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Paediatric Cervical Spine Radiograph Interpretation

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Dear Editor,

The Major Trauma Audit Paediatric Report 2014-2019 revealed that 5% of Irish paediatric major trauma patients had a spinal injury[1]. Given that approximately 80% of paediatric spinal injuries occur in the cervical spine[2], it is prudent to ensure that doctors working in Emergency Departments (EDs) which receive paediatric trauma are competent in the interpretation of paediatric cervical spine radiographs. We sought to evaluate the competence and confidence of doctors working in a Paediatric ED with regard to cervical spine radiograph interpretation.

The Picture Archiving and Communication System (PACS) was interrogated, and 45 patients were identified who underwent cervical spine radiograph for acute traumatic neck pain between January and June 2022. The clinical notes of these patients were studied to establish if the treating doctor had documented whether or not the series was adequate and whether any abnormalities were identified. This was then compared to the formal radiology reports. Whilst there were no definite fractures identified by radiologists in these patients, abnormalities identified included loss of normal cervical lordosis, asymmetry on odontoid peg view and rotation or tilt.

To assess confidence, an online survey was shared with 20 non-consultant hospital doctors (NCHDs) working in the paediatric ED, 16 of whom responded. The NCHDs had varying levels of experience and were from different backgrounds including general practice, emergency medicine and paediatrics. All of them interpret paediatric radiographs in the ED as part of their practice.

In relation to competence and accuracy in the interpretation of the radiographs, results revealed that only 17.7% (n=8) of the radiographs were deemed to be inadequate by the NCHDs, compared to 42.2% (n=19) by the radiologists. In addition, only 30% (n=10) of the 33 studies documented as normal by the NCHDs were also reported as entirely normal by the radiologists.

Regarding confidence, 50% (n=8) of NCHDs rated themselves as below average at identifying abnormalities on a cervical spine radiograph, while only 37.5% (n=6) claimed to have average or above average confidence to declare a radiograph normal. In total, 87.5% (n=14) said that they would benefit from further training in the interpretation of paediatric cervical spine radiographs.

This study reveals a lack of confidence to interpret cervical spine radiographs amongst NCHDs in a paediatric ED. In general, NCHDs appear more confident to recognise abnormalities than to identify truly normal radiographs. In addition, it was revealed that the ED NCHDs frequently did not recognise or document when a radiograph was inadequate. In general, the NCHDs described radiographs as normal more often than the radiologists who more frequently described rotation, asymmetry, and loss of cervical lordosis.

Previous studies have shown that the skills to detect radiographic abnormalities are unlikely to be acquired based on experience alone and that formal guidance and training is required[3]. This study identifies the need for further training and the development of a paediatric cervical spine radiograph interpretation tool to assist NCHDs.

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