset by savings achieved through reduction in attendance for medical clinics and endoscopic procedures. In the aftermath of the COVID-19 pandemic, innovative approaches will be required to encourage cost-saving in the HSE, and to reduce in-hospital patient visits and procedures, so that social distancing can be maintained and unnecessary risk to patients avoided. This Pathway lends itself to remote consultations and could be adjusted to meet the needs of the HSE in the post-pandemic era.

Declaration of Conflicts of Interest:
The authors have no conflicts of interest to declare.

Corresponding Author:
Dr Mairead McNally
Department of Gastroenterology,
Naas General Hospital.
Email: maireadnf@gmail.com/maireadmcnally@rcsi.com

References:

1. Longstreth GF, Thompson WG, Chey WD, Houghton LA, Mearin F, Spiller R. Functional bowel disorders. Gastroenterology. 2006;130(5):1480.
2. Mearin F, Lacy BE, Chang L, Chey WD, Lembo AJ, Simren M, et al. Bowel Disorders. Gastroenterology. 2016 Feb;
3. National Institute for Health and Care Excellence. Irritable bowel syndrome in adults: diagnosis and management. NHS Clinical Guidlines; 2008.
4. Talley NJ, Zinsmeister AR, Van Dyke C, Melton LG. Epidemiology of colonic symptoms and the irritable bowel syndrome. Gastroenterology. 1991;101(4):927.
5. Drossman DA, Li Z, Andruzzi E, Temple RD, Talley NJ, Thompson WG, et al. U.S. householder survey of functional gastrointestinal disorders. Prevalence, sociodemography, and health impact. Dig Sci. 1993;38(9):1569.
6. Thompson WG, Heaton KW, Smyth GT, Smyth C. Irritable bowel syndrome in general practice: prevalence, characteristics, and referral. Gut. 2000; 46:78–82.
7. Schmulsen MJ, Drossman DA. What Is New in Rome IV. J Neurogastroenterol Motil. 2017;23(2):151–63.
8. Spiller R, Aziz Q, Creed F, Emmanuel A, Houghton L, Hungin P, et al. Guidelines on the irritable bowel syndrome: mechanisms and practical management. Gut. 2007; 56:177–1798.
9. Brandt LJ, Chey WD, Foxx-Orenstein AE, Schiller LR, Schoenfeld PS, Spiegel BM, et al. An evidence-based position statement on the management of irritable bowel syndrome. Am J Gastroenterol. 2009;104(Supp 1): S1-35.
10. Schmulsen MW, Chang L. Diagnostic approach to the patient with irritable bowel syndrome. Am J Med. 1999;107(5A).

11. Smalley W, Falck-Yttr C, Carrasco-Labra A, Wani S, Lystvyn L, Falck-Yttr Y. AGA Clinical Practice Guidelines on the Laboratory Evaluation of Functional Diarrhea and Diarrhea-Predominant Irritable Bowel Syndrome in Adults. Gastroenterology. 2019;157(3):851.
12. Ford AC, Moayyedi P, Chey W, Harris LA, Lacy BE, Saito YA, et al. American College of Gastroenterology Monograph on Management of Irritable Bowel Syndrome. Am J Gastroenterol. 2018; 113:1–18.
13. Ahmad OF, Akbar A. Dietary treatment of irritable bowel syndrome. Br Med Bull. 2015; 113:83–90.
14. Does a low FODMAP diet help IBS? Drugs Ther Bull. 2015; 53:93–6.
15. Staudacher HM, Lomer MC, Farquharson FM, Louis P, Fava F, Franciosi E, et al. A Diet Low in FODMAPs Reduces Symptoms in Patients With Irritable Bowel Syndrome and A Probiotic Restores Bifidobacterium Species: A Randomized Controlled Trial. Gastroenterology. 2017;153(4):936–47.
16. de Roest R, Dobbs B, Chapman B, Batman B, O'Brien L, Leeper J, et al. The low FODMAP diet improves gastrointestinal symptoms in patients with irritable bowel syndrome: a prospective study. Int J Clin Pract. 2013;67(9):895–90.
17. McKenzie YA, Bowyer KR, Leach H, Gulia P, Horobin J, O'Sullivan NA, et al. British Dietetic Association systematic review and evidence-based practice guidelines for the dietary management of irritable bowel syndrome in adults (2016 update). J Hum Nutr Diet. 2016;
18. Patrick DL, Drossman DA, Frederick IO, DiCesare J. Quality of life in persons with irritable bowel syndrome: development and validation of a new measure. Dig Sci. 1998;43(2):400–11.
19. Francis CY, Morris J, Whorwell PJ. The irritable bowel severity scoring system: a simple method of monitoring irritable bowel syndrome and its progress. Aliment Pharmacol Ther. 1997; 11:395–402.
20. Passos M, Lembo AJ, Conboy LA, Kaptchuk TJ, Kelly JM, Quilty MT, et al. Adequate Relief in a Treatment Trial with IBS Patients: A Prospective Assessment. Am J Gastroenterol. 2009;104(4):912–9.
21. Khan S, Chang L. Diagnosis and management of IBS. Nat Rev Gastroenterol Hepatol. 2010; 7:565–81.
22. Young SJ, Alpers DH, Norland CC, Woodruff RA. Psychiatric illness and the irritable bowel syndrome. Practical implications for the primary physician. Gastroenterology. 1976; 70:162–6.
23. Walker EA, Roy-Byrne PP, Katon WJ. Irritable bowel syndrome and psychiatric illness. Am J Psychiatry. 1990; 147:567–72.
24. Department of Health. Healthy Ireland Survey. Government Publications; 2016.

Irish Medical Journal
Established 1867
Issue: Ir Med J; Vol 113; No. 8; P156

The National Healthcare Communication Programme: An Audit of Initial Performance

P. Gillen[1], E. Doherty[2], P. Kinnersley[3], W. Ryan[4]

1. Dept. of Surgical Affairs Royal College of Surgeons in Ireland and co-lead of National Communication Programme.
2. Dept of Surgical Affairs Royal College of Surgeons in Ireland.
3. School of Medicine, Cardiff University.
4. Leadership education and talent development, and co-lead National Healthcare Communication programme, Health Service Executive.

Abstract

Objective
To report on the initial roll-out of the National Healthcare Communication Programme, a comprehensive intervention to improve the communication skills of Health Care Providers in Ireland.

Method
An audit of a national programme to improve communication by Healthcare Providers was undertaken beginning with a pilot study followed by progression to a national roll-out. The programme involved a Train the Trainer approach using experienced facilitators to deliver the pilot programme and subsequently support the national roll-out. Evaluation forms were used to collect participant feedback at module completion and a survey was conducted subsequently to assess self-efficacy of participants after return to the work place. The programme was supported by the Health Service Executive and worked in close collaboration with The International Association of Communication in Healthcare (EACH).

Results
Six pilot sites delivered the modules to a total of 683 participants from different disciplines. The evaluation forms from the pilot sites demonstrated that 586 (95.5%) participants felt they had learned new communication skills and 607 (99%) would recommend the training to colleagues. Five hundred and ninety-two participants attended a further 37 modules of training with 526 (99.5%) declaring they had learned new skills and 524 (99%) would recommend the training to colleagues. One hundred and one participants completed a survey carried out at least three months post return to work place and 80(83%) recorded that their communication skills had improved and 89 (90.7%) would recommend the training to colleagues.

Conclusion
The audit demonstrates a highly successful implementation of a national communication training programme for all healthcare providers. The programme requires on-going support from the Health Service Executive to train more facilitators and encourage greater up-take of training in order to ensure long-term benefit to patients and staff.

Introduction

It is universally recognised that the conversation between patient and healthcare professional, known as 'the consultation' is at the heart of the delivery of healthcare and that the quality of these consultations depends on the communication skills of the clinician.[1] Despite this there are few training opportunities for clinicians to improve their communication skills having completed basic training. This paper reports on the first national programme in Ireland aimed at improving communication skills of healthcare providers (NHCPs).

The National Patient Experience Survey (NPES), first conducted in 2017[2], highlighted poor communication between patients and healthcare providers (HCPs) as one of its main findings. Patients were asked a series of 60 odd questions in the survey but the area which provided the greatest information was the 'free text box' where patients were free to enter comments. These yielded over 20 thousand comments which were largely positive but over 20% indicated significant dissatisfaction with the service experienced and specifically with communication a central issue in this group. Key themes which emerged were problems in the areas of attending to the relationship, gathering information, giving information, reaching agreement, enabling self-management and working with families and carers. The greatest area for improvement identified was the quality of information that individuals and their families had received and understood about caring for themselves following discharge.

When analysed by category, these communication deficits highlighted by patients bore a striking similarity to skills taught in the Calgary Cambridge Guide[1] a published framework designed to address these issues. This internationally accepted method of clinical communication is also one which can be used to guide communication skills teaching. The guide divides each step of the patient interaction into stages which focus on the key elements of the core interaction e.g. initiating the session, gathering information, providing information and closing the session – all the while paying attention to structuring the consultation for the patient and building a rapport throughout. It is now one of the leading frameworks across Europe, Canada and North America in both under and postgraduate communication skills training.

The Health Service Executive's response to the communication deficits highlighted in the NPES was to establish the National Healthcare Communication Programme (NHCP) and to adopt the Calgary Cambridge Guide as the evidence-based method of communication skill training across the Irish healthcare service. The programme adopted a Train the Trainer (TTT) approach using a cascade model to achieve penetrance in the system. The programme was delivered as four modules of care entitled – Making Connections, Core Consultation skills, Challenging Consultations and Communicating with Colleagues and Promoting Teamwork. These core modules focus on the application of a skills-based approach to the facilitation and learning of how to communicate with patients and their families.

Experienced facilitators were used and collaborative links were established with the International Association for Healthcare Communication (EACH) who also provided facilitators and oversight of the project.

Methods

The training involved workshops delivering a skills-based approach with a combination of didactic teaching, role play, small group discussion and video demonstration of skills. The workshops were not intended to address poor performance.

The initial phase of the NHCP involved seeking volunteer hospitals across the hospital group system in Ireland. Six pilot sites declared interest - Beaumont Hospital (Model 4), St. Luke's general Hospital, Carlow/

Kilkenny (Model 3), University Hospital Waterford (Model 4), University Hospital Galway (Model 4), University Hospital Limerick (model 4) and The Mercy University Hospital Cork (Model 3). Model four hospitals equate to large teaching hospitals and typically employ between two to three thousand staff while model three equate to regional/general hospitals typically with staffing levels of between one to two thousand employees. Volunteer facilitators from these sites were trained by the core faculty of the NHCP and Modules One and Two were rolled out in all six pilot sites between 2018-2019. Based on evaluations from the pilot sites the programme was then extended to Modules Three and Four. These were subsequently delivered in all six pilot sites and later made available to all hospitals in the country. Participation at any module was open to all staff both clinical and non-clinical.

At the end of each module participants were asked to fill in an evaluation form and this data served to refine the delivery of the modules in keeping with the overall programme aim.

A simple Likert evaluation form was used for recording responses. In order to evaluate the perceived effectiveness of the programme during the pilot testing period we asked participants who had attended any of the four modules to complete a survey which was undertaken at least three months after the completion of the NHCP module attended.

Results

A total of 683 participants attended the modules in the pilot sites. Table 1 illustrates the breakdown of clinical and non-clinical staff.

Table 1. Participants attending each NHCP module categorised by profession.

Module	One	Two	Three	Four	Overall
Nursing	31	56	57	40	184
Doctors	3	44	21	39	107
HSCPs	43	42	17	15	117
Specialist areas/Non-Clinical*	195	12	33	35	275
Total	272	154	128	129	683

*Note: *Specialist areas include staff working in Learning and Development, Quality, Safety and Risk, and Clinical skills facilitation.*

Table 2. Frequency of Likert responses to survey items in the Pilot and Overall Study

Question	Strongly Disagree n(%) Pilot/Overall	Disagree n(%) Pilot/overall	Agree n(%) Pilot/Overall	Strongly Agree n(%) Pilot/Overall
1. I learned new skills and/or refreshed skills	4 (0.5%)/0(0%)	23 (4%)/3(0.5%)	297 (48.5%)/149(28.5%)	289 (47%)/377(71%)
2. The facilitation was effective	0 (0%)/0(%)	3 (0.3%)/2(0.3%)	237 (38.5%)/131(24.7%)	373 (61%)/396(75%)
3. I would encourage colleagues to attend a similar workshop	1 (0%)/0(0%)	5 (1%)/5(1%)	188 (30.5%)/134(25%)	419 (68.5%)/390(74%)

Table 2 illustrates the participant feedback in the pilot and overall sites. In the pilot survey five hundred and eighty-six (95.5%) participants felt they had learned new communication skills and 607(99%) would recommend training to a colleague. In the overall roll-out these figures were 526 (99.5%) and 524 (99%) respectively.

Results

Follow up survey

A questionnaire was issued by survey (SmartSurvey LTD, Tewkesbury, Gloucestershire UK) to all facilitators at least three months since last attending a workshop of the NHCP. A total of 101 responses (27%) were received with ninety-eight complete responses. The results demonstrated similar responses to the initial evaluation forms with 80 respondents (83%) indicating that their communication skills had improved following training. Eighty-nine (90%) respondents indicated they would recommend training to colleagues.

Table 3. Question: How likely are you to encourage colleagues to attend the module workshops?

	Response per cent	**Response total**
Extremely unlikely	5.1%	5
Unlikely	1.02%	1
Neutral	3.06%	3
Likely	34.69%	34
Extremely likely	56.12%	55
Total	100%	98

Table 4. Eighty-three per cent of facilitators felt their communication skills had improved since completing the module(s).

	Response per cent	**Response total**
Strongly agree	28.13%	27
Agree	55.21%	53
Neither agree nor disagree	15.6%	15
Disagree	1.04%	1
Total	100%	96

Discussion

The findings of the first NPES in Ireland have been replicated in its later iterations with deficits in communication skills among HCPs remaining a key issue for patients and families. The Scally report into the Cervical Screening[3] controversy highlighted shortcomings in open disclosure skills and lack of uptake in training among doctors, despite mandatory obligations. The Joint Commission Centre for Transforming healthcare in 2012[4] estimated that communication issues contributed to 80% of serious medical errors in healthcare. The State Claims Agency in Ireland have similar data [5]. The Irish Medical Council frequently encounter communication issues as a key element in many complaints to the fitness to practise committee[6]. However, it's not just doctors who need to be mindful of communication skills as evidenced by the comments in the recent patient surveys. All HCPs are mentioned at some stage or other.

In response to this backdrop the HSE have attempted to address the issue of communication skills training for all staff – not just doctors – by setting up the NHCP and encouraging staff to avail of training. The adopted training model of face to face experiential learning with structured feedback and supervision in a multidisciplinary setting mirrors the current healthcare initiative of 'learning together in teams' as best practice[7]. This audit data from the NHCP demonstrates how communication skills can be taught using the framework of the Calgary-Cambridge guide. The effectiveness of communication skill training in healthcare outcomes is substantial [8,9,10,11,12] and evidence -based support continues to grow.

It is noteworthy that doctors accounted for a minority of participants in the NHCP figures although hardly surprising. Doctors are already hard pressed to fulfil existing service commitments in an often over-stretched work environment and communication skills training may not feature highly in their list of priorities. Evidence exists, however, to support the view that effective communication leads to more effective consultations and in a shorter period of time - which has to be welcome news to all involved.[13] In addition, there is also evidence that communication skills training increases not only self-efficacy and person-centeredness but also enhances resilience and may protect against burnout in HCPs[14]. Given competing demands on time-poor HCPs the HSE has a role in supporting staff to attend NHCP training modules. Other jurisdictions such as Denmark and Austria where similar national training programmes exist have already reported success[15] and it is reasonable to anticipate Ireland will follow suit.

Inevitably criticisms of any large -scale intervention programme such as the NHCP will point to a lack of proven effectiveness. The science of evaluating effectiveness in situations such as these is complex[16.] The RE-AIM module focuses on the reach, effectiveness, adoption, implementation and maintenance on the impact of any training programme. Using this model we can state that the number of participants recorded to date is in excess of one thousand five hundred. This number is expanding as more services adopt the programme such as maternity, paediatric and patient advocacy services. Effectiveness was measured here using the follow-up survey to test self-efficacy which demonstrated that participants who responded recorded that they had picked up useful communication skills from the modules they attended. With a response rate of twenty-seven percent, however, it is not possible to over-emphasise these findings.

Adoption and implementation continues at the present time with currently 39 of the state's 46 acute hospitals engaging with the NHCP. The programme is also gaining momentum in maternity, paediatric and other services. The maintenance of the programme depends on sufficient numbers of facilitators continuing to contribute and also the HSE committing sufficient funding to sustain the programme.

Competing issues of individual performance before and after interventions are inextricably linked to the environment in which they occur. Isolating what works well may often be compounded as well as tailored to local factors in much the same way as individual resilience may be linked to resources. What we do know is that improving communication skills improves efficiency and leads to a greater sense of well -being and job satisfaction in HCPs. The results of the follow-up survey of facilitators certainly support this in this audit. In turn, better communication skills benefit patients, and lead to less aggressive treatment options, often with associated economic benefits.[17]

The sustainability of the programme will require a commitment from the HSE to support the facilitators and ensure quality control is maintained. To this end the incorporation of EACH representatives to date has significantly helped in this regard given the innovative nature of the project. As interest grows in the programme it is likely that other services within the HSE will look to avail of its resources which can only be good news for the Irish patient population.

Declaration of Conflicts of Interest:
The authors have no conflict of interest to declare.

Corresponding Author:
Prof. Peter Gillen
Associate Professor of Surgery
Dept. of Surgical Affairs,
Royal College of Surgeons in Ireland,
Dublin 2.
Email: pgillen@rcsi.ie

References:

1. Silverman J, Kurtz S, Draper J. Skills for communicating with patients. Oxon: Radcliffe Medical Press Ltd; 2013
2. National patient Experience Survey https://yourexperience.ie Access date 25 August 2020
3. Scally G. Scoping inquiry into the Cervical Check- Final report. http://scallyreview.ie/wp-content/uploads/2018/09/Scoping-inquiry-into-CervicalCheck-Final-report.pdf Access date 25 August 2020
4. Joint Commission Perspectives; Aug 2012 Vol. 32 Issue 8.
5. Health Service Executive and State Claims Agency, Open Disclosure National Guidelines (2013) https://www.hse.ie/eng/about/who/qid/other-quality-improvement-programmes/opendisclosure/opendiscfiles/opdiscnationalguidelines2013.pdf Access date 25 August 2020
6. Irish Medical Council Annual Report and Financial Statements (2018). https://www.medicalcouncil.ie/news-and-publications/reports/medical-council-annual-report-and-financial-statements-2018-pdf. Access date 25 August 2020
7. M. Rosen et al. Teamwork in Healthcare: Key Discoveries enabling safer, high-quality Care. AM Psychol 2018 may-june; 73(4):433-450.
8. Barth J & Lannon P (2011) Efficacy of communication skills training courses in oncology: a systematic review and meta-analysis. Ann Oncology: 22(5): 1030-1040
9. Dwamena F., Holmes-Rovner M.,Gaulden CM et al (2012) Interventions for providers to promote a patient centered approach in clinical consultations. Cochrane database Syst Rev 12 : CD 003267
10. Kelly JM (2014). The influence of the patient-Clinician relationship on Healthcare Outcomes: A systematic review and meta-analysis of randomised controlled trials. PloS One 9 (4)
11. Oliveira VC, Ferreira ML, Pinto RZ, Filho RF, Refshauge K, Ferreira PH. (2015). Effectiveness of Training Clinicians' Communication Skills on Patients' Clinical Outcomes: A systematic review. J of Manipulative and physiological therapeutics. 38(8): 601-616
12. Street RL. How clinician-Patient communication contributes to health improvement: modelling pathways from talk to outcome. Patient Educ Couns. 2013;92(3):286-291
13. Ammentrop J, Sabroe S, Kofoed PE, Mainz J. The effect of training in communication skills on medical doctors' and nurses' self efficacy. A randomised controlled trial. Patient Edu Couns 2007;66:270-277
14. Gulbrandsen P, Jensen BF, Finset A, Blanch-Hartigan D. Long-term effect of communication training on the relationship between physicians' self-efficacy and performance. Patient Edu. Couns. 2013;91:180-185
15. Iversen E.D., Cold S, Ammentorp J. Measuring patient perspectives of Clinician's Communication Skills before and After Communication skills Training using the communication assessment tool (CAT) ICCH&HARC; Baltimore 2017.

