

ORIGINAL ARTICLE

RADIOLOGY EDUCATION: A PILOT STUDY TO ASSESS KNOWLEDGE OF MEDICAL STUDENTS REGARDING IMAGING IN TRAUMA

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Background: Trauma remains one of the most frequent presentations in emergency departments. Imaging has established role in setting of acute trauma with ability to identify potentially fatal conditions. Adequate knowledge of health professionals regarding trauma imaging is vital for improved healthcare. In this work we try to assess knowledge of medical students regarding imaging in trauma as well as identify most effective way of imparting radiology education.

Method: This cross-sectional pilot study was conducted at Aga Khan University Medical College & Khyber Girls Medical College, to assess knowledge of medical students regarding imaging protocols practiced in initial management of trauma patients. **Results:** Only 40 & 20 % respectively were able to identify radiographs included in trauma series. Very few had knowledge of correct indication for Focused abdominal sonography in trauma. Clinical radiology rotation was reported as best way of learning radiology. **Conclusion:** Change in curricula & restructuring of clinical radiology rotation structure is needed to improve knowledge regarding Trauma imaging.

Keywords: Trauma, Medical Education, Ultrasound, Radiography, Terrorism, Curriculum

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INTRODUCTION

Trauma remains to be a frequent and often life threatening condition in emergency departments across the globe. Set protocols for imaging in trauma setting are nowadays practiced worldwide. Trauma series of radiographs including frontal projection radiographs of Chest, Pelvis and lateral shoot through view of cervical spine, along with Focused abdominal sonography in trauma (FAST) are currently included in major guidelines for management of trauma.¹⁻⁶

The rationale of this study was to assess knowledge of medical students regarding imaging protocols practiced in initial management of trauma patients. This study also aimed at identifying main source of information for learning radiology by medical students.

MATERIAL AND METHODS

This was a cross sectional study conducted at The Aga Khan University Medical College, Karachi (AKU-MC) & Khyber Girls Medical College, Peshawar (KGMC). Participants for this study were medical students in clinical years of their program. (Years 3, 4 and 5). Students enrolled in programs other than Medicine or those currently in pre-clinical years of study were excluded.

This study was a pilot project with investigators planning a further large scale study aimed at identifying & improving loopholes in radiology curricula nationwide. For this study total

number of participants was 60 (30 from each institution respectively).

Review of literature was conducted on Pubmed, Google scholar and PakMediNet (for Pakistani journals). No study assessing knowledge of Medical students about Trauma imaging in our country was found upon literature search.

For data collection, participants were approached in person. After obtaining an informed consent they were asked to fill a questionnaire. SPSS-17 was used for data analysis. Statistical analysis was mainly performed using prevalence ratios and chi square test of independence. This study did not pose any risks to participants.

RESULTS

Results from AKU-MC and KGMC respectively were as follows; 70% & 20% respectively had handled a case or observed management of a case of trauma. 40% and 20% respectively had knowledge regarding the trauma series of radiographs and were able to correctly select the included radiographs from a list of radiography examinations. 75% and 30% respectively were able to identify the abbreviation Ultrasound FAST, however only 25% and 10 % respectively correctly identified its indication & purpose (Figure-1).

In response to questions regarding specialized teaching in field of trauma imaging, 30 & 40% from AKU-MC and KGMC respectively responded in favour of trauma imaging being made part of regular curriculum.

Most of the students found clinical radiology rotations to be most helpful in learning radiology (65 & 40% from AKU-MC and KGMC respectively). This was followed by clinical rotations other than radiology (e.g., Surgery, Medicine and allied specialties). Dedicated lectures were regarded as the least useful method for acquiring radiology education.

