

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

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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 adolescence¹. Given its prevalence, impact on quality of life, economic burden, and association with asthma it can be described as a major respiratory disease². 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 sinuscopy, 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 benefits²⁵. 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.

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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 Otolaryngology 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 ARGAs study with general practitioners: Impact of medical education on asthma/rhinitis management. *Respiratory Medicine*. 2012;106(6):777-785.
15. Van Hoescke 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, McMurrin 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.