DIAGNOSTIC ACCURACY OF EXTENDED FOCUSED ASSESSMENT SONOGRAPHY IN PENETRATING ABDOMINAL TRAUMA

Ahmed Abdelfatah Sabry,[1] Hassan Abdelsalam Fathy,[2] Khaled Salah Mostafa,[3] Ahmed Mostafa Bekheet Mohamed[3]

Department of General Surgery,[1] Department of Diagnostic and Interventional Radiology,[2] Department of Emergency Medicine,[3] Faculty of Medicine, Alexandria University.

Introduction

Extended Focused Assessment Sonography in Penetrating Abdominal Trauma (EFAST) has emerged as a valuable tool in the initial evaluation of patients with abdominal injuries. This diagnostic modality encompasses a systematic ultrasound examination aimed at detecting free fluid, organ injury, and other signs indicative of intra-abdominal pathology following penetrating trauma. The accuracy of EFAST in identifying these injuries is of paramount importance, as timely and accurate diagnosis can significantly impact patient management and outcomes. Therefore, understanding the diagnostic accuracy of EFAST in penetrating abdominal trauma is essential for clinicians to make informed decisions regarding patient care. In this introduction, we will explore the current evidence surrounding the diagnostic accuracy of EFAST, including its sensitivity, specificity, and overall reliability in detecting intra-abdominal injuries resulting from penetrating trauma. By elucidating the strengths and limitations of EFAST in this context, we aim to provide insights that can inform clinical practice and contribute to the optimal management of patients with penetrating abdominal trauma.

Aim of the work

The aim of this study was to evaluate the diagnostic accuracy of abdominal Extended Focused Assessment with Sonography for Trauma (E-FAST) as initial assessment for patients with penetrating abdominal trauma as compared to chest and abdomen computed tomography, and to emergent exploratory laparotomy.

Subjects and Methods

This study included patients with penetrating abdominal trauma presented to the Emergency Department of Alexandria Main University Hospital. Sample size of 130 patients was needed to evaluate the diagnostic accuracy of abdominal Extended Focused Assessment with Sonography for Trauma (E-FAST) as initial assessment for patients with penetrating abdominal trauma as compared to chest and abdomen computed tomography, and emergent laparotomy.

Results

In this study, 130 patients with penetrating abdominal trauma were evaluated. The majority were male, in middle age. Common comorbidities included hypertension and diabetes mellitus. Extended Focused Assessment Sonography (E-FAST) was performed on all patients, with 70%, and 72.5% showing positive findings of intraperitoneal collection in both groups, respectively. Additionally, hemothorax and pneumothorax were detected in 14% and 6% of patients in Group 1 and in 16.25% and 11.25% in Group 2, respectively, using E-FAST. CT-Abdomen scans were performed on 50 patients, revealing various injuries, such as retroperitoneal injury (46.0%), small bowel injury (20.0%), and colonic injury (18.0%). Emergent laparotomy was performed on 80 patients, leading to the identification of liver injury (18.8%), small bowel injury (16.3%), and diaphragmatic injury (12.5%), among others.

Table 1: Distribution of studied cases according to demographic data.

Demographic Data	Group 1	Group 2
Gender		
▪ Male	No. 35 (54.3%)	No. 42 (52.5%)
▪ Female	No. 29 (45.7%)	No. 38 (47.5%)
▪ Total	No. 64 (100.0%)	No. 80 (100.0%)
Age (years)		
▪ 18 – 65	No. 50 (78.1%)	No. 65 (81.3%)
▪ > 65	No. 14 (21.9%)	No. 15 (18.7%)
Min. – Max	20 – 68	19 – 72
Mean ± SD	39.8 ± 13.2	45.6 ± 15.7
Median	42.5	43.0

Table 2: The diagnostic accuracy (sensitivity, specificity, and accuracy) of E-FAST in diagnosis of injuries after penetrating abdominal trauma.

Imaging Modalities		Sensitivity	Specificity	PPV	NPV	Accuracy
E-FAST	CT-Chest	91.29	99.01	98.4	96.74	90.7
	CT-Abdomen	93.62	98.79	95.10	93.67	93.94
	Emergent Laparotomy	95.52	98.81	97.36	96.44	95.94

Conclusion

The study demonstrated significant correlations between different radiological investigations and clinical outcomes in patients with penetrating abdominal trauma. The findings suggest potential clinical implications, such as the utility of E-FAST in initial assessments, the importance of CT scans for injury identification and severity assessment.