16. Moore GF, Audrey S, Barker M, Bond L, Bonnell C, Hardeman W, et al. Process evaluation of complex interventions: Medical Research Council Guidance. BMJ. 2015;350:1258.
17. Zhang B, Wright AA, Huskamp HA, Nilsson ME, et al Health care costs in the last week of life: associations with end-of-life conversations. Arch Intern Med 2009;169: 480-489

Irish Medical Journal
Established 1867

Issue: Ir Med J; Vol 113; No. 8; P157

The Early Impact of COVID-19 on Urological Service Provision

A. Jain[1], S.M. Croghan[1], C. Kelly[1], L. Scanlon[1], A.E. Daniels[1], L. Fitzgibbon[1], K. O'Connor[1], W.P. Shields[1], G. Nama[1], I.M. Cullen[1], P.J. Daly[1]

University Hospital Waterford, Waterford, Ireland.

Abstract

Aim

COVID-19 has posed an unprecedented challenge to healthcare systems. We aimed to observe the impact on urological care delivery in an Irish university hospital.

Methods

Data on urological activity was prospectively collected for 3 months from March 2020**.** A retrospective review of the same period in 2019 was performed for control data**.**

Results

Over the 2020 study period, 356 urological admissions were recorded; a 23.1% decrease from the 2019 corresponding period(n=463). A 21.7% decrease in flexible cystoscopies was seen (162 versus 207). 125 theatre cases (36 off-site) were performed in the 2020 period, versus 151 in 2019. Emergency case load remained stable, with 69 cases in the 2020 period. The percentage of trainee-performed cases was preserved. COVID-era outpatient activity increased, to involve 559 clinic consultations compared to 439 the preceding year; a reflection of annual growth in service demand and facilitated by virtual clinic application (n=403). There were 490 instances of patients cancelling/failing to attend outpatient appointments, compared to 335 in 2019.

Conclusion

The Irish COVID-19 outbreak has created obstacles for urological care. Nonetheless, urgent/emergent urological cases persist. Our unit has managed this to-date with flexible adaptation of service delivery. The global challenge posed by COVID-19 will demand ongoing resourcefulness to minimise impact on patients with time-sensitive urological conditions.

Introduction

Healthcare systems across the globe have been presented with an unprecedented challenge in the face of the current pandemic caused by the SARS-CoV-2 virus. This has been via both the direct threat to health posed by the resultant disease, COVID-19, and a ripple effect on hospital services. Rapid emergence of various COVID-era clinical guidelines has ensued.[1-3] These have suggested a paradigm shift at all stages of surgical care pathways, from diagnosis to intervention.

Surgical decision making has become more multi-faceted than ever before, with the need to balance multiple conflicting risks to patients, staff and resources in determining both scheduled and unscheduled management plans.

Surgical teams have also encountered stark changes to the structure and delivery of healthcare at a national level, implemented following the first confirmed case of the SARS-CoV-2 virus in Ireland on the 29th February 2020.[4] The National Public Health Emergency Team (NPHET) directed on the 27th March that "all non–essential surgery, health procedures and other non–essential services be postponed." Simultaneously, the Health Service Executive (HSE) entered a partnership deal with private hospitals, allowing use of private facilities and staff for the delivery of public healthcare under the HSE for a period ceasing on 1st July 2020.

Results

Inpatient & Procedural Activity

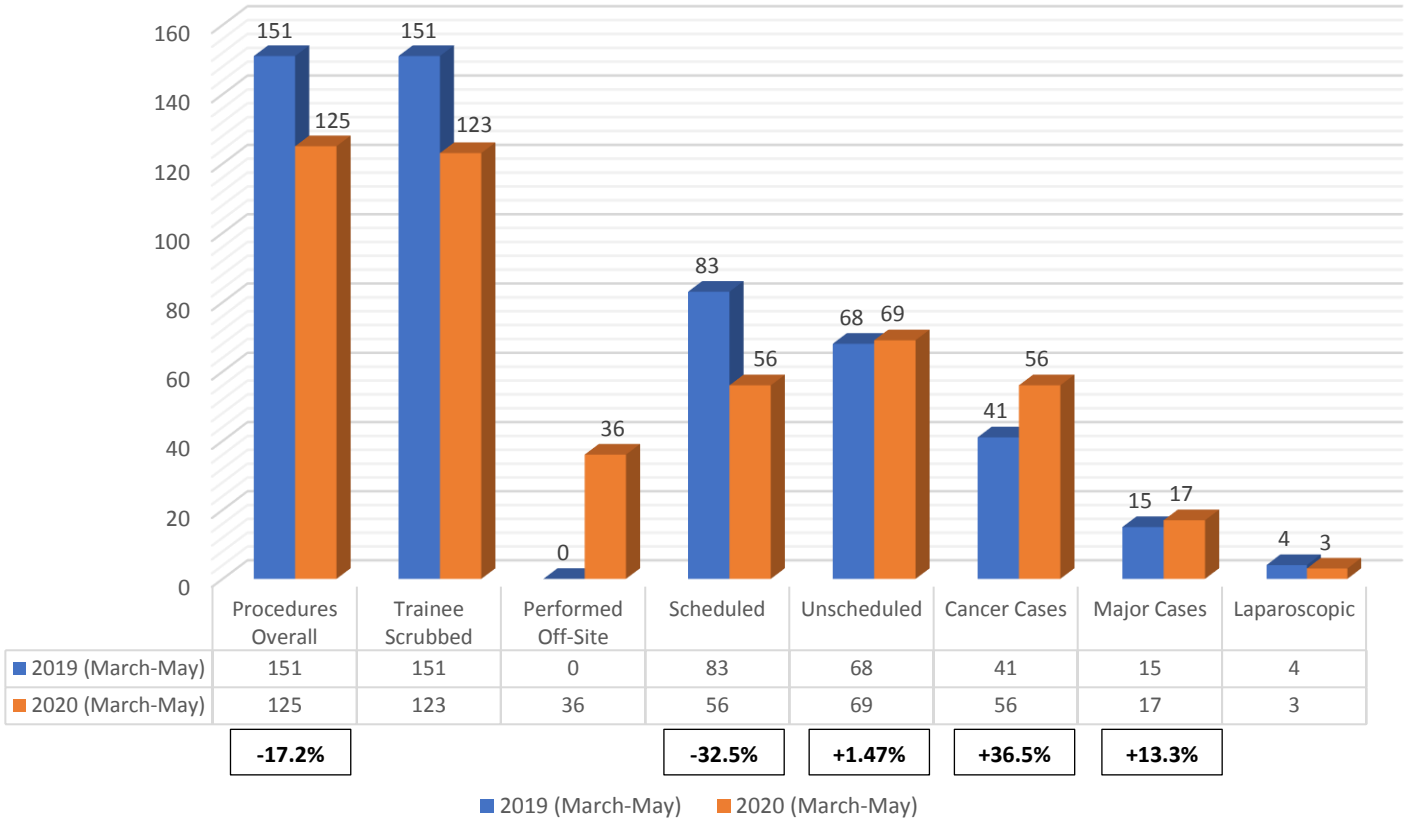
Inpatient and procedural activity data is presented in Table 1 and Figures 1 - 3. Over the 2020 study period, 356 urological admissions, including non-endoscopy day cases, were recorded, demonstrating a 23.1% decrease from the 2019 corresponding period (n=463). A 21.7% decrease in flexible cystoscopy procedures was seen (162 versus 207). One hundred and twenty-five theatre cases (36 off-site at a private hospital under the previously referenced Health Service Executive agreement)[8] were performed in the 2020 period, compared to 151 in 2019. Major cancer case numbers increased to 17 in 2020, from 15 the preceding year. Unscheduled case load remained stable, with 69 cases in the 2020 period. A trainee was actively involved in 100% (151/151) cases in the 2019 period, and 99.2% (123/125) cases in the 2020 period.

Table 1: Admissions.

	2019 (March – May)			2020 (March – May)			Change
Total Admissions	463			356			**-23.1%**
Overnight Admissions	173	**Mean LOS* (days)**	2.94	137	**Mean LOS* (days)**	2.55	**-20.8%**
		% Unscheduled	43.9 %		**% Unscheduled**	65.7 %	
Non-endoscopy Day Cases**	83			57			**-31.3%**
Endoscopy Day Cases	207			162			**-21.7%**

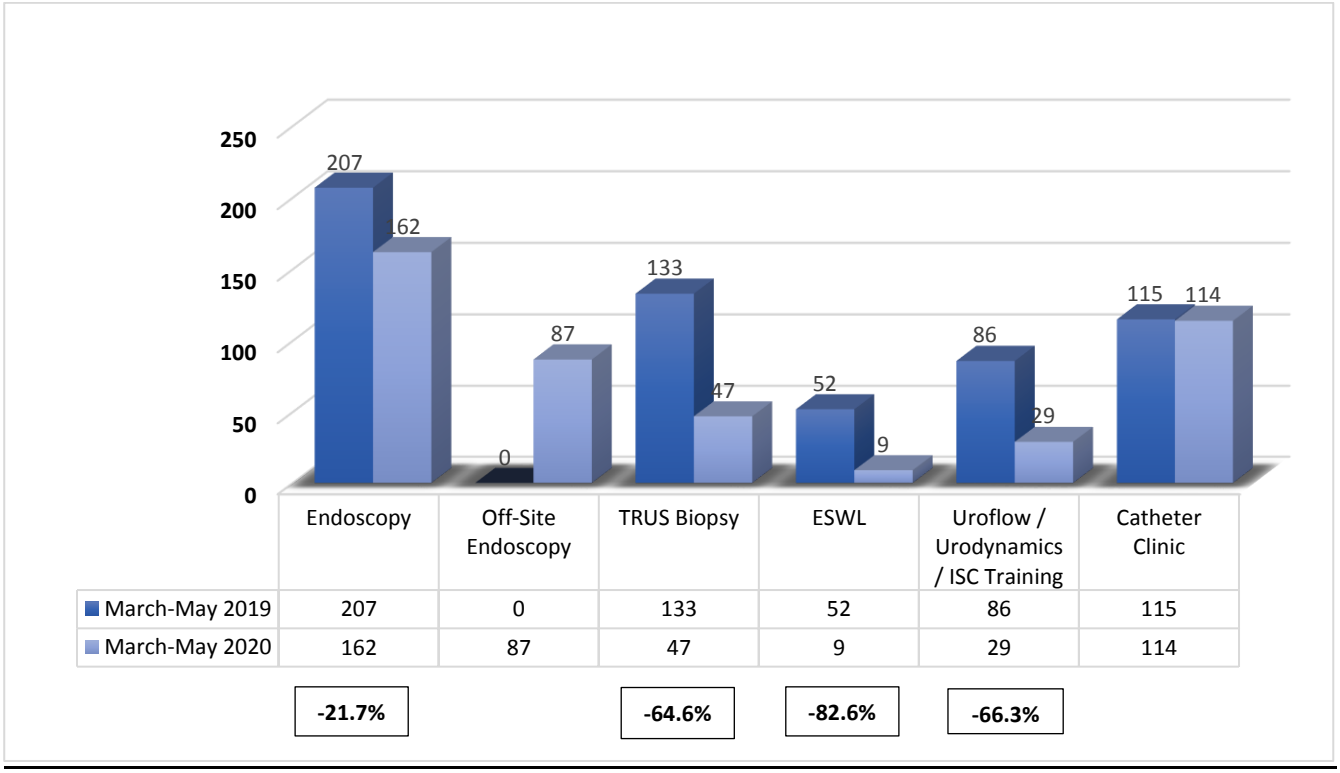
*LOS = Length of Stay **Including non-operative day cases

Figure 1. Operative Workload.



**Trainee scrubbed – A urological / surgical trainee performed the case, or was actively involved in assisting and operating to the level of his/her ability*

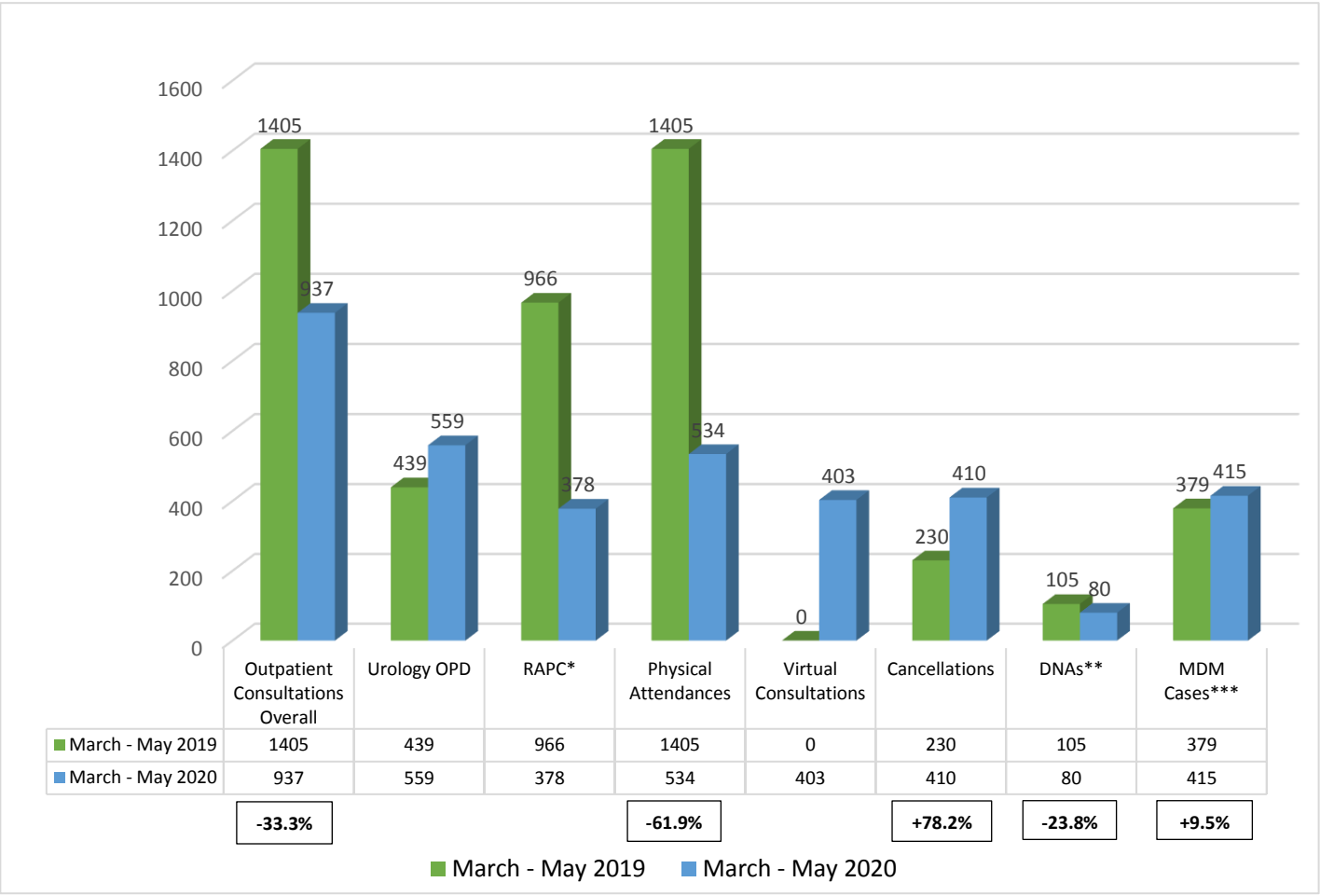
Figure 2. Diagnostics and Non-Theatre Procedures.



Outpatient Activity

Prospectively studied outpatient activity involved 559 (control n=439) clinic consultations, of which 403 were delivered virtually, 410 cancellations (n=230 in 2019 period) and 80 patients recorded as 'did not attend' (DNA) (n=105 in 2019 period) (Figure 3). Virtual clinic consultations involved a telephone call by a urology team member to the patient during an allocated time period of which the patient was notified in advance by postal mail. Video telecommunication was not used.

Figure 3. Outpatient and MDM Activity.



**Rapid Access Prostate Clinic **Did not attend or were uncontactable at virtual clinics ***Cases discussed at multi-disciplinary team meetings. These were delivered via secure videoconference in the 2020 period.*

Many urological conditions are time-critical in their management, with high morbidity and mortality rates associated with delayed intervention. Accordingly, the potential impact of COVID-19 has caused great concern amongst urological communities.[5]

In Ireland, urology is one of the busiest surgical specialities as measured by patient turnover per annum, despite having one of the lowest ratios of accredited urologists per capita in the developed world.[6] As a result of a severely understaffed workforce working at maximum capacity, >30,000 patients were recorded on urology outpatient waiting lists in 2019, with predicted rapid annual growth.[6] This context renders Irish patients with urological conditions particularly vulnerable to service disruption.

A further potential challenge pertains to training of urology trainees, an essential facet of planned expansion of urology consultant numbers. The potential reduction in technical skill training in the context of the virus is likely to impede this, an issue echoed internationally.[7]

We aimed to observe the impact of the SARS-CoV-2 outbreak on urological practice in an Irish university hospital.

Methods

Data on urological activity was collected prospectively over a 3-month period from March 2020. All activity was reviewed weekly and corroborated by two researchers during this period. Control data was obtained by performing a retrospective review of the same 3-month calendar period in 2019, based on prospectively collected, anonymised hospital activity data.

Variables collected included numbers of day-case and inpatient admissions, scheduled and unscheduled theatre cases, endoscopy admissions, extra-corporeal shock wave lithotripsy (ESWL) attendances, numbers of cases discussed at multi-disciplinary meetings (MDMs) and figures for nurse-led and outpatient clinics. Data was further analysed to identify virtual versus in-person conduction of outpatient consultations, off-site relocation of elective theatre cases and use of laparoscopic versus open surgical approach. Data from the two discrete time periods was collated with activity figures compared. Statistical analyses were performed using SPSS®.

Discussion

Our results show a decrease in urological hospital admissions and in overall activity figures in the COVID-19 era. This was a result of theatre resource reallocation, the deferral of non-essential activity in accordance with practice guidelines, and patient reluctance to attend healthcare facilities.

Emergency cases presented in similar numbers in the 2020 and 2019 periods. This is unsurprising, as the majority of urological emergencies are acute, painful and difficult for patients to ignore.[9] They are also generally spontaneous, rather than trauma-related for example, and unlikely to decline on account of 'lockdown' conditions. We did notice a trend towards delayed presentations in the COVID era; for example, 3 cases of severe epididymoorchitis presented late with abscess formation, requiring operative intervention in all and orchidectomy in two. Early evidence however, suggests an international reluctance of patients to attend healthcare systems, anecdotally due to their apprehension surrounding potential exposure to SARS-CoV-2, which might underly this.[10, 11] A 'non-COVID' emergency theatre for patients with no clinical suspicion of COVID-19 was in operation throughout the study period and time to intervention was similar to that in 2019.

Scheduled operative activity was reduced by 32.5%. Elective theatre capacity was markedly curtailed at our main hospital, to allow reallocation of resources in COVID-preparedness efforts. However, the impact of this was greatly negated by the use of a local private hospital's facilities under a government-funded public contract. This facilitate time-critical scheduled care to be delivered to patients with confirmed or suspected malignancies and other time-sensitive urological conditions, such as urolithiasis in patients with indwelling ureteric stents. Had use of these off-site facilities not been possible, our figures suggest that a reduction in scheduled theatre cases by 76% rather than 32.5% and a reduction in flexible cystoscopy procedures of 63.8% as opposed to 21.7% would have been encountered. A greater number of cancer cases were operated on during the 2020 versus the 2019 period. Cancer cases were prioritised during both periods, and this increase

merely reflects an annual increase in referrals to the service. A shift in practice towards using spinal anaesthesia in all eligible cases was observed in the 2020 period, to avoid the risks of virus aerosolization at intubation.[12] Whilst a wide range of urological procedures are feasible under spinal anaesthesia, it was generally reserved for high anaesthetic risk procedures and those using glycine irrigation fluid in the 2019 period. Much debate has surrounded the use of minimally-invasive surgery in the COVID-19 climate, due to concerns of potential aerosolization of viral particles and transmission to operating theatre staff. This remains to date, however, a theoretical danger, based on assumption that viral particles identified in peritoneal fluid may result in infection to staff.[13] Furthermore, minimally-invasive radical nephrectomy, for example, is associated with multiple advantages over an open approach, including reduced hospital stay and decreased burden on hospital and critical care beds in the postoperative period.[14] We therefore proceeded with a laparoscopic approach to radical nephrectomy and radical nephroureterectomy during the study period, in asymptomatic, SARS-CoV-2 swab-negative patients, whilst implementing precautions such as use of the AirSeal® insufflation management system and the wearing of personal protective equipment. All cancer cases were operated on only following a multi-disciplinary meeting risk assessment where the verdict was that deferring treatment would not be appropriate.

