
TRAUMA SCANS : ULTRASOUND AND RADIONUCLIDE STUDIES

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OBJECTIVE : To report the imaging of trauma patients by ultrasound and radionuclide studies.

METHODS : Ultrasonography and radionuclide scans were performed in six patients after various types of injuries.

RESULTS : In all cases, the imaging studies were useful in clinical management.

CONCLUSIONS : Ultrasound and radionuclide studies should be used in selected cases of trauma patients.

Ultrasonography and nuclear scans are used for many decades to evaluate blunt abdominal trauma,¹⁻⁴ e.g. liver, spleen, kidney, uterus etc. Localized impact such as in sports injury (collision with fist, foot, knee or elbow) normally produces injury limited to structures adjacent to the impact. Diffuse impact is most frequently the result of a road traffic accident and is characterized by both widespread impact and deceleration components, causing injury at the points of impact and also remote from these areas.⁵ Hepatosplenic scan (185 MBq 99m Tc colloid i.v.) offers a rapid reproducible method of assessment in upper abdominal trauma with less than 2% false negative and 7% false positive results.⁶ Hypovolemic shock may cause bone marrow uptake of radio-colloid particles.⁷

MATERIALS AND METHODS.

Six patients were referred to our centre for evaluation of various types of injuries by ultrasound and radionuclide scans (Siemens sonoline 2 and Single head planar gamma camera).

RESULTS

Case 1 :

A boy of age 14 years coming from Kurigram suffered a blunt abdominal trauma. Ultrasound scan (USG) revealed a 3x5 cm semicystic area in the right hepatic lobe. Radio-colloid liver scan (99m Tc tin colloid particles) showed photon-deficient area of the same size in the same location. The patient improved gradually on conservative treatment.

Case 2 :

Following a road traffic accident, a man of 25 years had severe left loin pain and hematuria. Intravenous urography (IVU) showed normal right kidney, but left kidney was not visualized. Nephrosonogram revealed perirenal hematoma around left kidney. Radionuclide renogram (99m Tc DTPA) by computerized gamma camera (Siemens Microdelta) showed normal right kidney, but left renal arterial phase was a bit smaller than the right. This patient required a nephrectomy.

Case 3 :

A man of 25 years had a bamboostick injury on right loin resulting in a big ecchymosis. USG shows normal liver & kidneys, but subcutaneous hematoma

of 55x89 mm was noted which was improved over a few days.

Case 4 :

A multiparous woman of 35 years came with profound shock and severe abdominal pain following fall in the bathroom. USG revealed ruptured uterus and fetal distress. Fetal heart movement was present but feeble. Fetal biparietal diameter (BPD) was 51mm, femur length (FL) was 31 mm both correspond to about 21 weeks of gestation. She needed emergency hysterectomy.

Case 5 :

A man of 37 years had bile peritonitis following cholecystectomy on post-operative day.² USG showed considerable amount of fluid bile in the region of porta hepatis. He needed a repeat surgery immediately for repair of the bile leak from common bile duct.

Case 6 :

A man of 21 years had blunt trauma on the right side of the chest and complained of cough. USG revealed right pleural effusion. (Figure-1)

DISCUSSION

These six cases of trauma show the importance of non-invasive imaging procedure e.g. USG, nuclear scan etc. The sensitivity of the FAST (Focused Abdominal Sonography for Trauma) scan has ranged from 63% to 100%² -- a number of studies have not included clinical outcome, instead comparing sonography with computed tomography (CT), diagnostic peritoneal lavage or laparotomy ; these have had sensitivities in the range of 63% to 69%. In analysing these series with lower sensitivities, McGahan and associates stated two facts : (a) we can improve sensitivity by learning from our previous errors ; and (b) the focused abdominal

sonography for trauma (FAST) scan will not detect all hollow-or solid-organ injuries.² Sonography can also identify pleural effusions, pneumothoraces, pericardial effusions and potential cardiac rupture in patients with chest trauma.² If large pockets of fluid are noted throughout the abdomen, Richards and associates often send these patients to surgery without confirmatory CT, especially if they are not hemodynamically stable.⁸

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