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The FAST accuracy in major pelvic fracture for decision making of abdominal exploration : systematic review and meta-analysis

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Abstract

Background : In blunt trauma patients, major pelvic fracture is often associated with abdominal organ injury. According to ATLS, Focused Assessment with Sonography for Trauma (FAST) is typically used to assess the presence of hemoperitoneum, and when combined with the patient's hemodynamics, this will facilitate in making the decision to perform abdominal exploration. However, hemoperitoneum in major pelvic fracture is sometimes caused by the extension of a pelvic hematoma into the abdominal cavity. If an abdominal exploration is performed in these situations, patients will loss the tamponade effect in the pelvic cavity and will progress to exsanguinous bleeding, so negative abdominal exploration should be avoided.

Objective: Aim of the study is to determine accuracy of FAST in the diagnosis of significant intraabdominal haemorrhage and whether to do abdominal exploration in major pelvic fracture.

Method: Systematic review of the literature studies from PUBMED and SCOPUS databases during 2009 to 2019. Original published only human study were included. Two researcher independently performed extraction of the data and agreement of results using consensus. We also included the accuracy of FAST from retrospective review of the patients who admitted in Acute Care Surgery service at Ramathibodi Hospital from 2016 to 2019. The meta-analysis was done for sensitivity and specificity combining with our institution data using the random effect model. We attempted to identify significant factor associated accuracy of FAST using meta-regression. We consider the definition of significant intraabdominal haemorrhage is haemorrhage that mandate abdominal exploration.

Results: We concluded a total of 6 retrospective studies with 677 patients. A mean patients age is 40.8 year-old. Mechanism of injury is motor vehicle commission(MVC) 39.44%, fall from height 9.45%, motorcycle collisions(MCC) 5.91%, bicycle accident 3.69%, pedestrain injury 3.69%, and body assault 0.3%. Average ISS score is 32.5(24.1-50). Overall mortality rate is 5.32%. The pooled sensitivity and specificity of FAST is 81% and 89%, repectively. The accuracy of FAST that has significant intraabdominal haemorrhage is 92% (95% CI 89%,94%). Meta-regression did not show significant effect of injury severity score(ISS) on accuracy of FAST.

Conclusion: Our meta-analysis reveals that FAST in major pelvic fracture is accurate to detect significant intraabdominal hemorrhage (hemorrhage needs surgical control). And, when used in conjunction with the presence of unstable hemodynamics, we can make a decision to perform abdominal exploration with expectation to find significant intraabdominal organ injury.

Biography:

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