Flexible cystoscopy procedure numbers fell significantly in the 2020 period. This was of great concern given the high proportion of diagnostic procedures performed on each list for visible haematuria, a symptom associated with urological malignancy in up to 20% of patients.[15] Midway through the study period, cystoscopy lists were established in the off-site private hospital, greatly increasing capacity. Activity was somewhat limited, however, by poor patient attendance rates, presumed due to healthcare facility avoidance discussed above.[10, 11]

Urodynamic investigations were suspended as these were seen as non-urgent and requiring periods of prolonged contact between patient and healthcare provider. Similarly, extracorporeal shock wave lithotripsy (ESWL), was suspended entirely, as delivery of this treatment in our hospital group involves use of a mobile lithotripter, with both the machine and ESWL technicians traveling from overseas. Patients with obstructing stones or indwelling ureteric stents were managed with ureteroscopy. Consequences of the ESWL suspension, such as patients developing increased stone burden and greater requirement for operative intervention, will likely be significant, but it is too soon to quantify the impact.

Transrectal ultrasound guided (TRUS) biopsies for prostate cancer were suspended in our institution, where they are usually performed by interventional radiology colleagues, during a portion of the 2020 study period. This was in line with national and international guidance to avoid TRUS biopsy where possible.[16] The rationale underlying this decision included concerns of potential concomitant TRUS sepsis and SARS-CoV-2 infection placing patients at serious risk, of TRUS sepsis increasing demand on critical care resources, and of possible viral particle aerosolization during rectal probe manipulation. Diagnostic prostate MRI was continued in an off-site private hospital. Potentially delayed cancer diagnoses by inability to biopsy, are of course, a major concern as the pandemic continues. We are currently exploring other options, including establishment of a trans-perineal (TP) prostate biopsy programme, which may confer a lower risk of sepsis and be associated with a lower requirement for repeat biopsy due to improved diagnostic accuracy, and are following National Cancer Control Programme (NCCP) recommendations.

The outpatient cancellation rate rose during the study period, both from patients volitionally cancelling appointments due institutional avoidance, and from the department cancelling non-urgent consultations in the early phase of the pandemic, prior to establishment of virtual clinics which were commenced 3 weeks into the study period. Virtual outpatient clinics were conducted over the phone and seemed successful, with the vast majority of patients contactable and a

management plan being agreed upon. The 'did not attend' rate was significantly lower than the previous year, possibly because patients found it easier to be available for a telephone consultation, or because those who forgot about their appointments were reminded by the call, although this would require further exploration. This also allowed patients to have a family member listen in on the consultation if desired; something not possible with face-to-face consultations due to the hospital's ban on visitors and companions. Studies by other authors have demonstrated various forms of telemedicine to be seen as pragmatic and acceptable to urology outpatients during the pandemic.[17, 18] In fact a greater number of outpatient consultations were ultimately delivered than in the 2019 period, in keeping with the annual increase in urology referrals. This was also facilitated in part by a reduction in annual leave taken by team members during the study period.

We acknowledge a number of limitations to our study. Our hospital is located in a region with relatively low numbers of confirmed COVID-19 cases to date, and therefore may have suffered less service disruption than centres in other regions. Nonetheless, similar precautions, restrictions, and resource reallocation were implemented in our institution as in other hospitals nationally. The unit was fortunate in maintenance of a full workforce, as no team members contracted the virus or had to self-isolate during the study period, and further curtailment of services may occur if this arises as an issue. Diagnostic and surveillance imaging are an important part of urological care. We could not, however, accurately quantify the impact of radiological service restructuring on outpatient scan numbers from our data, particularly as some imaging was performed off site.

We envisage continued delivery of emergency and urgent elective urological care as the pandemic continues, and should continue to learn from colleagues who observed earlier outbreaks of the virus.[19, 20] Depending on time frame, efforts will need to be undertaken to resume semi-urgent scheduled care in addition. Continued utilisation of 'non-COVID' private hospital facilities should permit this. Incorporation of rapid point-of-care testing (e.g. qSARS-CoV-2 IgG/IgM Rapid Test, Cellex Inc)[21] into screening algorithms may help to safeguard the use of these. Maximisation of the potential of telemedicine to continue outpatient consultations, and potentially to review inpatients,[22] seems desirable.

The early phase of the Irish COVID-19 outbreak has demanded rapid reallocation of hospital resources and restructuring of services. Our data confirm, however, that emergency and urgent urological cases continue to present in significant numbers and require timely management. To date, ongoing service provision has been possible in our centre with flexibility and resourcefulness, by securing use of private hospital facilities under a publicly-funded contract and by incorporating telemedicine into outpatient consultations. As the pandemic continues, we anticipate increasing demands on services as patients with semi-urgent conditions temporarily deferred begin to surface or transition into urgent or emergency categories. Urologists globally will need to continue to adapt, innovate and converse to minimise the impact of SARS-CoV-2 on patients' access to urological care.

Declaration of Conflicts of Interest:
The authors have no conflicts of interest to declare.

Corresponding Author:
Stefanie Croghan
University Hospital Waterford,
Waterford,
Ireland.
Email: stefaniecroghan@rcsi.ie

References:

1. Ribal MJ, Cornford P, Briganti A, et al. European Association of Urology Guidelines Office Rapid Reaction Group: An Organisation-wide Collaborative Effort to Adapt the European Association of Urology Guidelines Recommendations to the Coronavirus Disease 2019 Era. *Eur Urol*. 2020.
2. Surgeons ACo. COVID 19: Elective Case Triage Guidelines for Surgical Care. Urology. United States: ACS, 2020.
3. Surgeons IRCo. Intercollegiate General Surgery Guidance on COVID-19 UPDATE. Intercollegiate Colleges of Surgeons, 2020.
4. Team NPHE. Overview of the Health System Response to date. Ireland: An Roinne Slainte (Department of Health), 2020.
5. Ahmed K, Hayat S and Dasgupta P. Global challenges to urology practice during COVID-19 pandemic. *BJU Int*. 2020.
6. (NCPS) NCPiS. Urology: A Model of Care for Ireland. Dublin: Royal College of Surgeons, Ireland, 2019.
7. Pang KH, Carrion DM, Rivas JG, et al. The Impact of COVID-19 on European Health Care and Urology Trainees. *Eur Urol*. 2020.
8. Ireland HSE. COVID-19 Committee Meeting Tuesday 2nd July 2020. Ireland: HSE, 2020.
9. Redmond EJ, Forde JC, Abdelrahman MA, et al. A prospective audit of emergency urology activity in a university teaching hospital. *Ir J Med Sci*. 2015; 184: 493-7.
10. Krumholz HM. Where have all the heart attacks gone? *New York Times*. 2020.
11. Vandoros S. Has mortality due to other causes increased during the Covid-19 pandemic? Early evidence from England and Wales. *MedRxiv*. 2020.
12. Uppal V, Sondekoppam RV, Landau R, El-Boghdadly K, Narouze S and Kalagara HKP. Neuraxial anaesthesia and peripheral nerve blocks during the COVID-19 pandemic: a literature review and practice recommendations. *Anaesthesia*. 2020.
13. Porter J, Blau E, Gharagozloo F, et al. Society of Robotic Surgery Review: Recommendations Regarding the Risk of COVID-19 Transmission During Minimally Invasive Surgery. *BJU Int*. 2020.
14. Liu G, Ma Y, Wang S, Han X and Gao D. Laparoscopic Versus Open Radical Nephrectomy for Renal Cell Carcinoma: a Systematic Review and Meta-Analysis. *Transl Oncol*. 2017; 10: 501-10.
15. Edwards TJ, Dickinson AJ, Natale S, Gosling J and McGrath JS. A prospective analysis of the diagnostic yield resulting from the attendance of 4020 patients at a protocol-driven haematuria clinic. *BJU Int*. 2006; 97: 301-5; discussion 5.
16. (BAUS) BAoUS. COVID-19 strategy for the Interim management of Prostate Cancer Prepared by the BAUS Section of Oncology. 2020.
17. Boehm K, Ziewers S, Brandt MP, et al. Telemedicine Online Visits in Urology During the COVID-19 Pandemic-Potential, Risk Factors, and Patients' Perspective. *Eur Urol*. 2020.
18. Luciani LG, Mattevi D, Cai T, Giusti G, Proietti S and Malossini G. Teleurology in the Time of Covid-19 Pandemic: Here to Stay? *Urology*. 2020.
19. Tan YQ, Wu QH and Chiong E. Preserving Operational Capability while Building Capacity during the COVID-19 Pandemic: A Tertiary Urology Centre's Experience. *Urology*. 2020.
20. Campi R, Amparore D, Capitanio U, et al. Assessing the Burden of Nondeferrable Major Uro-oncologic Surgery to Guide Prioritisation Strategies During the COVID-19 Pandemic: Insights from Three Italian High-volume Referral Centres. *Eur Urol*. 2020.
21. FDA. Coronavirus (COVID-19) Update: Daily Roundup April 2, 2020. *FDA News Release*. USA: Food & Drugs Administration, 2020.
22. Croghan SM, Carroll P, Reade S, Gillis AE and Ridgway PF. Robot Assisted Surgical Ward Rounds: Virtually Always There. *J Innov Health Inform*. 2018; 25: 982.

Irish Medical Journal
Established 1867

Issue: Ir Med J; Vol 113; No. 8; P158

Diagnostic Error

T. Cassidy

St Vincent's University Hospital, Elm Park, Dublin 4

Introduction

Getting the right diagnosis is a key aspect in health care as diagnostic errors can lead to negative health outcomes, psychological distress and financial costs. The Institute of Medicine (IOM) defined error in medicine to be a "Failure of a planned action to be completed as intended and the use of a wrong plan to achieve an aim". Their report "To err is human: building a safer healthcare system" distinguished four types of error in which diagnostic error was one.[1]

Diagnostic error is not uncommon, a conservative estimate found that 5% of US adults attending an out-patient department experienced a diagnostic error, post mortem studies have shown that diagnostic errors may contribute to 10% of patient deaths and medical chart review suggests 6 – 17% of hospital adverse events are due to diagnostic error.[2]

Many different definitions of diagnostic error have been proposed and there has been disagreement about what constitutes diagnostic error. Does diagnostic error refer to the process of arriving at a diagnosis or the final multifactorial outcome of which the diagnostic process is only one factor.

Therefore, the Committee on Diagnostic Error, which was set up to look at this issue, defined diagnostic error as: *The failure to (a) establish an accurate and timely explanation of the patient's health problem(s) or (b) communicate that explanation to the patient.*

The definition has been framed from the patient's perspective as the patient is ultimately at risk of harm. It also conveys that each arm may be evaluated separately. Therefore, focusing on two characteristics of diagnosis, accuracy and timeliness. The committee did not specify a time period that would reflect "timely". Therefore, this term needs to be operationalised for different health care problems.[2]

Clinical World

The fundamental aspect of making a diagnosis is based upon our history and examination of the patient. There is an iterative process of information gathering, information integration and interpretation to determine a working diagnosis. Clinicians will generate a differential diagnosis and will refine this list as further information is obtained. As the list narrows to one or two possibilities, diagnostic refinement becomes diagnostic verification in which the lead diagnosis is checked for its adequacy in explaining the patient's symptoms. It is important to note that clinicians do not need to obtain diagnostic certainty prior to initiating treatment.

Medical schools teach us how to acquire knowledge and use the traditional "bedside evaluation" (history and examination). However, the recent explosion of imaging and laboratory testing has inverted the diagnostic paradigm and junior clinicians often bypass the bedside evaluation for immediate testing. There has been an exponential rise in the volume of imaging done. For example, the fraction of ED patients with dizziness undergoing CT scans has risen steadily from 9% in 1995 to over 40% in 2013 with no increase in the number of stroke diagnoses.[3] This has allowed such investigations to move tentatively from symptom driven to non-symptom driven, leading to a flood of information which leads clinicians to accept a world in which we accept VOMIT (victim of modern imaging technology) as a reasonable price of technology but in which the diagnostic process has failed.[4]

Clinical Reasoning

Accurate, timely and patient centred diagnosis relies on proficiency in clinical reasoning, this is regarded as the clinician's quintessential competency. Understanding, the clinical reasoning process and the factors that can impact it are important to improving diagnosis.[5]

The current understanding of clinical reasoning is based upon the dual process theory (DPT) that integrates analytical and non-analytical models of decision making. The DPT was originally developed in the cognitive sciences and has been adapted for medicine.[6] It provides a scaffold for describing two pathways for decision making. System 1 is subconscious, fast and dependent upon pattern recognition, for example the recognition of the typical skin rash of herpes zoster. System 2 is conscious, slow deliberate and analytical. System 2 processing requires individuals to generate mental models of what should or not happen in a particular circumstance, in order to test possible actions or explore alternative explanations. System 1 is less demanding on cognition but there is a tendency to over-trust it and thereby leading to diagnostic failure.

Expert clinicians develop better mental models of disease which support more reliable pattern matching (System 1 processing). As clinicians accumulate experience, the repetition of Type 2 system processing can improve pattern matching and storing in the memory. This ability to create and develop mental models through repetition explains why expert clinicians are more likely to rely on pattern recognition compared with novices.

Rationality and Bias

Rationality is the foremost characteristic of the accomplished decision maker. Rationality can be defined as making the best possible decision given the available evidence and the prevailing conditions. This definition assumes that we are well rested, fed and have undivided attention. In addition, we are aware of our biases and know how to deal with them.

We need to be aware of the factors that compromise rationality. There is a tendency for the brain to lessen cognitive work, a cognitive miserliness. Kahneman coined the term WYSIATI ("What you see is all there is").[7] Rationality failures can also arise from the mindware (software) problems in that individual's brain.[8] Mindware can suffer from gaps were essential knowledge has not been acquired or is forgotten. This appears to be a particular problem for biostatistical knowledge than clinical knowledge.[9,10] Or where contamination has occurred, and the software is corrupted by bias and fallacious thinking.[11]

Heuristics are mental short cuts or cognitive strategies that are automatically and unconsciously employed in decision making. Heuristics can facilitate decision making but can lead to errors especially with atypical presentations. When a heuristic fails it is referred to as a cognitive bias.

There are over two hundred cognitive biases described in the literature and bias is so widespread that we need to consider it as a normal operating characteristic of the brain. Examples of such cognitive biases are listed in table 1. Some clinicians will persist in the notion that they are not vulnerable to cognitive bias, however, evidence exists in the literature that they suffer with a cognitive blind spot. [12,13]

Table 1: Examples of Cognitive Bias

Heuristic / Bias	Medical Example
Anchoring: Is the tendency to lock onto salient features in the patient's initial presentation and failing to adjust following further information being obtained	A patient is admitted with a TIA. During the course of the admission, the clinicians do not pay attention to new findings that suggest an alternative diagnosis.
Affective bias: Refers to the various ways that our emotions, feelings and biases affect judgement.	New complaints from recurrent ED attenders are not taken seriously.
Availability bias: Refers to our tendency to more easily recall things that we have seen recently.	A clinician who has read or seen a patient with an aortic dissection, assumes that the next patient has a dissection even though aortic dissections are rare.
Context errors: Reflect instances where we misinterpret the situation, leading to an erroneous conclusion.	The patient who presents with abdominal pain, we think of a GI problem. However, the pain may arise from another cause.
Premature closure: is the tendency to accept the first answer that comes along that explains the facts	ED hands over a patient to medical team as a haemorrhagic stroke. Later investigations determine that it is a bleed into a tumour.

Hot Zones

The counting of diagnostic error has not been easy. The complexity of the diagnostic process, inherent uncertainty underlying clinical decision making makes measurement a challenging task. In addition, many patients recover from their illness regardless of their diagnosis. Therefore, measurement of diagnostic error is not easy.

Using analysis of medico-legal claims in the United States as a surrogate marker of diagnostic error suggests that 12 million Americans each year in primary care suffer a diagnostic error of which 33% resulted in "serious permanent damage" or "immediate or inevitable death". Across practice settings missed vascular events, infections and cancers (sometimes collectively referred to as "The big three") account for most of the morbidity and mortality attributable to diagnostic errors. [14]

We regularly hear stories of over-crowding in our EDs and they have become the petri dish for diagnostic error. It is not a great place for diagnostic accuracy. You do not know the patient; the patient does not know you and we have incomplete medical records. The atmosphere is dynamic, there are distractions and sometimes chaotic scenes. All impairing our cognitive processing and increasing the likelihood of error.

Conclusion

Our medical schools teach us to take a history and exam our patients, leading to creating a differential diagnosis. There is, still a lack of formal teaching on diagnostic reasoning and students are not explicitly exposed to cognitive training in decision making. While recognising that the accurate measurement of a trainee's diagnostic reasoning is a challenging undertaking, there is a moral imperative to think about diagnostic pathway and how biases affect our thinking.

Therefore, it has been recommended that there is a need to optimise clinical reasoning to reduce cognitive errors. Secondly, to understand system related aspects of the diagnostic process. Thirdly, to effectively engage patients and the diagnostic team. Fourthly to promote appropriate values and attitudes and finally to improve education and the base of knowledge.[15]

Corresponding Author:
Dr Tim Cassidy FRCP Edin FRCPI
Consultant in Elderly Medicine and Stroke Medicine
St Vincent's University Hospital,
Elm Park,
Dublin 4
E mail: t.cassidy@svuh.ie

References:

1. Institute of Medicine 2000. To err is human: Building a safer health system. Washington DC. National Academy Press 2000.
2. Balogh EP, Miller BT, Ball JR. Editors Board on Health Care Services. Institute of Medicine. Improving Diagnosis in Health Care. The National Academies of Sciences-Engineering-Medicine 2015.
3. Saber Tehrani AS, Coughlan D, D, Hsieh YH, Mantokoudis G, Korley FK, Kerber KA, Frick KD, Newman-Toker DE. Rising annual costs of dizziness presentations to US Emergency departments. Acad Emerg Med 2013; 20: 689-96.
4. Hayward R. VOMIT (victim of modern imaging technology) – an acronym of our times BMJ 2003; 326: 1273.
5. Crosskerry P. the importance of cognitive errors in diagnosis and strategies to minimise them. Academic Medicine 2003; 78(8): 775 – 780.
6. Crosskerry P. A universal model of diagnostic reasoning. Acad Med 2009; 84: 1022 – 8.
7. Kahneman D. Thinking, fast and slow. New York: Farrar, Straus and Giroux. 2011.
8. Perkins D. Outsmarting IQ: The emerging evidence science of learnable intelligence. New York: The Free Press 1995.
9. Crosskerry P. The rational diagnostician. In: Crosskerry P, Cosby KC, Graber ML, Singh H. Diagnosis: interpreting the shadows. Boca Raton: CRC Press 2017. P 113 – 28.
10. Manrai AK, Bhatia G, Strymish J, Kohane IS, Jain SH. Medicine's uncomfortable relationship with math: Calculating positive predictive value. JAMA Internal Medicine 2014; 174: 991 – 992.
11. Stanovich KE. What intelligence tests miss: the psychology of rational thought. New Haven Yale University Press 2009.
12. Hershberger PJ, Part HM, Markert RJ, Cohen SM, Finger WW. Development of a test of cognitive bias in medical decision making. Academic Medicine 1994; 69: 839 – 42.
13. Klein JG. Five pitfalls in decisions about diagnosis and prescribing. BMJ 2005; 330: 781 – 4.
14. Newman-Toker DE, Schaffer AC, Yu-Moe CW, Nassery N, Tehrani ASS, Clemens GD et al. Serious misdiagnosis-related harms in malpractice claims: The "Big Three" – vascular events, infections and cancers. Diagnosis 2019; 6(3): 227 – 240.
15. Graber ML, Renic J, Rusz D, Papa F, Crosskerry P, Zierler B et al. Improving diagnosis by improving education: a policy brief on education in healthcare professions. Diagnosis 2018; 5 (3): 107 – 118.

