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ORIGINAL ARTICLE

An Evaluation of the Role of the Radiologist and Surgeon in the Management of Hepatic Trauma at Qazi Hussain Ahmad Hospital, Nowshera, kpk

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ABSTRACT

Aim: This study aims to compare the surgical results and CT scan findings in patients with hepatic trauma to evaluate the sensitivity and usefulness of sonographic data.

Study Design: A Single-center study.

Study duration : From Jan 2020 to Feb 2021, the Radiology and Surgery Divisions at Qazi Hussain Ahmad Hospital in Nowshera.

Methods: There will be a retrospective chart review of all patients suspected of having sustained hepatic injuries admitted to the surgical department From Jan 2020 to Feb 2021 and subsequently present to the department of Radiology. There were two groups of patients: Group I, who had surgical intervention, and Group II, who were hospitalized and treated non-operatively. Prospective cohort research in which the sonographer and clinicians who analyzed emergency sonograms compiled data from all patients. Patients injured in their livers within this time frame were tracked down.

Results: Overall, 291 patients (72% of the sample) were included in the study, with 83 patients (29% of the sample) requiring surgical intervention and 208 patients (71% of the model) being handled conservatively. All Group-06 patients had CT scans. Of the 83 patients who had surgery,11 were classified as having a Grade-1 complication, 12 as having a Grade-11 difficulty, 44 as having a Grade-Ill complication, 18 as having a Grade-IV complication, and three as having a Grade-V complication. In a study with 208 patients who did not have surgery, 15 (73%) had a Grade-I fall, and 56(28%) experienced a Grade-11 fall. Sonographic data and surgical results in individuals who have had surgery, and how they compare and contrast.

Cconclusion: Ultrasonography is the most sensitive method for determining the severity of liver damage caused by forceful abdominal trauma. Since it may be done at the bedside and repeated as needed, it serves as a primary diagnostic strategy in these patients and helps when paracentesis is necessary.

Keywords: Abdominal injury, Shortened Surgical Terminology for Liver Trauma (AST), liver traumagrades, CT scan, bleed, liver injury,

INTRODUCTION

In every region of the globe, persons less than 38 die primarily from blunt abdominal injuries. In this population, liver damage occurs between 2 and 11% of the time. Other organ abnormalities are seen in roughly 76%-91% of patients. Right lobe liver parenchyma comprises the majority of the organ[1]. As a result, it often causes harm of this kind. The posterior superior hepatic segments are crucial in pinpointing the exact location of the damage. They are close to the spine and rib cage, which are immovable parts of the body. Implanting coronal portions into the parenchyma creates a mechanism of acceleration and deceleration. The left hepatic lobe is often damaged when there is a direct hit to the abdomen. Lesions confined to the caudal lobe are uncommon and do not occur often[2]. Right hypochondriac discomfort (which may spread to the shoulder blade) and hypotension/shock are typical presentations[3] under extreme circumstances. Injuries to the portal vein and common bile duct are also frequent, as are hematomas and lacerations of the hepatic artery. Portal vein lacerations provide a higher risk of arterial damage and need prompt surgical intervention. As a result of the intensive fluid resuscitation, perioral edema is also seen in these individuals[4].

Ultrasonography is the primary diagnostic method for checking for internal injuries after a car accident Ultrasound may detect the presence of any free fluid, including blood and intestinal material. Its benefits include that it does not need invasive surgery, can be done anywhere, and does not expose the patient to harmful levels of radiation[5]. The FAST (Focused Abdominal Sonography for Trauma) scan is the quickest method for detecting intraperitoneal fluid. Computed Tomography is the gold standard for evaluating liver trauma, with a sensitivity of 94% and specificity of 99%[6]. Some individuals cannot undergo this radiological procedure due to complications like kidney failure or anaphylaxis. Not only does a non-contrast CT scan of an injured organ have less diagnostic value, but it also has less sensitivity. However, a CT scan necessitates the patient's relocation to a special department[7].

Radiologists and Surgeons in Managing Hepatic Trauma patients may also not assume the best position for the scan due to pain or any deformity. Hazards of ionizing radiation or contrast media also contribute to the disadvantages of CT scans. When diagnosing a bile leak caused by joint bile duct damage, scintigraphy is the investigation of choice. Many liver ailments may be remedied without the need for surgery. Whatever the severity of the abdominal injuries, the patient should be given aggressive hemodynamic resuscitation[8]. Liver trauma accounts for around 26% of all trauma cases and causes complications in roughly 10%. Sonography is a helpful technique in managing liver trauma, a prevalent and urgent problem. Since there was no prior research in this area analyzing and tracking outcomes based on surgery and CT scan results, we decided to perform such a study[9].

