

The value of comparative radiographs in the diagnosis of extremity fractures in children by doctors in the emergency department

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Introduction: The practice of routinely requesting radiographs of both limbs (injured and unaffected side) in a suspected extremity fracture in a child for comparison purposes is widespread and accepted in emergency departments in South Africa, despite the fact that it has been discouraged in literature.

Aim: The aim of this study was to evaluate the ability of junior emergency department doctors to diagnose selected common paediatric extremity fractures without and with comparative radiographs.

Method: Study participants evaluated a set of 30 paediatric extremity radiographs, first without comparison radiographs and then 5 days – 7 days later with comparison radiographs. They indicated the presence or absence of a fracture and their level of confidence in making a diagnosis. The selected radiographs included normal films as well as subtle and obvious fractures at the following sites: hand or wrist or forearm, elbow and foot or ankle or lower leg.

Results: The overall ability to detect paediatric extremity fractures (sensitivity) was unchanged (80%) with and without comparison radiographs ($p = 0.28$). There was, however, a significant (7.8%) increase in detection rates of elbow fractures only, when comparison radiographs were added ($p = 0.0068$). There was a significant improvement in confidence levels (12%) amongst the participants with comparative radiographs compared to without them ($p = 0.0001$). The ability to detect normal paediatric extremity radiographs (specificity) improved by 15.3% with the addition of comparison radiographs ($p \leq 0.0001$).

Conclusion: There is an overestimation of the value of comparison radiographs in diagnosing paediatric extremity fractures. The findings of this study do not support their routine use in the emergency department. Selective use is justified. Training of junior emergency medicine doctors to recognise paediatric fractures should be prioritised rather than relying on comparative radiographs.

Note: A selection of conference abstracts: RSSA/SASPI Paediatric Imaging Congress, 03–06 November 2016, Spier Estate, Stellenbosch, South Africa. Faculty collaborators: Professor Kassa Darge (Body Imaging, University of Pennsylvania, Philadelphia, USA), Professor Edward Lee (Thoracic Imaging, Harvard University, USA), Professor Beverley Newman (Cardiac Imaging, Stanford University, California, USA), Professor Kimberly Applegate (Image Gently and Body Imaging, Emory University, Atlanta, USA) and Professor Savvas Andronikou (Thoracic Imaging, University of Bristol, UK) supported by South African Paediatric Radiologists, co-ordinated by Dr Jaishree Naidoo, President of the African Society of Paediatric Imaging and Head of Division of Paediatric Radiology, Charlotte Maxeke Johannesburg Academic Hospital.

Paediatric doctors' error rate in detection of paediatric elbow injuries in Rahima Moosa Mother and Child Hospital

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Introduction: Elbow fractures are common paediatric injuries that are often misdiagnosed. Quality imaging and accurate interpretation are essential to avoid complications which can result in growth disturbance.

Aim: This study aimed to determine error rates of elbow injuries by medical doctors in the paediatric department in Rahima Moosa Mother and Child Hospital.

Method: A total of 28 doctors participated in the study. Twenty preselected radiographs (10 normal and 10 abnormal) were projected in a PowerPoint slide show, and the doctors completed a tick sheet to assess whether the X-ray was normal or not. This was followed by a 20-minute tutorial on the approach to paediatric elbow X-rays. Then the same images were projected in a different sequence and with a more detailed tick sheet for the readers to evaluate.

Results: The detection rate of elbow fractures by paediatric doctors is poor. Although there was an improvement in the detection of fractures before (50.7%) and after (53.9%) the tutorial, the difference was not statistically significant (paired *t*-test; *p* = 0.16).

Conclusion: The paediatric elbow is a common site where pathology is missed on X-rays. The study showed that the detection rate of elbow fractures by the paediatric doctors is poor, even after a tutorial on the radiological features. We recommend ongoing in-service training of clinicians to maximise the detection of fractures.