Irish Medical Journal
Established 1867

Issue: Ir Med J; Vol 113; No. 8; P159

"SMEYES Though Your Heart Is Breaking" Pre-COVID Vaccine Vacillations

B. Kennedy

Mount Carmel, Tyone, Nenagh, Co Tipperary.

Mícheál Ó Muircheartaigh's Late Late Show lock down mantra of "dúiseacht le dúthracht le breacadh an lae" where he invokes his mother's optimism to awaken to each day's dawning full of beans and enthusiasm was a little easier this morning the 29TH of June 2020 as we entered phase three of lockdown exit. Even in windy sideways Tipperary Monday Morning sheet rain.

The elusive "WATIO" i.e. "When All This Is over" feeling seems somewhat within the realms of not so far off possibility. Are we deluded? Do we need to indulge a spot of pretend arrival at WATIO? At least with good hair (hurray for opened hairdressers and tended manes), and the possibility of a few indulgent pre-booked, socially distanced, nine- euros- worth- of- food- with- your -beer, #theorganizedfunmustbeoverwithin90minutes "real" pub pints. Many Mothers will be happy about the new prerequisite of a forcibly lined stomach before one is to indulge in a few jars. The concerted association of alcohol consumption to food consumption and also with a time limit may actually be cathartic for Irish Drink Culture. Or will it be all just be a swift reprieve before we are thrust into another Covid wave front stamped with OTATO (One Thing After The Other) yet again? More and more people begin using the past tense somewhat tentatively when discussing Ireland's lockdown and the worst of the Covid Crisis. The USA and Brazil are still in the throes and epicentres of Covid Pandemic Pandemonium. But we Irish seem to be able to see light in the distance. An albeit flickering light, but it catches a cheeky glint of shiny hope on our now flattened curve. Our now dwindling numbers of cases are plotted reassuringly on down sloping glimmering graphs.

There is a much longed for seismic social shift afoot. But it comes laced with anxiety. We have habituated to quarantining and limiting our travel and contact with the outside world. Our choices have been curtailed and with that there has been less anxiety around the act of choosing. Is that the attraction of cloistered convent or monastic life or political dictatorships where there is no trepidation with choosing?.... just all those "rules to be followed", "lines to be toed". Just "follow the leader", "maintain the status quo". We are emerging from hibernation, from unprecedented hermitage. There is palpable trepidation woven into the relief, as kids are ceremoniously dropped to pony camp, crèche, sports. There are new rules. No buggies allowed in crèche. Offspring are to be handed over at door to be assigned pods. Children who heretofore were used to being corralled in their homes with their primary care givers must now all of a sudden, cope with being wrenched from the cocoon.

There are garish yellow signs festooning doors and hand washing stations have sprouted up like dystopian holy water fonts at every entrance and exit. Will crèche workers be masked? Will it be easy to let the kids back into the big bad world? What will the dog and cat think? They are used to having their co-cocooned hoo-mans about their personages for all day on tap cuddles and treats. Have we all become socially deskilled? Almost agoraphobic cocooners gingerly venture out their front doors like survivors of a war emerge from their bomb shelters. Many others are inexplicably tripping the light fantastic as if there's nothing to worry about.

The GP Consulting Room has borne witness to this crisis. It is a relatively small space, a crucible of sorts into which the world relentlessly funnels the coarse bedrock ores of humanity to us. We as GPs, take what is presented to us and try to provide the milieu and right temperature in our melting pots to smelt out the metals from the ribboned rock; so much undefined undifferentiated illness and anguish and torment comes at us to make sense of. There are diamonds in the rough and pure gold seams. Some metals are more pliable and more malleable. There is the inevitable transference and countertransference. There is the elation and honour and heart lift. There is the exasperation and drudge and the heart sink. There is the soothing routine of banal problems and then the reproachful jolt of the emergency. Out of nowhere, bolts the bizarre and the unusual. As with any mining, there are explosions and delays in production. Sometimes alloys are formed. There are meltdowns and landslides and tunnels collapses. Things get heated and cooled. Metal shows its tensile strength. The old miners' hands get dirtied and worn, their faces sooty. There are union issues. The communication gets muffled and stifled with all the protective equipment. Sometimes, the canaries down the mine shafts stop singing.

RTE aired comic relief. Anne Doyle's familiar face reads "Waterford Whispers" news reel with iconic comic solemnity. They resurrect moth eaten, sclerally icteric Zig and Zag. They could have both done with a rub of Jif and a decent febreezing. True to form, Covid profiteering Dustin has a Perspex scammer going. Ray D'Arcy is grey-bearded and bald. The nostalgia was anchored in a slap- to-the-face Tsunami of the reality of the passage of time. It was enough to precipitate an undignified public midlife crisis for anyone who grew up in the 80s and 90s. The presenters try desperately to compensate for the lack of a studio audience. It initially rings achingly hollow until things warm up and we ignore the echoing acoustics. We are jollied along with "The 2 Johnnies" and lice outbreak fleeing "Eamonn and Bridget". Christy Moore poignantly sings "The Voyage" into a 20-year-old Nokia phone and there is a heart wrenching zeitgeisty short animated film of a cocooning Granddad separated from their Grandchild. It captures the everyday Weltschmerz and loneliness wrought by Covid and Quarantine. The Granddad gets an ipad and learns how to face time! Hozier croons "Bridge over Troubled Water" out of a bleak Croke Park. The carefully socially distanced up lit musicians play in the dark, desolate pitch. The stands are hauntingly empty. Marianne and Connell from normal people have a "Sally Rooneyversary" confessional box priest sandwich harmonic epiphany singing "baby can I hold you tonight" and disappear to a life of bliss. They spoof the same now middle- aged, dressing robed couple, years later. "He in his kerchief and she in her cap" kind of pre bed scene. The heyday in the blood now tamed. He is offering beans and toast she is clutching a hot water bottle between languid pregnant pauses. We are reminded again of the human condition and our right to age (dis)gracefully and pan to our own middle-aged post Covid denouement.

First day of phase three lockdown relaxation begins to sour when CMO Tony Holohan warns about a concerning cluster of 24 cases. A lovely patient is replaying the videoed eulogy of their beloved deceased spouse's recent funeral on her phone. The day is bookended by RTE airing a very hard-hitting documentary about the Covid ward in St James' Hospital. The staff cry as they try to deliver dignified safe care to infected patients.

The patients and families beam to each other through computers wrapped in plastic. Nurses and Doctors defeatedly deliver bad and good news by telephone. Some patients get reunited with family. Some others deteriorate and need ventilation. Others die. When they pass away, the corpse must be masked, and the double body bagged. The family do not get to see their loved ones laid out. The stark lived horror of these ordinary lovely people and professionals strikes home. The compassion, professionalism and caritas of the healthcare workers drenches through their PPE. I think of the importance of the often-quoted palliative care adage "to cure sometimes, to relieve often, to comfort always". The joy and triumph of human connection somehow transcends all the gowns and visors and masks.

I think this week we are all a little spent. We continue to put the best foot forward. Even though this bloody virus seems to loom spectrally large on the horizon and uncertainty seems to be the only certainty. We distract ourselves with banana bread and "notiony" elderflower cordial making. In Paris, they show pictures of giant teddy bears strategically sitting in street cafe chairs to whimsically social distance customers. McGowan's Pub in Phibsborough sets up perspex booths with old style phones so the singles can "mingle" from safe distances through pre-booked perspex panelled partitions. Flirtation has adapted. The "New Normal" might actually be fun and the phrase itself less anxiety triggering. "The Beekeeper of Aleppo" said the thing he loved most about his wife was "she laughed like we would never die". That's a skill we should all acquire and hone. We are going to need a sense of humour. Back bone, wish bone, funny bones at the ready, the only way out of this is through it. Mask on, hands clean and smiley eyes "SMEYES" a twinkling.

Fan Slán

Corresponding Author:
Brian Kennedy GP Nenagh
MB BCh University of Dublin
MICGP DCH DCP
Dip Therapeutics Dip Dermatology
Mount Carmel,
Tyone,
Nenagh,
Co Tipperary.
Email: brianoif@hotmail.com

Irish Medical Journal
Established 1867

Issue: Ir Med J; Vol 113; No. 8; P160

An Irish Dermatology Department in the Era of COVID-19

C. O'Connor[1,2], G. O'Connell[1], E. Nic Dhonncha[1], L. Roche[1], C. Quinlan[1], L.A. Murphy[1], C. Gleeson[1], M. Bennett[1], J. Bourke[1,2], M. Murphy[1,2]

1 Department of Dermatology, South Infirmary Victoria University Hospital, Cork.
2 University College Cork.

"All's changed, changed utterly" – WB Yeats

The COVID-19 pandemic has had a monumental impact on the delivery of healthcare globally. Dermatology is a predominantly outpatient-based, particularly visual speciality, with a high volume of medically complex patients and therapies. We summarise the adaptations made in a large dermatology centre in Cork, Ireland, to enhance patient and professional safety, and to streamline practice. While some of these changes are being reversed as the nation exits lockdown, this document could provide a blueprint for management of a second wave, or future outbreak.

Pre-COVID-19 Surge

Tutorials were organised by our general medical and anaesthetic colleagues to re-skill in resuscitation, acute medical emergencies, and practical skills such as cannulation and arterial blood gases. Lectures on analgesia and end-of-life care were delivered by our pain management and palliative care colleagues. Teaching on personal protective equipment (PPE) was delivered by our infection control colleagues. Medical staff with backgrounds in medical or paediatric medicine volunteered for additional work in 'Covid pods' in the city's regional acute hospital. Local dissemination of 'fake news' regarding COVID-19 was confronted. [1]

COVID-19 Surge

Dermatology referrals and correspondence

The department offers a long-standing photo-advice service via email for General Practitioners (GPs) with urgent queries. All GPs in the catchment area were emailed to remind them of the service for urgent queries, to prevent delayed or missed emergencies. A sharp and massive increase was noted in the volume of phone calls from GPs, as many GPs were unable to review patients in person. Several patients were directly referred onwards to other surgical specialties for definitive management to minimise healthcare exposure. There was increasing reliance on email for clinical photos from other doctors and from patients. Prescriptions were emailed directly to pharmacies. Patient letters were emailed directly to GPs.

Dermatology clinics

Dermatology clinics were immediately converted to telephone clinics for return patients. Doctors received training in teledermatology, due to the potential pitfalls in communication. Patients were contacted by administrative staff to verify that they could take a phone call during their allotted time. Our 'did not attend' rate decreased from 22% pre-COVID to a 'did not answer' rate of 7% during this period. Video consultations for new patients were introduced, using software previously enabled for dictation. Patient selection for video review was refined to prioritise common conditions such as psoriasis, eczema, or acne. Lesions were excluded from video review due to difficulties viewing lesions and the need for in person follow up for biopsy or excision. Face to face reviews were still held due to clinical necessity. Pigmented lesion clinics continued due to the serious risk of missed melanomas. [2] Excisions of suspicious pigmented lesions were performed immediately to avoid return visits. Melanoma follow up clinics, involving full skin and lymph node examinations, were held in a local private hospital which had been rented by the public health system.

Dermatology procedures

Surgical lists were complicated by the fact that the patient population requiring surgery was generally at higher risk of COVID-19 (older and/or immunosuppressed). The number of appointments for 'direct biopsy' (lesion review +/- surgery if required) was increased. Parallel clinics/biopsies were run so that if a patient required surgery it could be performed immediately. Absorbable sutures were used if feasible to prevent re-attendance for suture removal. Equipment and rooms required deep cleaning between patients. Where possible, topical therapy (e.g. 5-fluorouracil) was prescribed instead of cryotherapy or surgery. Wide local excisions were deferred. Intralesional steroid injections and neuromodulator injections for hyperhidrosis were deferred.

Phototherapy for inflammatory or neoplastic dermatoses was initially deferred considering the risk of close contact with potential cases. It was gradually reintroduced on a limited basis.

Patch testing for identification of cutaneous allergens was also initially deferred and was gradually reintroduced on a restricted basis. The 48-hour assessment was performed at home to reduce exposure to healthcare.

Dermatology therapies

The risk-benefit ratio of biologic and systemic therapy was explained to every patient on immunomodulatory therapy. The lack of knowledge on the effects of these therapies on acquisition and severity of COVID-19 was highlighted. The risk of severe untreated inflammatory skin disease was also discussed. The importance of influenza and pneumococcal vaccination was emphasised. Blood monitoring was reduced in frequency if feasible.

The department had previously established a photo-triage system for infantile haemangiomas, which continued throughout the crisis. [3] This facilitated urgent review if required and eliminated a significant volume of unnecessary visits. Propranolol monitoring (weight, blood pressure, heart rate) was moved to our hospital due to an infection-related ward closure in the local paediatric hospital. Isotretinoin therapy was cautiously initiated during the crisis, due to the need for frequent monitoring, and the unknown risk of retinoid-induced epithelial drying. Female patients who were already on treatment attended our department for urinary pregnancy testing, performed home urinary testing and forwarded us the results, or had monitoring blood tests including ß-hCG.

Use of technology

Video consults were performed using T Pro Health system. Melanoma and dermatopathology multidisciplinary meetings changed from physical meetings to Webex meetings. Dermatopathology teaching, journal club, and tutorials for our new interns were performed using Zoom. Adobe Connect was used for nation-wide teaching including introduction to dermatology for new trainees, weekly trainee teaching, and lectures from external sites. A WhatsApp service was established for healthcare workers in the city who developed skin problems related to hand hygiene or personal protective equipment (PPE).

Work environment

Several less conspicuous but personal changes took place in the hospital work environment. Outfits changed to scrubs. PPE was donned and doffed. Jewellery was not worn. Anxiety was particularly palpable at the onset of the crisis, as meetings were held regarding deployment, and uncertainty about the future of the department took hold. Social distancing was enforced in the office and at break time. Shaking hands with patients was suspended, and nursing staff no longer comforted patients intraoperatively by holding their hand. Visitors and accompanying family members or friends were limited.

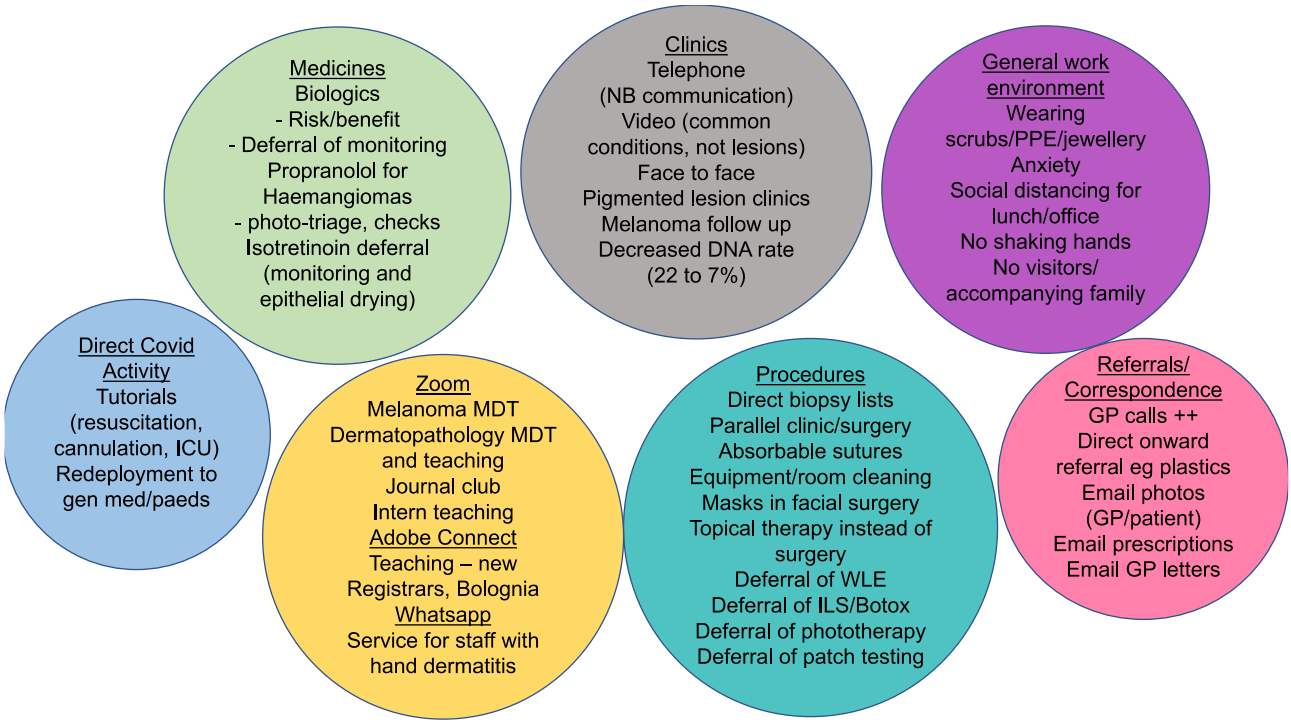


Figure 1. Summary of departmental changes

Post COVID-19 Surge

The initial surge has had a major impact on outpatient waiting times. Face-to-face reviews are being reintroduced on a phased basis. Patients referred with lesions are now seen in a 'see and treat' surgical list. Patients on biologics will attend virtual clinics for the foreseeable future. Arrangements are being put in place to deliver undergraduate dermatology teaching virtually. [4] Routine procedures are being performed once again.

Conclusion

COVID-19 has had a devastating impact on the global healthcare system and economy. We have outlined the changes made in one department which has successfully negotiated an unprecedented clinical environment. As we emerge from the first surge of COVID-19 in Ireland, we must share experiences, successes, and failures, to inform future planning.

Keywords:
COVID-19; SARS-CoV-2; dermatology; service provision

Corresponding Author:
Dr Cathal O'Connor
Department of Dermatology,
South Infirmary Victoria University Hospital,
Cork,
Ireland.
Telephone: 00353 21 4926100
Email: drcathaloconnor@gmail.com

References:

1. O'Connor C, Murphy M. (2020). Going viral: doctors must tackle fake news in the covid-19 pandemic. BMJ, m1587. doi:10.1136/bmj.m1587
2. Quinlan C, Gill R, Murphy M. (2020). Increasing melanoma awareness amongst health and social care professionals in secondary care in an era of reduced skin cancer referrals. *Clinical and Experimental Dermatology.* doi:10.1111/ced.14323
3. Flynn A, O'Connor C, Murphy M. (2020). Photo-triage of infantile haemangiomas during the COVID19 pandemic.
   Journal of Dermatological Treatment, 1–5. doi:10.1080/09546634.2020.1808153
4. Nic Dhonncha E, Murphy M. (2020). Learning New Ways of Teaching and Assessment - The Impact of Covid-19 on Undergraduate Dermatology Education. *Clinical and Experimental Dermatology.* doi:10.1111/ced.14364

Irish Medical Journal
Established 1867

Issue: Ir Med J; Vol 113; No. 8; P161

Keeping it in the Family

Lily Farrell Wins 2020 National Dom Colbert Prize in Travel Medicine

Lily Farrell (left) with grandfather Dr Dom Colbert (right)

This is an annual essay competition in travel medicine sponsored by the Tropical Medical Society of Ireland (TSMI). Dr Colbert, a fellow of the faculty of travel medicine, is one of the most respected academics in the travel medicine community in Europe, having made significant contributions to education and practise in the field over a long and distinguished career. His record of humanitarian assistance to people living in the most impoverished regions of the world have been outstanding. His reputation as an innovative and gifted teacher is richly deserved. Dr Colbert co-founded the TSMI and the society flourished under his leadership as President during multiple terms. Dr Colbert remains active as an invited speaker and publisher of work in travel and tropical medicine.

He is pictured here presenting the gold medal to his granddaughter Lily Farrell, who won the 5th annual competition with her submission entitled “Climate change, implications for travel medicine.” Lily is an Ad Astra Scholar and is currently studying medicine in UCD. This is the first time this award has been won by a UCD student.

