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Editorial

Focused Assessment Scan in Trauma, "Good or not Good Enough"

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Editorial

Karl &Friederich Dussik first time presented their idea of using ultrasound as a diagnostic device in a paper he wrote in 1941 in Vienna, entitled: "On the possibility of using ultrasound waves as a diagnostic aid." Karl published his first ultrasound images in 1947. Since then the ultrasound has evolved over the period of years, starting with the graphic presentation to 3D. The use of ultrasound in trauma began in the 1990s as focused assessment scan in trauma, which then led to, extended FAST. Despite its increasing use, there has been an ongoing debate about its accuracy and usefulness in managing the trauma patients. Always we have been taught it is not good at ruling out but pretty accurate in identifying free fluid.

Over the period of years, several studies have been published to measure its usefulness in trauma. Some have found its use better than the others. Its use in trauma has been evaluated in multiple ways, such as efficiency, effectiveness, time to surgery and accuracy. Arrillaga in 1999, in his prospective study of 331patients, evaluating the accuracy, efficiency, and cost-effectiveness of bedside US in comparison with CT and DPL. The US was 92% sensitive, 99% specific, 99% accurate and 2.8 times cheaper [1].

Boulanger in 1999 did the prospective study using FAST and no-FAST algorithms in managing the 706 trauma patients to compare its accuracy as compared to CT and cost effectiveness. He found the diagnostic accuracy of the FAST and no-FAST algorithms was 99% and 98%, respectfully [2]. Rose in 2001 published the study proving the use of ultrasound could reduce the number of CT scans in trauma patients. The study was done in a level II trauma center. 104 in the control group received CT and only 37 out of 104 in the ultrasound group received CT. They found a difference of 52% versus 36% in 208 patients managed without ultrasound and with ultrasound respectively [3].

Miller in 2003 did the study to determine the diagnostic accuracy of FAST in blunt abdominal trauma. FAST was used as a screening tool and CT as a confirmatory test. The study showed ultrasound has a sensitivity of 42%, a specificity of 98%, a positive predictive value of 67%, a negative predictive value of 93%, and an accuracy of 92% [4].

Melniker in 2006 conducted a randomized controlled trial compared the time to operative care as the primary outcome in 440 trauma patients managed without ultrasound and with ultrasound. He published 64% reduction in the time to operative care in patients managed using ultrasound as part of the management [5].

Nishijima in 2012 published the analysis of 34 studies to conclude that when comparing with other investigation the bedside ultrasound has the highest accuracy, but we cannot rule out abdominal injuries with a normal scan [6]. Nunes in 2001 did a prospective study on 156 patients using 6-point ultrasound with CT and laparotomy as the gold standard. He published that bedside ultrasound has 69% sensitivity, 100% specificity, 100% positive predictive value, 95% negative predictive value, and overall 95% accuracy [7].

Stengel in 2001 performed a meta-analysis on the use of FAST and included30 trials with 9047 patients. He concluded, despite its high specificity, ultrasonography has an unexpectedly low sensitivity for the detection of both free fluid and organ lesions [8]. Stengel in 2015 then published another review and concluded that use of FAST in trauma patients probably could reduce the number of CT scans and at best has no impact on morbidity and mortality. However, we still need to remember its low sensitivity which could have the impact on its diagnostic yield [9].

I believe what we are sure about FAST is, its safety and ready availability. Also in cases of the positive FAST scan, this will speed up patient's trip to the theater. Other studies have pointed out FAST being less than useful for diagnosing solid organs injuries. The common theme though is its low sensitivity (ruling out) but very high specificity (ruling in) and accuracy in diagnosing free fluid in trauma patients. However, FAST still can be used with care in the assessment of trauma patients because it still can identify free fluid and could save potential radiation exposure (CT) in cases of positive scan and expedite patient transfer to definitive care.

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