Note: A selection of conference abstracts: RSSA/SASPI Paediatric Imaging Congress, 03–06 November 2016, Spier Estate, Stellenbosch, South Africa. Faculty collaborators: Professor Kassa Darge (Body Imaging, University of Pennsylvania, Philadelphia, USA), Professor Edward Lee (Thoracic Imaging, Harvard University, USA), Professor Beverley Newman (Cardiac Imaging, Stanford University, California, USA), Professor Kimberly Applegate (Image Gently and Body Imaging, Emory University, Atlanta, USA) and Professor Savvas Andronikou (Thoracic Imaging, University of Bristol, UK) supported by South African Paediatric Radiologists, co-ordinated by Dr. Jaishree Naidoo, President of the African Society of Paediatric Imaging and Head of Division of Paediatric Radiology, Charlotte Maxeke Johannesburg Academic Hospital.

Quality assessment of thyroid ultrasound and implementation of a standard reporting template to be used in training hospitals

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Background: Ultrasound is the conventional and best imaging modality used to visualise the thyroid and thyroid-related diseases. An adequate ultrasound report can significantly influence clinicians in making management decisions in patients with such diseases.

Aim: The aim of this study was to critically assess the quality of thyroid ultrasound reports generated at Charlotte Maxeke Johannesburg Academic Hospital (CMJAH), a training hospital in Johannesburg, South Africa.

Methods: A retrospective cross-sectional study was performed. The quality of thyroid ultrasound reports was determined by using a tick sheet – a sheet having items that should be included in a thyroid ultrasound report. The contents of the tick sheet were guided by the current literature (including Thyroid Imaging Reporting and Data System [TIRADS] and Thyroid, Head and Neck Cancer Foundation [THANC]). The tick sheet was designed by the principal investigator and supervisors. The quality of reports of training radiologists, sonographers as well as qualified radiologists were documented. Comparisons of the quality of reports were made between the above groups of reporters.

Results: A retrospective analysis of thyroid ultrasound reports conducted at CMJAH revealed that the reports are of poor quality and little value to the referring clinician. The quality of the reports was poor regardless of the training level or experience of the reporter.

Conclusion: Because of the poor quality of the reports, a standard thyroid ultrasound reporting template has since been introduced at CMJAH.

Note: A selection of conference abstracts: RSSA/SASPI Paediatric Imaging Congress, 03–06 November 2016, Spier Estate, Stellenbosch, South Africa. Faculty collaborators: Professor Kassa Darge (Body Imaging, University of Pennsylvania, Philadelphia, USA), Professor Edward Lee (Thoracic Imaging, Harvard University, USA), Professor Beverley Newman (Cardiac Imaging, Stanford University, California, USA), Professor Kimberly Applegate (Image Gently and Body Imaging, Emory University, Atlanta, USA) and Professor Savvas Andronikou (Thoracic Imaging, University of Bristol, UK) supported by South African Paediatric Radiologists, co-ordinated by Dr. Jaishree Naidoo, President of the African Society of Paediatric Imaging and Head of Division of Paediatric Radiology, Charlotte Maxeke Johannesburg Academic Hospital.

Paediatric gastrointestinal volvulus: Twisting our heads around unusual diagnoses

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Introduction: Volvulus of the gastrointestinal tract is a rare entity. Clinical symptoms are often non-specific, and imaging plays a vital role in the identification and diagnosis.

Aim: An educational poster highlighting the specific radiological features of gastric, midgut, caecal and sigmoid volvulus.

Conclusion: Recognition of the radiological appearance of volvulus of the gastrointestinal tract is essential to make a prompt diagnosis and thus avoid life-threatening complications.

Note: A selection of conference abstracts: RSSA/SASPI Paediatric Imaging Congress, 03–06 November 2016, Spier Estate, Stellenbosch, South Africa. Faculty collaborators: Professor Kassa Darge (Body Imaging, University of Pennsylvania, Philadelphia, USA), Professor Edward Lee (Thoracic Imaging, Harvard University, USA), Professor Beverley Newman (Cardiac Imaging, Stanford University, California, USA), Professor Kimberly Applegate (Image Gently and Body Imaging, Emory University, Atlanta, USA) and Professor Savvas Andronikou (Thoracic Imaging, University of Bristol, UK) supported by South African Paediatric Radiologists, co-ordinated by Dr Jaishree Naidoo, President of the African Society of Paediatric Imaging and Head of Division of Paediatric Radiology, Charlotte Maxeke Johannesburg Academic Hospital.