The annual Dom Colbert Prize in Travel Medicine is open to all undergraduates of any discipline in a Third Level College in the Republic of Ireland. This annual competition consists of writing a paper on travel related medicine, the title which is outlined by the TMSI - it is judged blindly and independently by experts in the field. Details can be found on the TMSI website (www.TMSI.ie)

By Dr Sallyann Colbert

Irish Medical Journal
Established 1867
Issue: Ir Med J; Vol 113; No. 8; P162

Pulmonary Embolism and COVID-19

A.M. Farrell[1], L.J. Walsh[1], B.J. Plant[1], M.T. Henry[1], M.P. Kennedy[1], J.E. Eustace[2], C. Sadlier[3], M. Crowley[4], D.M. Murphy[1,2]

1. The Department of Respiratory Medicine, Cork University Hospital, Cork, Ireland.
2. The HRB Clinical Research Facility, University College Cork, Cork, Ireland.
3. The Department of Infectious Disease Medicine, Cork University Hospital, Cork, Ireland.
4. The Department of Haematology, Cork University Hospital, Cork, Ireland.

Abstract

Aims
There is increasing concern amongst clinicians of a possible increase in venous thromboembolism (VTE) events in patients with COVID-19. There remains limited data defining the incidence of VTE in this population and thus also a paucity of research examining the impact of targeted treatment in patients with thrombotic complications.

Methods
We examined the number of symptomatic VTE events amongst proven COVID-19 patients admitted to a tertiary level academic hospital, over a one-month period. Patient characteristics, admission and discharge inflammatory and coagulation markers were included in the analysis.

Results
Sixty-one patients were identified. Twelve patients (19.6%) admitted with COVID-19 were treated for a suspected PE. Of these patients, 3 patients were discharged on anticoagulation, 3 died and 6 remain inpatients at the end of the study period.

Discussion
COVID-19 patients are at increased risk of VTE. This risk may extend beyond the period of admission. Further research examining the role of extending the duration of thromboprophylaxis in COVID-19 patients beyond hospital discharge is warranted.

Introduction

There is increasing concern amongst clinicians of an increase in venous thromboembolism (VTE) events in patients with COVID-19, regardless of routine thromboprophylaxis practice.[1,2] COVID-19 promotes a pro-inflammatory and hypercoagulable state. Microvascular pulmonary thrombosis may play a role in the development of acute respiratory failure in this cohort.[3] One recent study has shown a mortality benefit from anticoagulation in patients with severe COVID-19 or a markedly elevated D-Dimer.[4]

However, there remains limited data defining the incidence of VTE in this population and thus also a paucity of research examining the impact of targeted treatment in patients with thrombotic complications.

Methods

We examined the number of symptomatic VTE events amongst proven COVID-19 patients admitted to a tertiary level academic hospital, over a one-month period from 23rd March 2020 to 23rd April 2020. Patient characteristics, admission and discharge inflammatory and coagulation markers were included in the analysis.

Results

Sixty-one patients were identified, with a male predominance at 61%. All were commenced on thromboprophylaxis on admission. The median age (range) was 65 (25-89) years. On admission, D-Dimer and fibrinogen count was carried out in 60 and 47 patients respectively. In these patients, D-Dimer level was elevated in 68% (median 0.68mg/L FEU; Normal hospital range:0-0.5mg/L FEU) and fibrinogen level elevated in 83% (median 5.7; Normal hospital range:1.7-4.1g/L).

Of this cohort, anticoagulation was empirically commenced (weight based therapeutic tinzaparin) in patients with a high clinical suspicion of pulmonary embolus (PE). Acute PE was confirmed by computed tomography pulmonary angiogram (CTPA) in 4 patients (6.6%). A further 8 patients were deemed to have a high probability of PE based on the treating physician's assessment of the patient's acute deterioration in respiratory or hemodynamic status as well as elevated D-Dimer and troponin levels. BNP levels were not routinely measured. Diagnostic imaging was not feasible in these 8 patients due to clinical instability. Of these 8 patients, 38% (3/8) had an elevated troponin level at time of acute deterioration. The median (range) admission D-dimer in this treated cohort of patients was 2.7(0.31-16.7) mg/L FEU.

Hence, within our institution, 19.6% (12/61) of patients admitted with COVID-19 were treated for a suspected PE. Of these 12 patients, at the end of the month study period, 25% (3/12) patients were discharged on anticoagulation, 25% (3/12) died and 50% (6/12) remain inpatients. Post-mortem studies were not carried out on the deceased.

Of our total cohort of 61 patients, 49% (30/61) were discharged and on discharge, 30% (9/30) had a raised D-Dimer level. Excluding the 33% (3/9) of patients who were treated for VTE during their inpatient stay and were discharged on anti-coagulation, there were a further 67% (6/9) patients with elevated D-Dimers on discharge. One patient was on anti-coagulation for a pre-existing cardiac condition pre-admission. The remaining 56% (5/9) patients with elevated D-Dimers on discharge were not commenced on anticoagulation.

Discussion

There is an emerging concept of pulmonary intravascular coagulopathy in patients with COVID-19.[1] In our study, 19.6% of all patients admitted with COVID-19 were treated for an acute PE. This would appear to represent a significantly increased risk, given that in critically ill patients without a diagnosis of COVID-19, the reported rate of PE is 1.3%.[5]

Of the patients diagnosed with co-existing PE and COVID-19, 3 patients died, 2 are currently intubated in intensive care and a further 4 remain inpatients. The median admission D-Dimer in these patients was 2.7mg/L FEU. Elevated D-Dimer levels have been linked with disease progression and an increased mortality rate in hospitalised COVID-19 patients.[6] Our findings would support this data.

Many organisations have advocated for more aggressive thromboprophylaxis regimens.[7] The American College of Chest Physicians guidelines currently recommend against extending the duration of thrombophylaxis beyond the period of acute hospital stay as this did not result in reduced VTE rates.[8] However, further studies have shown that high risk patients such as those with high D Dimers did benefit.[9] A statement endorsed by several international expert bodies, has stated that 'while no data specific to COVID-19 exist, it is reasonable to employ individualized risk stratification for thrombotic and haemorrhagic risk, followed by consideration of extended prophylaxis (for up to 45 days)'.[10] Given the high proportion of our cohort with elevated D-Dimers on discharge, the potential high risk of VTE events and functional limitation, extended thrombophylaxis post hospital stay in this group may be a consideration.

Therefore, we believe that COVID patients are at increased risk of VTE and that this risk may extend beyond the period of admission. Further research, including the enrollment of suitable patients in a clinical trial and, at local level, the engagement of multidisciplinary specialists in decision-making around the use of anticoagulation in this complex and poorly understood area is warranted.

Abbreviations List:

BNP: Brain natriuretic peptide
CTPA: Computed tomography pulmonary angiogram
FEU: Fibrinogen-equivalent-units
PE: Pulmonary Embolus
VTE: Venous Thromboembolism

Keywords:

Venous thromboembolism, COVID-19, Pulmonary Embolus, Anticoagulation

Declarations of Conflicts of Interest:

The authors declare that they have no competing interests.

Ethics Approval and Consent to Participate:

This study was approved by the Clinical Research and Ethics Committee of the University College Cork affiliated hospital group

Corresponding Author:
Dr Desmond Murphy,
The Department of Respiratory Medicine,
Cork University Hospital,
Cork,
Ireland.
Email: Desmond.Murphy@hse.ie

References:

1. Middeldorp S, Coppens M, van Haaps TF, Foppen M, Vlaar AP, Müller MC, et al. Incidence of venous thromboembolism in hospitalized patients with COVID-19. Preprints.org. 2020;
2. Wang T, Chen R, Liu C, Liang W, Guan W, Tang R, et al. Attention should be paid to venous thromboembolism prophylaxis in the management of COVID-19. The Lancet Haematology. 2020.
3. Magro C, Mulvey JJ, Berlin D, Nuovo G, Salvatore S, Harp J, et al. Complement associated microvascular injury and thrombosis in the pathogenesis of severe COVID-19 infection: A report of five cases. Transl Res. 2020;
4. Tang N, Bai H, Chen X, Gong J, Li D, Sun Z. Anticoagulant treatment is associated with decreased mortality in severe coronavirus disease 2019 patients with coagulopathy. J Thromb Haemost. 2020;
5. Lim W, Meade M, Lauzier F, Zarychanski R, Mehta S, Lamontagne F, et al. Failure of anticoagulant thromboprophylaxis: Risk factors in medical-surgical critically Ill patients. Crit Care Med. 2015;
6. Zhou F, Yu T, Du R, Fan G, Liu Y, Liu Z, et al. Clinical course and risk factors for mortality of adult inpatients with COVID-19 in Wuhan, China: a retrospective cohort study. Lancet. 2020;
7. Klok FA, Kruip MJHA, van der Meer NJM, Arbous MS, Gommers DAMPJ, Kant KM, et al. Incidence of thrombotic complications in critically ill ICU patients with COVID-19. Thromb Res. 2020;
8. Kahn SR, Lim W, Dunn AS, Cushman M, Dentali F, Akl EA, et al. Prevention of VTE in nonsurgical patients. Antithrombotic therapy and prevention of thrombosis, 9th ed: American College of Chest Physicians evidence-based clinical practice guidelines. Chest. 2012;
9. Cohen AT, Harrington RA, Goldhaber SZ, Hull RD, Wiens BL, Gold A, et al. Extended thromboprophylaxis with betrixaban in acutely ill medical patients. N Engl J Med. 2016;
10. Bikdeli B, Madhavan M V., Jimenez D, Chuich T, Dreyfus I, Driggin E, et al. COVID-19 and Thrombotic or Thromboembolic Disease: Implications for Prevention, Antithrombotic Therapy, and Follow-up. J Am Coll Cardiol. 2020;

Irish Medical Journal
Established 1867

Issue: Ir Med J; Vol 113; No. 8; P163

Oophorectomy for Fertility Preservation

L. Hartigan[1,2,3], V. Broderick[2] J. Cullinane[1], L. Glover[1,3], F. Martyn[1,2], M. Wingfield[1,2,3]

1. Merrion Fertility Clinic, Dublin 2.
2. National Maternity Hospital Dublin.
3. University College Dublin.

Abstract

Presentation
Turner syndrome (TS) is the most established genetic cause of premature ovarian insufficiency (POI). A 14-year-old girl with a TS mosaic karyotype was referred to the adolescent gynaecology department to discuss fertility preservation (FP) options.

Diagnosis
We report the first case of oophorectomy for the purpose of ovarian tissue cryopreservation (OTC) performed in Ireland.

Treatment
Oophorectomy was performed in Dublin and the ovary was transported to Oxford for cryopreservation.

Conclusion
OTC to preserve fertility is still considered experimental but is offered as a clinical service in other countries. Until now this technique has not been available in Ireland. It is the authors' hope that a FP service can be developed in Ireland.

Introduction

Turner syndrome (TS), affects 1 in 2,500 newborn females.[1]

For some women with TS, particularly those with a mosaic karyotype, there may be sufficient ovarian reserve to undergo normal pubertal development with subsequent menarche. However, POI is inevitable for all women with TS.

While still considered experimental, OTC is the FP technique of choice for pre-pubertal girls at high risk of POI and post-pubertal girls who are not mature enough for ovarian stimulation with subsequent oocyte cryopreservation.

Case report

A 14-year-old girl was referred by her paediatric endocrinology team to the adolescent gynaecology department at the National Maternity Hospital, Dublin.

She presented with short stature at the age of 11. Chromosomal analysis revealed TS mosaic karyotype (46,XX/45,X).

Her pubertal development was normal with spontaneous menarche at age 14. Her anti-mullerian hormone level (AMH, a serum marker of ovarian reserve) was critically low (0.6 pmol/L). Her follicle stimulating hormone (FSH) level was within the normal range (2.8IU/L).

Without fertility preservation treatment, she would inevitably develop POI, probably before the age of 18. Therefore, her only options for motherhood would be in vitro fertilization (IVF) using donor oocytes or adoption. Spontaneous conceptions are rare in women with TS. Oocyte cryopreservation is an established fertility preservation option but a poor response to stimulation would be predicted given such a low ovarian reserve. An alternative option is ovarian tissue cryopreservation. This is now considered for suitable girls in the United Kingdom and throughout Europe.

A multidisciplinary team meeting was held between the National Maternity Hospital, Merrion Fertility Clinic and a Consultant paediatric oncologist from 'Future Fertility Trust', a charitable trust based in Oxford, U.K. who help young people at risk of infertility access expert care. This patient was deemed suitable for OTC. Laparoscopic oophorectomy was performed in Dublin with transportation that day of the ovary to Oxford for processing and cryopreservation. There are currently no facilities in Ireland for the storage of cryopreserved ovarian tissue. Permission for the procedure and for transport of the tissue was obtained from the HPRA (Human Products Regulatory Authority) in Ireland and the HTA (Human Tissue Authority) and HFEA (Human Fertilisation and Embryology Authority) in the UK. The girl recovered well post-operatively.

Discussion

Advances in cryopreservation techniques have raised hopes for FP in girls and women at risk of POI. Oocyte cryopreservation is usually the approach of choice. However, ultrasound scans and oocyte retrieval are typically performed trans-vaginally, thus requiring a certain level of physical and psychological maturity.[3] Furthermore, approximately two weeks of stimulation with gonadotropins is required, which in the case of oncology patients, could delay treatment.

OTC offers an alternative FP strategy. It involves the surgical removal of an ovary or ovarian cortex fragments, via laparoscopy with subsequent cryopreservation of the tissue.[2] Ovarian tissue can be thawed and grafted back to the pelvis at a later date. Retrieval of tissue for OTC does not require sexual maturity so it constitutes a suitable FP method for pre-pubertal girls. A further advantage is that auto-transplantation of ovarian tissue after puberty can restore general ovarian endocrine function, in addition to preserving fertility. Most cases of OTC are performed prior to cancer treatment

To date, over 130 live births following auto-transplantation of ovarian tissue have been reported worldwide.[4] The majority of these pregnancies have resulted from use of ovarian tissue that was harvested from post-menarchal adult ovaries.

At the time of writing, there have been just two reported cases of pregnancy following auto-transplantation of ovaries that were recovered from a pre-menarchal girls prior to gonadotoxic treatment.[5,6] No pregnancies have been reported to date in the TS cohort.

In conclusion, OTC holds promise as a potential way to preserve fertility for girls at risk of POI. It is the authors' hope that a FP service can be developed in Ireland. Such a service would allow girls at high risk of POI, especially those who require FP prior to treatment for cancer, to avail of OTC in Ireland.

Declaration of Conflicts of Interest:

The authors declare no financial interests in any of the work submitted here.

Corresponding Author:
Dr Lucia Hartigan
National Maternity Hospital,
Dublin.
Email: lucia.hartigan@ucdconnect.ie

References:

1. Oktay K, Bedoschi G, Berkowitz K, Bronson R, Kashani B, McGovern P, et al. Fertility Preservation in Women with Turner Syndrome: A Comprehensive Review and Practical Guidelines. Journal of pediatric and adolescent gynecology. 2016 Oct;29(5):409-16. PubMed PMID: 26485320. Pubmed Central PMCID: 5015771.
2. Grynberg M, Bidet M, Benard J, Poulain M, Sonigo C, Cedrin-Durnerin I, et al. Fertility preservation in Turner syndrome. Fertility and sterility. 2016 Jan;105(1):13-9. PubMed PMID: 26677790.
3. Hewitt JK, Jayasinghe Y, Amor DJ, Gillam LH, Warne GL, Grover S, et al. Fertility in Turner syndrome. Clinical endocrinology. 2013 Nov;79(5):606-14. PubMed PMID: 23844676.
4. Fisch B, Abir R. Female fertility preservation: past, present and future. Reproduction. 2018 Jul;156(1):F11-F27. PubMed PMID: 29581237.
5. Matthews SJ, Picton H, Ernst E, Andersen CY. Successful pregnancy in a woman previously suffering from beta-thalassemia following transplantation of ovarian tissue cryopreserved before puberty. Minerva ginecologica. 2018 Aug;70(4):432-5. PubMed PMID: 29696941.
6. Demeestere, I., Simon, P., Dedeken, L.,Moffa, F., Tsepelidis, S.Brachet, C.Delbaere, A.Devreker, F.Ferster, A., Live birth after autograft of ovarian tissue cryopreserved during childhood. Hum Reprod, 2015, Vol 30, Issue 9, 2107-9

Irish Medical Journal
Established 1867

Issue: Ir Med J; Vol 113; No. 8; P164

Anti-TIF1-γ Paraneoplastic Dermatomyositis: A Novel Association with Mantle Cell Lymphoma

Y. Cheung[1], A. Abdalla[1], M. Khalid[1], S. Alraqi[1], C. Farrelly[2]

1. Department of Rheumatology, Mater Misericordiae University Hospital, Dublin.
2. Department of Radiology, Mater Misericordiae University Hospital, Dublin.

Abstract

Presentation
We present the case of a 67-year-old otherwise healthy male who presented with an erythematous rash, symmetrical proximal muscle weakness, myalgia and arthralgia of the shoulders and hips, compatible with a working diagnosis of dermatomyositis.

Diagnosis
Laboratory data confirmed elevated creatine kinase (CK) and liver enzymes but normal inflammatory markers. Myositis antibody profile was positive for anti-TIF1-γ, a highly specific antibody for myositis and strongly associated with malignancy, which prompted extensive cancer screening. We describe the clinical course and investigations leading to the simultaneous diagnosis of mantle cell lymphoma (MCL).

Treatment
Patient was treated with high-dose prednisolone with good clinical response.

Conclusion
This case highlights the usefulness of myositis–specific antibody (MSA) screening in inflammatory myositis, which in many cases, can become lifesaving by revealing an underlying concealed malignancy that would otherwise go unnoticed.

Introduction

Dermatomyositis (DM) is an idiopathic autoimmune condition characterized by muscle weakness with distinctive cutaneous manifestations. It is a subtype of a heterogeneous group of acquired idiopathic inflammatory myopathy (IIM).

Increased incidence of malignancy in dermatomyositis is well established.[1] The role of specific autoimmune antibody testing has revolutionised the outlook in IIM, leading to earlier detection and better prediction of cancer-associated myositis.[2–4] Here we present a case of a positive anti-transcription intermediary factor 1-gamma antibody (anti-TIF1-γ) paraneoplastic dermatomyositis associated with MCL, which were simultaneously diagnosed.

Case Report

A 67-year-old Caucasian gentleman presented with a two-week history of muscle weakness and erythematous rash affecting his face, neck, elbows, hands and chest. He reported fatigue, myalgia, and arthralgia in his shoulders and hips to the extent that he was unable to perform daily activities, especially over-head tasks and required crutches to ambulate. He has a background of osteoarthritis, hypertension, and dyslipidemia. He had previously been taking atorvastatin 40mg for over five years preceding this presentation. There was no relevant family history, smoking, or any substance or alcohol misuse. Clinical examination revealed proximal muscle tenderness and weakness with reduced power (Medical Research Council (MRC) grade 3/5) symmetrically in the shoulders and pelvic girdle. There was an erythematous rash over his face, neck, extensor surface of his hands, elbows and anterior upper chest (figure 1). The remainder of his clinical examination and vital signs were unremarkable.

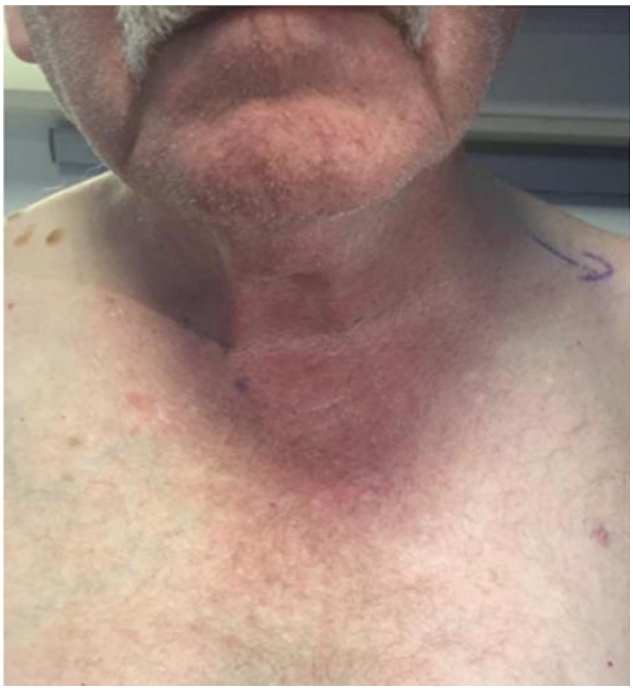


Figure 1. Rash on upper chest (“V sign”).