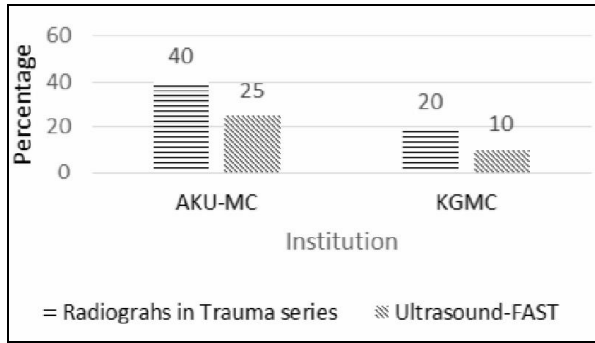


Figure-1: Knowledge of trauma imaging

DISCUSSION

Overtime there have been lots of advancements in the field of Trauma (involving emergency medical services, Accident & emergency Departments, Imaging facilities and Surgery). It has in turn resulted in increased survival rates and decreased disabilities. For Purpose of management trauma can be classified according to its type (e.g., Penetrating, Blunt, Crush etc.) or according to body region it affects.¹ Some conditions resulting as a consequence of trauma do not manifest early but can be life threatening (e.g., pneumothorax).

This study was conducted in cities of Karachi and Peshawar, Pakistan. Being major metropolitans, both cities face an increasing burden of trauma cases presenting to Accident & Emergency services. Moreover both cities are victims to increased incidence of terrorism and hence deal a lot of patients with trauma resulting as a result of terrorist activities. These patients often present with firearm, blunt or blast injuries requiring management according to set international protocols.^{1,6}

Imaging plays an important role on management of acute trauma. Nowadays there are set protocols of trauma imaging that are widely practiced worldwide to prevent complications of trauma. Trauma imaging encompasses use of a number of modalities (e.g., Plain Radiographs, Ultrasonography and Computerized Tomography), however in this article we focused on Plain Radiographs included in Trauma series along with Ultrasound-FAST (Focused Abdominal Sonography in Trauma). These imaging modalities are also a component of Advanced Trauma Life Support (ATLS) protocols.

The Trauma series of x-rays consist of plain radiographs of cervical spine (in lateral shoot through view), along with frontal projections of chest radiograph & pelvic radiograph. The main aim of this protocol is to check for radiologically evident cervical spine injuries (the sensitivity of plain films for cervical spine is 75%),^{2,3,5} thoracic emergencies like pneumo- or haemo-thorax as well as mediastinal widening. Unstable Pelvic fractures which may result in exsanguination are also detected by pelvic radiograph. It has been reported that Pelvic radiographs in Antero-posterior views can uncover 90% of pelvic injuries.²⁻⁵

Ultrasound-FAST is indicated in all cases of Blunt Abdominal Trauma and has replaced the historically performed Diagnostic Peritoneal Lavage.^{6,7} It is a quick, inexpensive and non-invasive way to check for presence of free fluid in abdomino-pelvic cavity. It is also free of radiation exposure and hence safe for pregnant women with trauma. Serial Ultrasound-FAST performed in patients admitted in Trauma services can significantly reduce the need for Abdominal CT Scan to assess Blunt abdominal trauma.⁸⁻¹⁰ Extended FAST or E-FAST is a new technique in which besides normal FAST examination, bilateral haemothorax and upper anterior chest wall to check for evidence of pneumo- or haemo-thorax.¹¹⁻¹⁵ Ultrasound-FAST also evaluates the heart for potentially life threatening pericardial tamponade.

Overall there was a lack of knowledge regarding trauma imaging in both included groups. Despite the fact that one of the two included institutions has a dedicated Emergency room rotation for medical students, lack of knowledge regarding trauma imaging warrants further modification in curricula.

Most students reported clinical radiology rotations as the prime source of learning radiology followed by clinical rotations other than radiology. In keeping with these results, further modifications in objectives of clinical radiology rotation are needed in order to familiarize students with imaging protocols in setting of acute trauma, their interpretation and implications.

CONCLUSION

Emphasis and improvement is needed for education in field of Trauma Imaging in order to improve knowledge and provide quality healthcare.

AUTHOR'S CONTRIBUTION

SS conceived the idea with support from NN. SS, MAS and NS worked on literature search, data collection and manuscript preparation. NN reviewed and refined the manuscript.

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