Initial laboratory data showed elevated CK of 3595IU/L (30-190), alanine aminotransferase (ALT) of 93IU/L (<40), lactate dehydrogenase (LDH) at 245U/L (135-225), C-reactive protein (CRP) 6mg/L (0-5), and erythrocyte sedimentation rate (ESR) 14mm/h (0-15). Full blood count (FBC) was normal. A whole-body magnetic resonance imaging (MRI) confirmed diffuse high STIR signal intensity at the proximal musculature of upper and lower limbs with diffuse bone marrow signal throughout the thoracolumbar vertebral spine indicative of hypercellular marrow (figure 2).

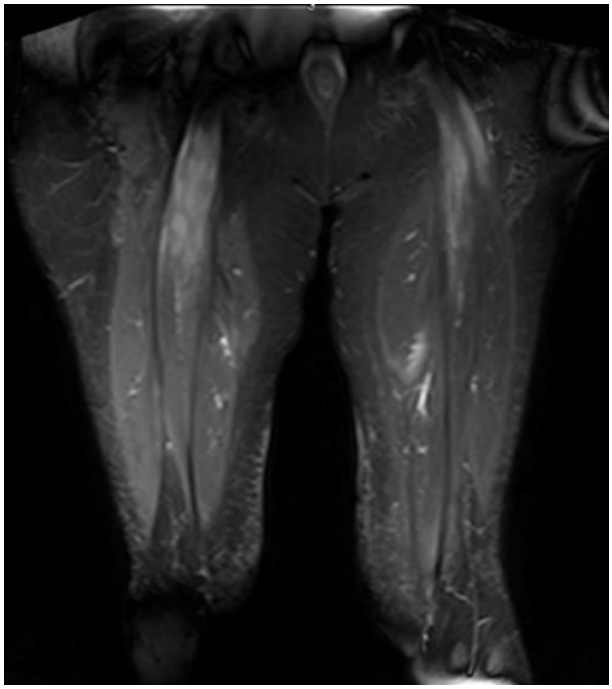


Figure 2. MRI showing abnormal muscle signal intensity.

Skin biopsy showed interface dermatitis, consistent with DM. Deltoid muscle biopsy showed perifascicular atrophy with perivascular chronic lymphoplasmacytic inflammation, strongly supporting immune-mediated myopathy. Autoimmune profile was positive for antinuclear antibody (ANA). Myositis panel was positive for anti-TIF1-γ. Serum electrophoresis revealed abnormalities in the gamma region. Electromyography (EMG) was consistent with myopathy. Given his age and diagnosis of dermatomyositis, investigations to outrule underlying malignancy were performed. Computed tomography (CT) of his thorax, abdomen and pelvis, tumour markers, viral screening and gastroscopy were negative.

He was commenced on oral prednisolone 40mg, which led to significant clinical and biochemical improvement including normalisation of CK 6 weeks later. Bone marrow aspirate and trephine biopsy revealed hypercellular marrow, 15% plasmacytosis and aggregates of mature lymphoid cells. Immunohistochemistry and flow cytometry were strongly positive for CD20, CD19, CD79A, cyclin D1, and BCL2. Polymerase Chain Reaction (PCR) detected t(11;14). These findings led to the diagnosis of MCL.

Discussion

Dermatomyositis carries a significant risk of malignancy. A meta-analysis indicated a 19-fold risk increase for malignancy in the first year following diagnosis, with men carrying a higher risk.[5] Anti-TIF1-γ is the commonest malignancy-associated MSA, with a cancer prevalence rate of 38-80%.[5,6] Breast cancer was the most prevalent malignancy in the anti-TIF1-γ-positive patients, followed by ovarian cancer and lymphoma.[1] MCL is a rare, aggressive subtype of non-Hodgkin lymphoma with poor prognosis. It is characterised by a strong association with translocation (11;14)(q13;q32) and subsequent overexpression of cyclin D1.[7] Although cutaneous manifestations associated with MCL have previously been reported[8], this case describes the first reported association with confirmed DM. Few reports have described positive treatment outcomes with chemo-immunotherapy regimes involving Rituxmab.[9] Our patient is currently stable on 10mg prednisolone with normal muscle power and resolution of skin manifestations. He is currently being considered for chemo-immunotherapy with Rituximab.

Declaration of Conflicts of Interest:
The authors have no conflicts of interest to declare.

Corresponding Author:
Dr Yuen Cheung,
Department of Rheumatology,
Mater Misericordiae University Hospital,
Dublin 7.
Email: yuencheung@mater.ie

References:

1. Baig, S. & Mecoli, C. A. Cancer and Idiopathic Inflammatory Myositis. *Curr. Treat. Options Rheumatol.* (2019). doi:10.1007/s40674-019-00128-8
2. Lu, X., Peng, Q. & Wang, G. The role of cancer-associated autoantibodies as biomarkers in paraneoplastic myositis syndrome. *Current Opinion in Rheumatology* 31, 643–649 (2019).
3. Chinoy, H., Fertig, N., Oddis, C. V., Ollier, W. E. R. & Cooper, R. G. The diagnostic utility of myositis autoantibody testing for predicting the risk of cancer-associated myositis. *Ann. Rheum. Dis.* 66, 1345–1349 (2007).
4. Brouwer, R. *et al.* Autoantibody profiles in the sera of European patients with myositis. *Ann. Rheum. Dis.* 60, 116–123 (2001).
5. Yang, Z., Lin, F., Qin, B., Yan, L. & Renqian, Z. Polymyositis/dermatomyositis and malignancy risk: A metaanalysis study. *J. Rheumatol.* 42, 282–291 (2015).
6. Hida, A. *et al.* Anti-TIF1-γ antibody and cancer-associated myositis. *Neurology* 87, 299–308 (2016).
7. Maddocks, K. Update on mantle cell lymphoma. *Blood* 132, 1647–1656 (2018).
8. Nemets, A., Ronen, M. & Lugassy, G. Chronic Paraneoplastic Cutaneous Syndrome Preceding an Indolent Variant of Mantle Cell Lymphoma: Favorable Response to Rituximab. *Acta Haematol.* 115, 113–116 (2006).
9. Hilal, T. *et al.* Rituximab maintenance therapy for mantle cell lymphoma: A systematic review and metaanalysis. *Am. J. Hematol.* 93, 1220–1226 (2018).

Irish Medical Journal
Established 1867

Issue: Ir Med J; Vol 113; No. 8; P165

Cerebral Amyloid Angiopathy Related Inflammation

P.J. Menon[1], S. Lyons[1], K. Thavarajah[2], A. Gabr[2], M. Seerat[3], M.C. McKenna[1], E. Kavanagh[4], P. Kelly[1], M. Marnane[1], R. McGovern[3], C. Quinn[2], S. Murphy[1]

1. Acute Stroke Service, Mater Misercordiae University Hospital, Dublin.
2. Department of Geriatric Medicine, University Hospital Limerick, Limerick.
3. Department of Geriatric Medicine, Saint Luke's Hospital, Kilkenny.
4. Department of Radiology, Mater Misercordiae University Hospital, Dublin.

Abstract

Cerebral amyloid angiopathy related inflammation (CAA-ri) is an increasingly recognized and rare cause of reversible encephalopathy, affecting a subset of patients with cerebral amyloid angiopathy. We describe 5 cases of probable CAA-ri that presented to 3 different hospitals in Ireland. A wide spectrum of presenting symptoms was seen ranging from episodic sensory disturbances to severe presentations with tonic-clonic seizures and encephalopathy. Magnetic Resonance Imaging (MRI) is essential to enable prompt diagnosis and must include a blood sensitive sequence such as gradient echo (GRE) or in particular, susceptibility weighted imaging (SWI). It is important for clinicians to be aware of this condition, as prompt treatment with immunosuppression is usually associated with rapid clinical improvement in the majority of patients.

Introduction

Cerebral amyloid angiopathy related inflammation (CAA-ri) is an increasingly recognized and rare cause of reversible encephalopathy, affecting a subset of patients with cerebral amyloid angiopathy (CAA).[1] In CAA, amyloid A-beta peptides are deposited in the walls of small arteries, arterioles and capillaries supplying the cortex, subcortex and leptomeninges.[1] CAA classically presents clinically with lobar intracranial haemorrhage. Other presentations include 'amyloid spells', (a transient ischemic attack mimic), chronic cognitive impairment and convexal sub-arachnoid haemorrhage. In CAA-ri, amyloid A-beta depositions are associated with peri-vascular inflammation and oedema.[1] It can present with acute/ sub-acute encephalopathy, headaches, seizures and focal neurological signs.[2] Magnetic resonance imaging (MRI) reveals T2 hyperintense lesions in the cortex and subcortical white matter suggestive of cerebral oedema. Brain biopsy demonstrates perivascular inflammation and the presence of multinucleate giant cells. CAA-ri is associated with presence of the apolipoprotein E4/E4 genotype.[1]

We describe 5 cases of CAA-ri that presented to 3 different hospitals in Ireland, illustrating the heterogeneity in the presentation of this condition.

Case 1

An 82-year-old man was found obtunded in his house having been unresponsive to messages from his son for a period of several days. At presentation he was alert but disorientated and restless. Speech was slow and hesitant with neurological examination otherwise unremarkable. Blood pressure was normal. Non-contrast CT brain showed asymmetrical vasogenic oedema involving bilateral temporal, parietal and occipital lobes. Contrast enhanced MRI brain demonstrated multifocal areas of T2-weighted Fluid Attenuated Inversion Recovery (T2-FLAIR) hyperintensities affecting cortical and subcortical white matter regions without enhancement. Blood sensitive susceptibility weighted imaging (SWI) sequences revealed bilateral multiple cortical punctuate hypointensities consistent with microhemorrhages sparing the basal ganglia bilaterally. Work up including CSF analysis was otherwise unrevealing.

Initial treatment included empirical cover for viral encephalitis and anticonvulsant therapy, as there was a clinical suspicion of unwitnessed seizure activity. In view of his presentation and radiological features, a presumptive diagnosis of CAA-ri was made. He was commenced on a 6-week tapering course of oral prednisone 30mg. Follow up MRI 6 weeks later revealed complete resolution of the white matter hyperintensities. At outpatient review, he was asymptomatic and living independently. Folstein Mini Mental State Examination Score was 24/30.

Case 2

A 67-year-old lady was admitted electively to hospital in October 2017 for neoadjuvant chemotherapy with weekly carboplatin and taxol for locally advanced oesophageal squamous cell cancer. A few weeks following completion of the chemotherapy she developed 2 generalized tonic-clonic seizures at home and was readmitted to the hospital. She was encephalopathic on admission. Lumbar puncture excluded viral encephalitis. The suspected diagnosis at the time was Posterior Reversible Encephalopathy Syndrome (PRES) secondary to chemotherapy. MRI brain at the time showed bilateral T2 FLAIR hyperintensities (Figure 1a). She had no further seizures after admission, however she deteriorated rapidly requiring parenteral nutrition. She was managed with supportive care. Repeat MRI brain in January 2018 showed significant progression of the T2 FLAIR hyperintensities (Figure 1b). SWI sequences showed associated micro-bleeds. This raised a suspicion for CAA-ri and she was commenced on a course of oral steroids.

She was readmitted in February 2018 from an outpatient rehabilitation facility with clinical deterioration in her symptoms despite improvement in the T2 FLAIR hyperintesities on MRI brain. Steroids were reinstated. Repeat MRI brain in March 2018 showed interval improvement in T2 FLAIR hyperintensities (Figure 1c). SWI sequence showed the presence of new microbleeds (Figure 1d).

She was well when reviewed in July 2018 and she was weaned off the anti-epileptics, Levetiracetam and Lamotrogine. Prednisolone was weaned down to a maintenance dose of 10mg every day. In October 2018, she had a generalized tonic-clonic seizure at home. MRI brain showed prominent post contrast vascular enhancement in bilateral occipital lobes. She was recommenced on 40mg oral prednisolone and improved significantly. Levetiracetam was recommenced. She was commenced on azathioprine 2mg per kilogram as a steroid-sparing agent in January 2019. MRI brain in April 2019 is stable with no new T2 hyperintensities (Figure 1e). She remains well.

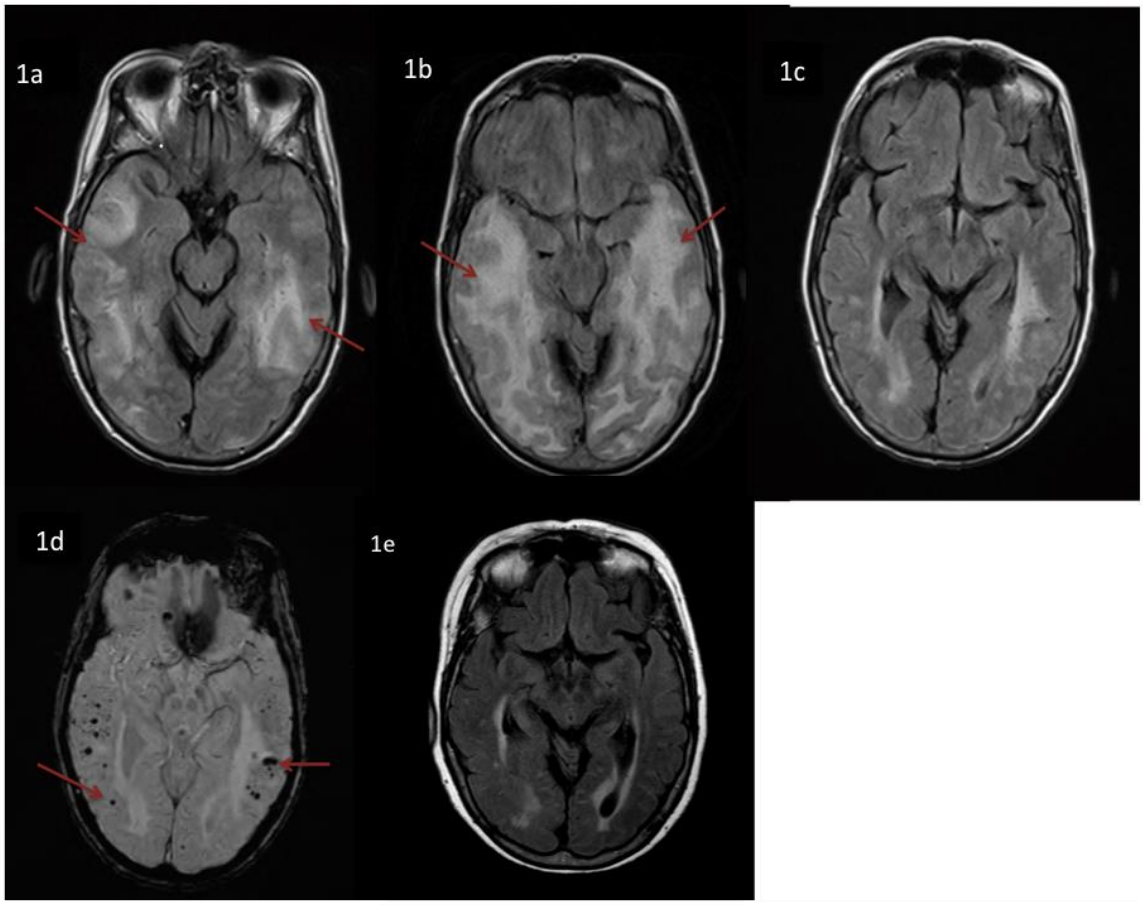


Figure 1a: Axial T2 FLAIR MRI brain in December 2018 showing bi-temporal and parietal hyper-intensities.
Figure 1b: Axial T2 FLAIR MRI brain in January 2018 with extensive bilateral white matter hyper-intensities.
Figure 1c: Axial T2 FLAIR MRI brain in March 2018 showing improvement in bilateral white matter hyperintensities.
Figure 1d: Axial SWI sequence in March 2018 showing numerous punctuate hypointense lesions, which are consistent with macro and microhaemorrhages.
Figure 1e: Axial T2 FLAIR MRI brain in April 2019 showing improvement in white matter hyperintensities.

Case 3

In 2013, a 56-year-old man presented with intermittent paraesthesia and numbness on the right side of the chin, which had been present for one year. He had a past history of hypertension, hypercholestrolaemia and a head injury 16 years ago. His family history was significant for Alzheimer's disease in his father and intra-cranial hemorrhage in his paternal aunt. MRI brain showed subcortical T2 FLAIR white matter hyperintensities in both temporal and parietal lobes (Figure 2a). The changes were initially thought to be secondary to the prior head injury. However, clinically isolated syndrome remained within the differential.

He was reviewed in clinic following a repeat MRI brain in 2014, which showed extensive T2 FLAIR white matter hyper-intensities (Figure 2b). He was minimally symptomatic, and his Montreal Cognitive Assessment test score was 29/30. Repeat MRI brain with contrast showed a persistent large area of T2 hyperintense signal in the left temporal lobe and to a lesser extent in the left parietal lobe, with no post-contrast enhancement. There were no oligoclonal bands detected on lumbar puncture.

These findings were most consistent with a diagnosis of probable tumefactive cerebral amyloid angiopathy. Aspirin for primary prevention was discontinued to reduce risk of intra-cranial haemorrhage.

Repeat MRI brain in May 2015 showed a new area of tumefactive change in the right frontal lobe (Figure 2c). MR angiography was normal. He was treated with intravenous methylprednisolone 1-gram daily for 5 days following the MRI brain and then switched to oral prednisolone. Repeat MRI brain in September 2015 (Figure 2d) showed resolution of the lesion in the right frontal lobe. Steroids were then tapered down over a few weeks and stopped.

MRI brain in September 2017 (Figure 2e) showed significant interval progression of the subcortical white matter T2 FLAIR hyperintensities in the left frontal lobe. He was recommenced on prednisolone 30mg, which was then tapered over 3 months. MRI brain in October 2017 (Figure 2f) showed resolution of the tumefactive change in the left frontal lobe. He has remained clinically and radiologically stable since 2017. MRI imaging in 2018 showed improvement in the FLAIR hyperintensities and stable florid bilateral microbleeds on SWI sequence.

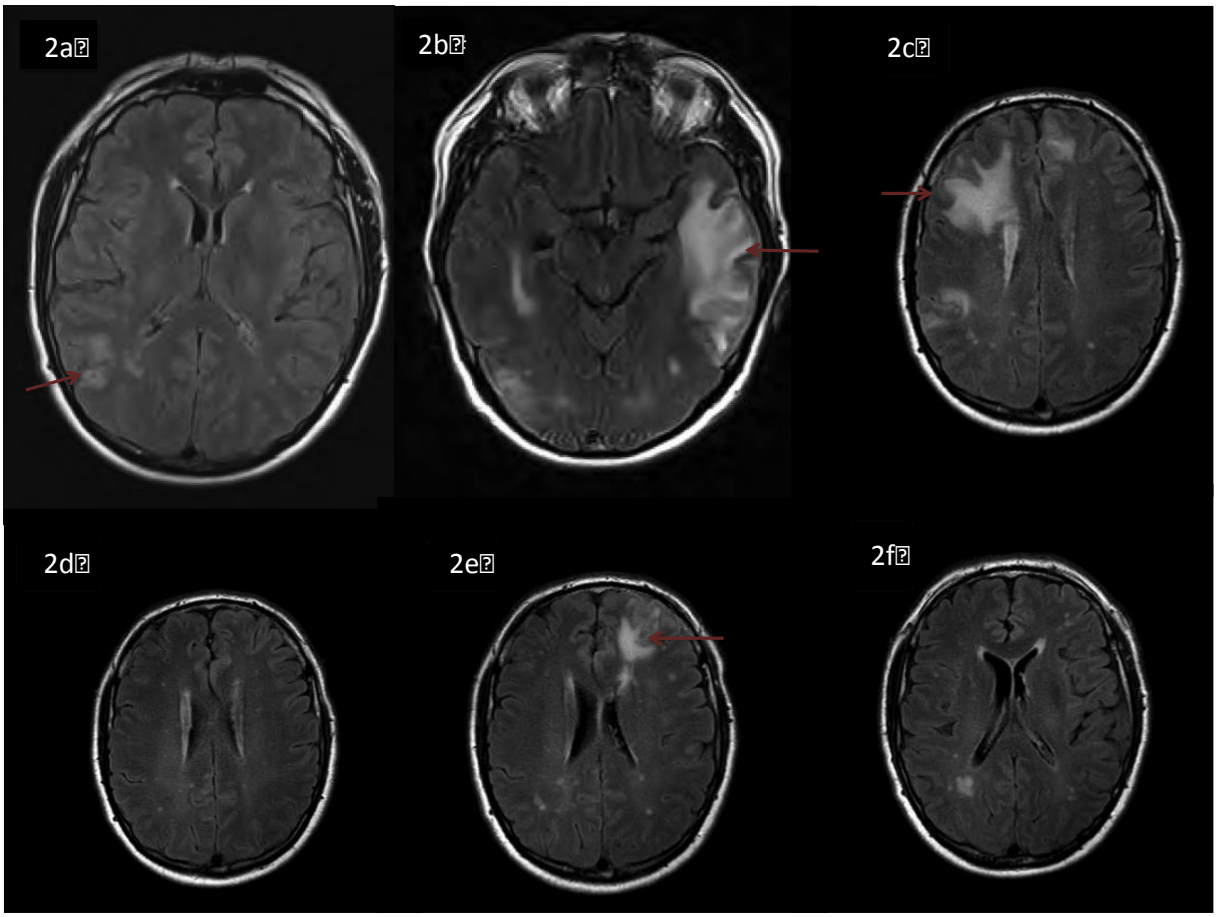


Figure 2a: Axial T2 FLAIR MRI brain in 2013 showing subcortical white matter hyperintensities.
Figure 2b: Axial T2 FLAIR MRI brain in 2014 showing extensive bilateral white matter hyperintensities.
Figure 2c: Axial T2 FLAIR MRI brain in May 2015 showing a new area of tumefactive change in the right frontal lobe.
Figure 2d: Axial T2 FLAIR MRI brain in September 2015 showing resolution of area of tumefactive change in the right frontal lobe following treatment with steroids.
Figure 2e: Axial T2 FLAIR MRI brain in September 2017 showing progression of left frontal hyperintense area.
Figure 2f: Axial T2 FLAIR MRI brain in October 2017 showed resolution of tumefactive change in left frontal lobe.

Case 4

An 84-year-old female was brought to hospital following acute onset of headache, confusion and left sided weakness. On admission she was normotensive with a Glasgow Coma Scale of 12/15. There was evidence of left sided hemiparesis, left sided hemianopia and left sided neglect.

Non-contrast CT brain showed asymmetrical vasogenic oedema involving bilateral occipital lobes with a 5mm hyperdense area in the right occipital lobe (Figure 3a). Contrast enhanced MRI brain demonstrated multifocal areas of T2 hyperintensities most marked in the occipital regions. (Figure 3b). Blood sensitive SWI sequences revealed bilateral, multiple, small punctuate hypointensities consistent with micro-hemorrhages (Figure 3c). Investigations including CSF analysis was otherwise unrevealing.

A presumptive diagnosis of CAA-ri was made. She was commenced on a 6-week tapering course of oral prednisone 30mg. Follow up MRI 6 weeks later revealed partial resolution of the white matter hyperintensities, and steroids were tapered to 5mg maintenance dose (Figure 3d). A Further MRI with gradient echo (GRE) 6 months from the previous scan revealed resolution of white matter hyperintensities. At outpatient review, she was asymptomatic and independent in all activities of daily living. Her blood pressure was controlled on therapy and her Folstein Mini Mental State Examination score was 25/30.

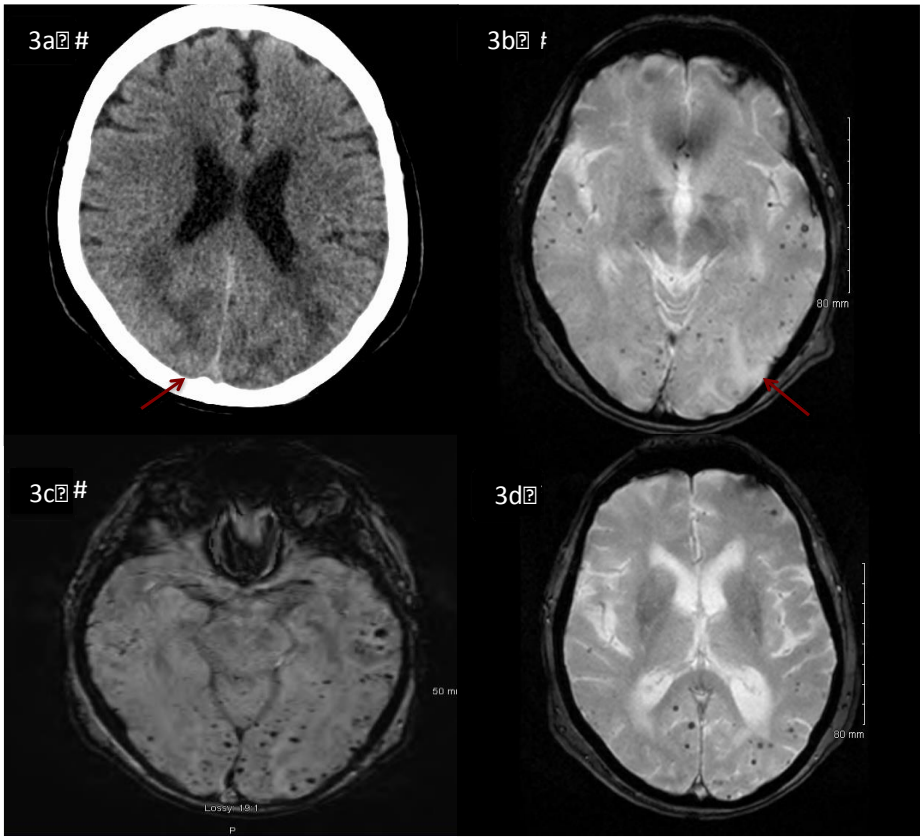


Figure 3a: Non-contrast axial CT brain showing asymmetrical vasogenic oedema involving bilateral occipital lobes with a 5mm hyperdense area in right occipital lobe .
Figure 3b: Axial T2 MRI brain showing hyperintense areas involving cortical and subcortical regions predominantly on the left parieto-occipital area.
Figure 3c: Axial SWI image showing multiple, punctate hypointense cortical lesions due to micro-hemorrhages.
Figure 3d: Axial T2 MRI Brain at 6-weeks interval following steroid therapy. There is remarkable regression of hyperintensities, consistent

Case 5

An 87-year-old woman experienced an episode of transient left-sided visual loss. Her symptoms resolved fully within fifteen minutes. She was orientated to place and time and could give a good account of preceding events. However, during her admission it became clear that she had difficulty recalling information from one day to the next. Her Montreal Cognitive Assessment (MoCA) was 19/30.

Non-contrast CT brain demonstrated a rounded hyperdensity in the right occipital lobe consistent with acute intraparenchymal haemorrhage (Figure 4a). Multiple smaller punctate hyperdensities, suggestive of subarachnoid haemorrhage was also seen. Contrast enhanced MRI brain demonstrated confluent periventricular and occipital T2-FLAIR hyperintensities (Figure 4b). SWI sequences demonstrated multiple microhaemorrhages throughout the brain, most numerous in the occipital lobes bilaterally (Figure 4d). Superficial siderosis overlying the cerebellar folia was also seen (Figure 4c).

These findings were consistent with probable CAA-ri. The patient was treated with intravenous methylprednisolone for five days and subsequently with a gradually tapering dose of oral prednisolone 30mg to a maintenance dose of 5mg. A repeat MRI brain performed seven days after steroid treatment demonstrated a modest reduction in the extent of subcortical oedema. Her MoCA score improved to 23/30. She continues to live independently with home supports.

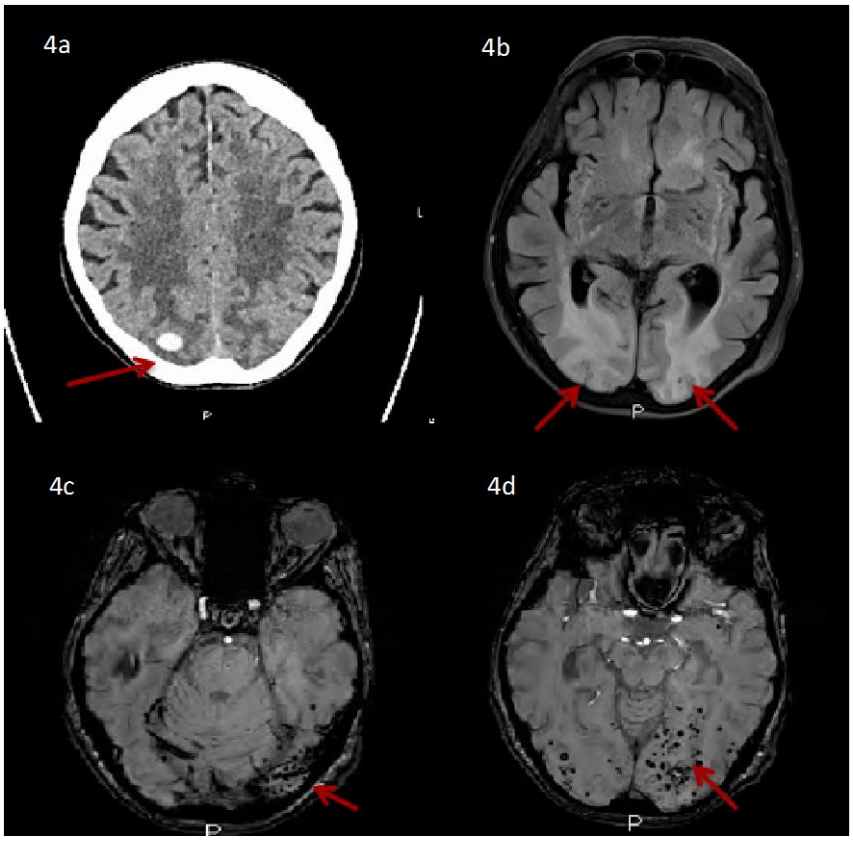


Figure 4a: Non-contrast axial CT brain showing rounded hyperintensity consistent with acute intraparenchymal haemorrhage in the right occipital lobe .
Figure 4b: Axial T2-FLAIR MRI brain showing diffuse subcortical hyperintensity consistent with vasogenic odema.
Figure 4c: Axial SWI image showing multiple, multiple punctate microhaemorrhages and linear hypodensity overlying the cerebellar folia consistent with superficial siderosis.
Figure 4d: Axial SWI image demonstrating many microhaemorrhages thoughout the occipital lobes bilaterally.

Discussion

Inflammatory cerebral amyloid angiopathy includes two entities with similar clinical and imaging features: amyloid beta related angitis (ABRA) and CAA-ri.[3] Inflammatory CAA is associated with a marked inflammatory response on both pathologic examination and imaging in comparison to typical CAA. ABRA is characterized on pathologic examination by vasculitis with intra-mural granulomas and regions of vessel wall destruction. In comparison, CAA-ri is characterized by perivascular inflammation and edematous gyri at autopsy.[3] It is not yet clear whether ABRA and CAA-ri are the same or separate conditions.[4]

Chung et al. proposed a clinical diagnostic criterion for probable CAA-ri to avoid histopathological confirmation with brain biopsy.[5] Auriel et al. modified Chung et al.'s criteria and created a clinical criterion for probable and possible CAA-ri.[6] They demonstrated the probable criteria had a sensitivity and specificity of 82% and 97% respectively for CAA-ri.[6] Auriel et al.'s modified criteria for probable CAA-ri suggests that CAA-ri should be considered in patients presenting (1) aged 40 years or older; (2) with at least one of the following symptoms: headache, decrease in consciousness, behavioural change, focal neurological signs and seizures whereby the presentation is not directly attributable to an acute intracranial haemorrhage ; (3) MRI showing unifocal or multifocal white matter hyperintensities that are asymmetric and extend to the subcortical white matter; (4) presence of one of more of the following: corticosubcortical haemorrhagic lesions, cerebral macrobleed, cerebral microbleed, or cortical superficial siderosis; (6) absence of neoplastic, infectious or other cause.[6] Definite diagnosis of CAA-ri requires brain biopsy.[7]

We report 5 cases of probable CAA-ri presenting with symptoms as mild as a numb chin, to symptoms as severe as tonic clonic seizures and encephalopathy. Our cases highlight the importance of neuroimaging, in particular obtaining SWI or GRE sequences, to assess for the presence of pre-existing microbleeds due to cerebral amyloid angiopathy. Tiny haemorrhages may only be seen on these sequence and not seen on T1 or T2 MRI sequences or on CT. The radiological findings of white matter hyperintesities with co-existent microbleeds enabled us to diagnose probable CAA-ri in all 5 cases. Microbleeds are present in almost 90% of patients with CAA-ri.[8] Leptomeningeal enhancement seen only in the oedematous region is another common finding in CAA-ri. [3,4] Case 2 and 3 highlight the need for frequent imaging to assess for any radiological signs of recurrence, since clinical features might not always be apparent. Case 3 and 5 highlights the dissociation between the mild clinical features and striking radiological abnormalities, a finding that has been reported previously.[9] Case 3 also highlights the importance of being aware of tumefactive cerebral amyloid angiopathy, which is often mistaken for a brain tumour.[10]

The 5 cases showed marked response to therapy with steroids, consistent with existing literature .[11] It is important to note that patients with CAA-ri can relapse when treatment with steroids is stopped, such as in case 2, whilst spontaneous remission can also occur.[12] Kinnecom et al, demonstrated in their study that 7 out of 12 patient had monophasic improvement with immunosuppressive therapy, while 3 out of 12 had initial improvement followed by symptomatic relapse while 2 out of 12 had no evident response to treatment. [13] A systematic review showed that 49 out of 85 patients improved with immunosuppressive therapy, while 12 remained the same and 24 deteriorated further. This study also showed that there was no difference in functional outcome between those patients treated with steroids alone in comparison with those treated with cytotoxic agents in combination with corticosteroids.[14] A recent study has demonstrated that immunosuppressive therapy is associated with clinical and radiological improvement of the presenting disease episode and reduced risk of subsequent recurrent disease flare over a median 2.7 year follow up period. [15]

It is important to be cognizant of other potential conditions that can present with similar clinical presentations and white matter hyperintesities on MRI brain including: posterior reversible encephalopathy syndrome, primary CNS vasculitis, primary CNS neoplasm, CNS lymphoma, acute disseminated encephalomyelitis, infections including progressive multifocal leukoencephalopathy.[3,4] The imaging findings in primary CNS vasculitis and CNS lymphoma can both improve with steroid therapy. In patients with CNS lymphoma, initiation of corticosteroid therapy prior to biopsy can obscure the histological diagnosis of primary CNS lymphoma.

Amyloid related imaging abnormalities (ARIA) represent the major side effect of amyloid-beta immunotherapy e.g. bapineuzumab for Alzheimer's disease. Interestingly imaging findings noted in ARIA consisting of ARIA-E (MRI evidence of vasogenic edema or sulcal effusios on FLAIR) and ARIA-H (MRI evidence of haemosiderin deposition suggestive of microhaemorrhages and superficial siderosis on T2 weighted GRE or SWI) are similar to the imaging findings noted in CAA-ri and ABRA.[16] Furthermore apoE e4/e4 genotype might potentiate the inflammatory response in all three conditions. [4,7,16] The similarities between ARIA and inflammatory CAA has lead to the suggestion that immunotherapy related vasogenic edema is a treatment induced counterpart to spontaneous inflammatory CAA.[15] Autoantibodies against amyloid-beta 1-40 and 1-42 forms have been shown to be elevated in CSF of patients with ABRA, CAA-ri and ARIA. These finding has given interest to whether amyloid beta autoantibodies could be a potential biomarker for inflammatory CAA.[4,16,17] The patients in our case series did not have CSF testing for amyloid beta 1-40 and 1-42.

In summary, our cases highlight the need to be aware of this condition, which can present with diverse symptoms ranging from mild to severe symptoms such as seizures and cognitive dysfunction. This is an important condition for clinicians involved in acute medical care to be aware of in order to diagnose and treat it appropriately. Brain MRI imaging to include either GRE or SWI sequences is essential and means that invasive brain biopsy can be avoided through recognition of the characteristic imaging findings. Prompt treatment with immunosuppression can improve symptoms in the majority of patients.

Declaration of Conflicts of Interest:

The authors have no conflicts of interest to declare.

Corresponding Author:
Dr. Poornima Jayadev Menon
Acute Stroke Service,
Mater Misercordiae University Hospital,
Dublin.
Email: poornimajmenon@gmail.com

References:

1. Kirshner H, Bradshaw M. The Inflammatory Form of Cerebral Amyloid Angiopathy or "Cerebral Amyloid Angiopathy-Related Inflammation" (CAARI). Current Neurology and Neuroscience Reports. 2015;15(8).
2. Eng J, Frosch M, Choi K, Rebeck G, Greenberg S. Clinical manifestations of cerebral amyloid angiopathy-related inflammation. Annals of Neurology. 2004;55(2):250-256.
3. Miller-thomas MM, Sipe AL, Benzinger TL, Mcconathy J, Connolly S, Schwetye KE. Multimodality Review of Amyloid-related Diseases of the Central Nervous System. Radiographics. 2016;36(4):1147-63.

4. Salvarani C, Hunder GG, Morris JM, Brown RD, Christianson T, Giannini C. Aβ-related angiitis: comparison with CAA without inflammation and primary CNS vasculitis. Neurology. 2013;81(18):1596-603.
5. Chung KK, Anderson NE, Hutchinson D, Synek B, Barber PA. Cerebral amyloid angiopathy related inflammation: three case reports and a review. J Neurol Neurosurg Psychiatry. 2011;82(1):20-6.
6. Auriel E, Charidimou A, Gurol ME, et al. Validation of Clinicoradiological Criteria for the Diagnosis of Cerebral Amyloid Angiopathy-Related Inflammation. JAMA Neurol. 2016;73(2):197-202.
7. Salam S, Anandarajah M, Al-bachari S, Pal P, Sussman J, Hamdalla H. Relapsing cerebral amyloid angiopathy-related inflammation: the wax and the wane. Pract Neurol. 2017;17(5):392-395
8. Mendonça MD, Caetano A, Pinto M, Cruz e silva V, Viana-baptista M. Stroke-Like Episodes Heralding a Reversible Encephalopathy: Microbleeds as the Key to the Diagnosis of Cerebral Amyloid Angiopathy-Related Inflammation-A Case Report and Literature Review. J Stroke Cerebrovasc Dis. 2015;24(9):e245-50.
9. Banerjee G, Alvares D, Bowen J, Adams ME, Werring DJ. Minimally symptomatic cerebral amyloid angiopathy-related inflammation: three descriptive case reports. J Neurol Neurosurg Psychiatry. 2019;90(1):113-115.
10. Kusakabe K, Inoue A, Matsumoto S, Kurata M, Kitazawa R, Watanabe H et al. Cerebral amyloid angiopathy-related inflammation with epilepsy mimicking a presentation of brain tumor: A case report and review of the literature. International Journal of Surgery Case Reports. 2018;48:95-100.
11. Kimura A, Sakurai T, Yoshikura N, Hayashi Y, Takemura M, Takahashi H et al. Corticosteroid therapy in a patient with cerebral amyloid angiopathy-related inflammation. Journal of Neuroinflammation. 2013;10(1).
12. Cousins O, Patel B, Khan U. Cerebral amyloid angiopathy-related inflammation: a complex case. Journal of Neurology, Neurosurgery & Psychiatry 2016;87:e1.
13. Kinnecom C, Lev M, Wendell L, Smith E, Rosand J, Frosch M et al. Course of cerebral amyloid angiopathy-related inflammation. Neurology. 2007;68(17):1411-1416.
14. Castro Caldas A, Silva C, Albuquerque L, Pimentel J, Silva V, Ferro J. Cerebral Amyloid Angiopathy Associated with Inflammation: Report of 3 Cases and Systematic Review. Journal of Stroke and Cerebrovascular Diseases. 2015;24(9):2039-2048.
15. Regenhardt RW, Thon JM, Das AS, et al. Association Between Immunosuppressive Treatment and Outcomes of Cerebral Amyloid Angiopathy-Related Inflammation. JAMA Neurol. 2020;
16. Difrancesco JC, Longoni M, Piazza F. Anti-Aβ Autoantibodies in Amyloid Related Imaging Abnormalities (ARIA): Candidate Biomarker for Immunotherapy in Alzheimer's Disease and Cerebral Amyloid Angiopathy. Front Neurol. 2015;6:207.
17. Yamada M. Cerebral amyloid angiopathy: emerging concepts. J Stroke. 2015;17(1):17-30.

Irish Medical Journal
Established 1867

Issue: Ir Med J; Vol 113; No. 8; P166

Sheehan's Syndrome: A Syndrome Becoming Rare Due to Improved Obstetric Care

N.C. Armstrong[1], M. Ryan[1,2]

1. Graduate Entry Medical School, University of Limerick, Limerick, Ireland.
2. Bon Secours Hospital Limerick at Barringtons, Limerick, Ireland.

Sheehan's syndrome occurs as a result of ischemic necrosis of the pituitary gland due to postpartum hemorrhage and was first described in 1937. Improvement of obstetric care including availability of blood products has led to a reduction in the prevalence of Sheehan's syndrome by seventy-five percent (75%) in the past half century in developed nations.[1] Symptoms usually develop years after delivery with one study reporting a mean duration between time of diagnosis and date of last delivery was 26.8 +/- 2.52 years.[2] The delay in symptom onset can lead to delayed or misdiagnosis which occurred in this case.

The patient presented in this report was diagnosed at age 41 after giving birth to two healthy boys (G2P2) 20 years earlier. This patient's second pregnancy was complicated by gestational hypertension, pre-eclampsia, and a prolonged labor. These are documented in the literature as significant risk factors associated with postpartum hemorrhage.[3] The combination of pre-eclampsia and gestational hypertension can lead to hypoperfusion of the enlarged pituitary gland. The patient had a prominent history of tobacco use and a history of Familial Hyperlipidemia.

This patient presented at the age of 41 (G2P2) with extreme fatigue, decreased libido, failure of lactation, and oligomenorrhea which led to clinical investigations. Laboratory findings in the patient revealed hypopituitarism characterized by decreased morning cortisol levels, low TSH, low T_3/T_4 levels, elevated LDL & triglyceride levels, low vitamin-D levels, decreased androstenedione and a moderate macrocytic anemia. At the age of 42 this patient had a DEXA scan revealing osteopenia in hip with a T score of -1.8. This was likely a result of the loss of normal estrogen levels and low vitamin D status, both of which are protective to bone.

This patient's current treatment regime is a hormone replacement regimen including steroid replacement, thyroid hormone replacement, vitamin D supplementation. This treatment regimen is in line with treatment protocol for Sheehan syndrome. Treatment of patients with hypopituitarism is the sum of the treatments of each of the individual pituitary hormonal deficiencies detected in a patient with pituitary or hypothalamic disease.

The patient in this report had non-pituitary related endocrine abnormalities which delayed diagnosis and treatment of her condition. These non-pituitary abnormalities included an extremely low Vitamin D level and a moderate macrocytic anemia.

The literature does not report similar findings, but it is plausible that these abnormalities were the result of other major pituitary and endocrine abnormalities. The literature also does not report any association between Familial Hyperlipidemia and increased risk for developing Sheehan's syndrome.

In summary, we report a case of Sheehan's syndrome in a 41-year-old woman characterized by a misdiagnosis and nonpituitary related abnormalities present alongside the classic clinical picture of Sheehan's syndrome. This case report supports the literature in the late onset of symptoms and should inform physicians to consider the diagnosis of Sheehan's syndrome when other endocrine abnormalities are present alongside the classic presentation of Sheehan's syndrome.

Corresponding Author:
Graduate Entry Medical School,
University of Limerick,
Limerick,
Ireland.
Email: nicholas.armstrong@mail.utoronto.ca

References:

1. Kristjansdottir, H. L., Bodvarsdottir, S. P., & Sigurjonsdottir, H. A. (2011). Sheehan's syndrome in modern times: A nationwide retrospective study in Iceland. 164: 349-354.
2. Karaca Z, Laway BA, Dokmetas HS, Atmaca H, Kelestimur F. Sheehan syndrome. Nature Reviews Disease Primers. 2016 Dec 22;2(1):1-5.
3. Dökmetaş HS, Kilicli F, Korkmaz S, Yonem O. Characteristic features of 20 patients with Sheehan's syndrome. Gynecological Endocrinology. 2006 Jan 1;22(5):279-83.

Irish Medical Journal
Established 1867

Issue: Ir Med J; Vol 113; No. 8; P167

Psychogenic Non-Epileptic Seizures: Hints for the Front-Line Doctors

M. Elseed[1], T. Abkur[2]

1. Department of Neurology, Hull Royal Infirmary, Hull, United Kingdom.
2. Department of Neurology, Southmead Hospital, Bristol, United Kingdom.

Dear Sir,

Psychogenic non-epileptic seizures (PNES) are common presentations to the emergency department and often lead to a diagnostic conundrum. Junior doctors often fail to distinguish presentations related to PNES. Consequently, patients are managed according to the seizure pathway which incorporates administration of antiepileptic drugs and intubation for refractory cases. This practice has short and long-term implications both for the patient and the health care system. In this short letter, we would like to highlight a few clinical clues, which when present, should point more towards PNES, allowing for early diagnosis and prompt initiation of appropriate interventions.

PNES are psychologically driven paroxysmal episodes that can mimic epilepsy. PNES are common with an estimated prevalence between 2 to 33 per 100.000[1]. It has a female preponderance with F:M ratio of 3:1[2].

History and careful observation are key when assessing patients with neurological problems, and particularly important in patients presenting with a fit. A detailed psychosocial history may reveal an underlying post-traumatic stress disorder related to physical or sexual abuse. Psychiatric comorbidities including depression, anxiety and personality disorders are more common in patients with PNES. Reporting vague somatic complaints, lack of concern about seizures and abnormal interaction with family may all be indicative of PNES.

Epileptic seizures are usually short-lasting (less than 1 to 2 minutes), whereas PNES tend to last longer. Patients with PNES show a tendency to close their eyes during the event and may resist eyelid opening. Motor activity in PNES is variable and often has a fluctuating course with waxing and waning which contrasts with stereotyped epileptic seizures. Certain patterns may also suggest PNES including forward pelvic thrusting, rolling from side to side and wild thrashing although it is worth noting that rarely frontal lobe seizures may present with unusual motor movements. Furthermore, brief pauses in rhythmic movement occur more commonly in PNES.

The immediate postictal period may also provide useful hints that help distinguish between the two entities. Ictal or postictal crying is a specific indicator of PNES, although it lacks sensitivity.

Rapid recovery would also lean itself towards PNES, and suggestibility may trigger another episode. Interestingly, some patients with PNES can recall the period when they appeared unconscious and we strongly advise clinicians to ask patients about their memory of the events. Autonomic changes due to activation of the sympathetic system (e.g. tachycardia and pupillary dilatation) are suggestive of an epileptic fit. PNES patients may even bite the tip of their tongue, lip, or the insides of their cheeks in contrast to epileptic patients who usually bite the side of the tongue. It is important to note that urinary incontinence is not a helpful distinguisher and can occur in both.

In conclusion, making a correct and early diagnosis of PNES is crucial to avoid not only the unwanted drug toxicity and unnecessary intensive care unit admissions which are not without risks, but also the financial burden on the health care system. Additionally, it enables the initiation of appropriate psychological interventions to improve outcomes. Finally, always ask for help from your friendly neurologist when doubt exists.

Corresponding Author:
Dr Mohammed Elseed
Department of Neurology,
Hull Royal Infirmary,
Hull,
United Kingdom.
Email: Mohammed.Elseed@hey.nhs.uk
Phone: +44 (0) 1482 875875

References:

1. Benbadis SR, Allen Hauser W. An estimate of the prevalence of psychogenic non-epileptic seizures. Seizure 2000; 9:280.
2. Meierkord H, Will B, Fish D, Shorvon S. The clinical features and prognosis of pseudoseizures diagnosed using video-EEG telemetry. Neurology 1991; 41:1643.

Irish Medical Journal
Established 1867

Issue: Ir Med J; Vol 113; No. 8; P168

The Pandemic Within Medical Education

L. O'Byrne[1], B. Gavin[2], F. McNicholas[2,3,4]

1. School of Medicine, University College Dublin, Ireland.
2. Department of Child and Adolescent Psychiatry, SMMS, University College Dublin, Ireland.
3. Children Health Ireland, Crumlin, Dublin 12, Ireland.
4. Lucena Clinic Rathgar, Dublin 6, Ireland.

The unprecedented upheaval generated by the COVID-19 pandemic has given many the opportunity for reflection. For medical students and educators, although disruptive, this pandemic has necessitated contemplation on our clinical training and how it is delivered.

Medical education, and the practice of such, is reliant on a dynamic and adaptive curriculum. Various traditional pedagogical approaches are protected within medical education, including lecture-based curricula delivered through a teacher-centred model. This particular approach can manifest as a culture within an organisation or discipline which is disinclined to embrace new and emerging practices and technologies[1]. More recently attention has focused on expediting the pre-clinical phase of medical training and moving students toward the clinical environment as early as possible[2]. The pandemic has forced certain changes in the form of almost exclusive online and non-face-to-face training, and surreptitiously might offer an opportunity to examine and revise the educational process.

The conversion from University-based to online learning highlights the possibility of a novel learning format. This move, however, has been associated with several issues, such as equity in access to stable internet connection and hardware as well as a reduction in the formal and informal educational dialogue between students, colleagues and between students and staff. Thus, this transition isn't proffered as a perfect solution. However, there is no major evidence that offline learning works better, and various advantages are also unique to online learning[3]. Distance teaching affords many students the opportunity to learn at their own pace, in a familiar environment. Further, the ability to access recorded materials at any time is ideal for international students who may be afforded greater opportunities to spend time at home via internet learning. Online modules can be produced cheaply, specifically to be shared nationally and internationally across several colleges. Such intercollegiate collaboration may ensure that medical students transitioning to intern doctors are at equal levels in terms of skill and preparation. Currently, numerous popular online resources exist and are widely used by students as adjuncts to their University education. By neglecting this fact, medical schools are out of step with how students are taking learning into their own hands. Online modules designed specifically for distance learners may incorporate many of these resources, strengthening the educational process.

Online learning technologies bring cost-saving innovations in higher education, with reduced labour costs through larger class size and less face-to-face interaction being most applicable[4]. Student savings in terms of reduced accommodation and travel costs are welcome, pertinent for graduate students saddled with tuition fees in excess of €60,000.

Such freedom may broaden the accessibility of graduate entry medicine in Ireland, which currently has cost as a significant barrier. Lastly, the consideration of alternative teaching modalities is important in itself.

Given that the practice of medicine relies on cutting-edge technology and up-to-date knowledge, our medical education should not be afforded the opportunity of complacency. Although there are many aspects of medical education which can't be transitioned online, such as patient contact, opportunistic clinical and educational encounters, including distance learning, may soothe the rigidity of the current curriculum.

Corresponding Author:
Lorcan O'Byrne
University College Dublin
Email: Lorcan.obyrne@ucdconnect.ie

References:

1. Pettersson F, Olofsson AD. Implementing distance teaching at a large scale in medical education: A struggle between dominant and non-dominant teaching activities. Educ Inf Technol. 2015;
2. Skochelak SE, Stack SJ. Creating the Medical Schools of the Future. Academic Medicine. 2017.
3. Pei L, Wu H. Does online learning work better than offline learning in undergraduate medical education? A systematic review and meta-analysis. Med Educ Online. 2019;
4. Deming DJ, Goldin C, Katz LF, Yuchtman N. Can online learning bend the higher education cost curve? In: American Economic Review. 2015.

Irish Medical Journal
Established 1867

Issue: Ir Med J; Vol 113; No. 8; P169

Mild COVID-19 Despite End Stage Liver Disease

E. Glynn[1], J. Ryan[1,2]

1. Department of Gastroenterology, Beaumont Hospital.
2. Royal College of Surgeons in Ireland, Dublin 2.

Dear Sir,

With over 12 million confirmed cases and worldwide mortality exceeding 550,000 persons, COVID-19 infection has quickly become a global threat to public health[1].

In patients with chronic liver disease, emerging reports suggest an increased risk of morbidity and mortality from COVID-19. Given the immunocompromised status of these patients and high rates of comorbidities, one might expect increased susceptibility to infection. Whether the disease course in these patients is more severe, with increased rate of complications and mortality has yet to be firmly established.

We discuss a 41-year-old Caucasian unemployed gentleman with advanced liver disease who contracted COVID-19. This patient's background history was significant for alcohol related liver disease (Child Pugh B, MELD 17), severe chronic thrombocytopenia <10 $x10^9$/L, BCLC stage C hepatocellular carcinoma deemed for best supportive care, grade 1 oesophageal varices and poorly controlled type 2 diabetes. The patient was actively drinking, with an alcohol intake exceeding 60 units weekly. Cirrhosis was diagnosed 7 years prior and complicated by recurrent hospital admissions for sepsis and hepatic encephalopathy.

The patient presented with fever and cough to the emergency department in mid-March, three weeks following the index case of COVID-19 in Ireland. On arrival, he was tachycardic and febrile however was not in respiratory distress. Laboratory investigations were not significantly deranged from baseline; platelets 3 $x10^9$/L, INR 1.42, bilirubin 31. Chest X-ray examination was normal and arterial blood gas showed no evidence of respiratory failure. This patient tested positive for COVID-19. As per hospital policy, this patient received supportive management with no additional specific medical therapy for COVID-19.

The inpatient course was relatively uncomplicated without the need for supplementary oxygen. The patient remained clinically stable, albeit persistent thrombocytopenia. There was no decompensation of liver disease such as ascites, encephalopathy or variceal haemorrhage. He was discharged well 14 days post diagnosis.

An initial pooled analysis from early COVID data in China, suggested that chronic liver disease was not strongly associated with progression to severe disease in COVID-19[2].

Since then, studies emerging from Europe and the US have shown that patients with chronic liver disease may indeed have worse outcomes. A recent US study of 2780 COVID-19 patients has also shown a significantly increased risk of mortality in those with known liver disease compared to patients without liver disease. Furthermore, the relative risk of mortality increased if the patient had cirrhosis[3].

Recent data released from the COVID-Hep international registry would further support these findings. Of the 833 cohort of patients with chronic liver disease who developed COVID-19, 379 patients were cirrhotic, with alcohol related liver disease being the leading aetiology. Of this cirrhosis subgroup, 45% had further decompensation of their chronic liver disease, with an overall 33% mortality[4].

This patient had established end stage liver disease, untreated liver cancer, diabetes and had already survived years longer than the initial prognosis he was afforded. In contrast with studies showing adverse outcomes in those with cirrhosis, COVID-19 was not a significant burden for this patient.

Corresponding Author:
Dr Emily Glynn
Gastroenterology Department,
Beaumont Hospital,
Dublin 9.
Email: glynnem@tcd.ie

References:

1. WHO Coronavirus Disease (COVID-19) Dashboard [Internet]. Covid19.who.int. 2020 [cited 21 June 2020]. Available from: https://covid19.who.int
2. Lippi G, de Oliveira MHS, Henry BM. Chronic liver disease is not associated with severity or mortality in Coronavirus disease 2019 (COVID-19): a pooled analysis. Eur J Gastroenterol Hepatol. 2020;2019:2019–20.
3. Singh S, Khan A. Clinical Characteristics and Outcomes of COVID-19 Among Patients with Pre-Existing Liver Disease in United States: A Multi-Center Research Network Study. Gastroenterology. 2020;(April).
4. COVID-Hep registry [Internet]. Covid-hep.net. 2020 [cited 21 June 2020]. Available from: https://covid-hep.net/updates.html

Irish Medical Journal
Established 1867

Issue: Ir Med J; Vol 113; No. 8; P170

Compliance with Immunosuppression for Rheumatic Disease During the COVID-19 Pandemic

A. O'Leary, A. Urbaniak, M. Phelan, L. Harty

Department of Rheumatology, South Infirmary Victoria University Hospital, Cork.

Dear Editor,

Reassuring data is continuing to emerge regarding the safety of continued use of drugs for rheumatic disease during the COVID-19 pandemic [1,2,3]. Patients on immunosuppressant medication and their doctors have however been concerned about increased risk during the COVID-19 crisis.

A New York case series of 86 patients with pre-existing rheumatic disease who developed COVID-19 showed that the percentage of patients on biologic therapy was higher among those not requiring hospital admission [1]. Two reports from the Lombardy region of Italy have reached similar conclusions. Monti et. al. reported that of 320 patients with rheumatic disease who were treated with a biologic or DMARD, 8 had a confirmed or strongly suspected diagnosis of COVID-19, and only one patient required hospital admission [2]. A second report from Damiani et al which looked at a large population found that patients on biologic therapy for psoriasis were at higher risk of symptomatic COVID-19 and hospitalisation compared to the general population, however their risk of ICU admission or death was similar to that of the control group [3].

An Irish interim clinical guidance document regarding immunosuppressant therapy during the COVID-19 pandemic was released by the national Health Service Executive on 6th April 2020. This document outlined which medications were likely to confer an increased or high risk of infection and identified other risk factors for serious infection including co-morbidities and advanced age. No recommendation was made to consider routinely stopping these medications [4].

Our rheumatology department wished to establish the confidence of our patients in continuing their immunosuppression during the COVID-19 pandemic. We performed a survey of our outpatient population to analyse compliance with treatment. We sent a postal survey to 643 rheumatology outpatients requesting them to indicate their immunosuppressant medications and whether or not they remained compliant throughout the pandemic.

We received 398 completed surveys after a two-week period, which was a 62% response rate. Of these, 6% of patients reported stopping one or more medications during the pandemic (n=23), whereas 94% continued taking all of their anti-rheumatic medication as prescribed.

Patients taking at least one DMARD made up 75% of patients (n=299), the majority of which were taking methotrexate (n=271). Of this group, 287 out of 299 patients continued to take at least one DMARD (96%). Seven patients were taking 2 DMARDs, and two of these patients stopped taking one DMARD.

There were 195 patients taking biologic therapy (59%). Nine people reported stopping a biologic during the COVID-19 pandemic; whereas 95% of patients continued to take their biologic as prescribed.

There were 37 patients who were prescribed a steroid medication – the dose was not specified. Two of these patients reported stopping their steroid during the pandemic (5%).

As far as we are aware, none of those who returned completed surveys have had COVID-19. Very few patients stopped treatment during the pandemic. It is encouraging that the majority of our outpatients continued to be compliant in accordance with current guidelines. We infer that our patients are confident in their immunosuppressant therapy.

Corresponding Author:
Annie O'Leary
SHO in General Medicine
Department of Rheumatology,
South Infirmary Victoria University Hospital,
Cork.
Email: annie.oleary93@gmail.com

References:

1. Haberman R, Axelrad J, Chen A, Castillo R, Yan D, Izmirly P, et al. Covid-19 in Immune-Mediated Inflammatory Diseases — Case Series from New York. New England Journal of Medicine. 2020.
2. Monti S, Balduzzi S, Delvino P, Bellis E, Quadrelli VS, Montecucco C. Clinical course of COVID-19 in a series of patients with chronic arthritis treated with immunosuppressive targeted therapies. Annals of the Rheumatic Diseases. 2020;79(5):667-8.
3. Damiani G, Pacifico A, Bragazzi NL, Malagoli P. Biologics increase the risk of SARS-CoV-2 infection and hospitalization, but not ICU admission and death: Real-life data from a large cohort during red-zone declaration. Dermatologic Therapy.n/a(n/a):e13475.
4. Pate M KC, Kane D, Murphy D, Irvine A, Buckley M, Kerins D, et al. HSE COVID-19: Interim Clinical Guidance: Immunosuppressant Therapy [Clinical Guidance Document]. Covid-19 HSE Clinical Guidance and Evidence Repository, National Health Library & Knowledge Service, HSE2020 [updated 12/05/20]. Available from: https://hse.drsteevenslibrary.ie/ld.php?content_id=32936271. Accessed 26/08/20.