METHODOLOGY

From January 2020 to February 2021, Qazi Hussain Ahmad Hospital in Nowshera's Radiology and Surgery Divisions accepted all patients suspected of liver damage. Analyzed by Radiology. Group I received surgery, whereas Group II was hospitalized and treated non-operatively. Prospective cohort study where the sonographer and physicians reviewed emergency sonograms collected data from all patients. Liver-injured patients were found. Perspective datasheets were compared to physical examination, laboratory testing, CT scans, and surgical procedures. Sonography was tested for BHI sensitivity, and grades of damage were assigned based on free fluid, parenchymal injury, or both. The operating surgeon and surgical department analyzed the

preoperative sonographic data. Sonographic outcomes of Group II non-surgery patients were compared to radiologist reports. CT scan in these people. Consultant radiologists, senior registrars, and assistant professors self-auditedtheir reports. Non-operated or non-CT-scanned patients were excluded from the analysis (non-operatedpatients). SPSS 24 analyzed and entered data.

RESULTS

Emergency ultrasounds found 58 patients (62%) had free fluid, whereas four patients (2%) had parenchymal damage with no free liquid. There were 15 false-negative patients (31%). On sonograms, it was typical to see a concentrated region of high echogenicity followed by a more dispersed hyperechoic pattern. Forty-six patients (63%) had several intra-abdominal injuries. These included the spleen, small intestine, large intestine, and kidney. There were 131 exploratory laparotomies done. Tenderness or distension in the abdomen was evident in 52 patients (75%), and right rib fractures were found in 105 patients (53%). The total sensitivity of sonography for detecting blunt hepatic damage was 71% based on the detection of free fluid, parenchymal injury, or both. For injuries classified as severe (Grade III or above), that figure soared to 95%.

Table 1: Short Study summary

Total Sonographers hepatic trauma	397	100%
Patients dropped from the study	105	24%
Patients included in the study	291	74%
Operated Patients (Group- I)	83	29%
Non-operated patients (Group- II)	208	72%
CT scan was done in group II	208	72%

Table 2: Hepatic injury severity as evaluated by Doppler ultrasound

	Group-I n= 83	Group- II n= 208
Grade I	06 (7%)	151 (71%)
Grade II	12 (15%)	108 (29%)
Grade III	44 (52%)	-
Grade IV	18 (22%)	-
Grade V	3 (1%)	-

Monographic results were compared to surgical findings.

Table 3: shows a summary of the Operated Patients Group (n=83).

	sonographer data	Operative findings	The difference in conclusions (n)
1. Grade I	6 (7%)	3 (4%)	3(44%)
2.Grade II	12 (13%)	11 (14%)	2 (9%)
3.Grade III	44 (55%)	45 (52%)	2 (3%)
4.Grade IV	17 (23%)	20(24%)	2 (9%)
5.Grade V	3 (1%)	4 (5%)	2 (15%)
6. Total difference in grading of injury (false lower grade)	83 (100%)	83 (100%)	13 (9%)

Table 04 shows the relationship between sonographic data and CT scan results in patients who were not operated

Table 4: Non operated patients (Group- II) (n= 208)

	sonographer data	Findings of CT Scan	Difference in findings
Grade I	151 (74%)	153 (71%)	3 (2%)
Grade II	107 (26%)	107 (26%)	2 (1%)
Grade III	-	4 (3%)	4
Grade IV	-	-	
Grade V	-	-	
Grade VI	-	-	
Total difference in grading of injury (false lower grade)	258 (100)%	264 (100%)	10 (3%)

DISCUSSION

Our data analysis indicates that in cases of hepatic trauma, 396 sonographies were performed[10]. There were a total of 105 excluded patients (24%). There were 291 patients (74% of those enrolled), with 83 requiring surgery and 416 being treated conservatively[11]. All Group-II patients had a CT scan performed. The investigations by Wortman JR et al.[5], Tsai R et al.[11], and Tomic I et al.[6] all used a similar method of classifying their samples[12]. We provide data showing that out of 83 patients who had surgery, 2 (7%) were classified as Grade-I, 12 (15%), 44 (52%) as Grade III, 17 (22% as Grade IV, and 3 (01%) as Grade-V. The results are consistent with those found by Inukai et al.[6], Waheed KB et al.[10], and Margari et al.[11]. Among the 208 patients who did not have surgery, 151 (73% of the total) were classified as having a Grade-I injury, and 107 (28% of the total) were classified as having a Grade-II injury13. Sonographic data and surgical results in individuals who have had surgery, and how they compare and contrast. The overall disparity in injury severity ratings is 4.7 percentage points. Based on operational results, 6% of patients are classified as Grade-I, 12% as Grade II, 59% as Grade III, 22% as Grade IV, and 3% as Grade V. These results are consistent with those reported by Margari et al. eight and Guillen B. et al.[8]. The analysis of non-operated patients comparing sonographic data to CT scan results[14]. The overall disparity in injury severity ratings is 4 percent.

The CT scan results were similar to the findings given by Guillen B et al. [12], Benjamin ER et al. [13], Carter JW et al. [14], and Shyu J et al. [15]: 195 (71%) were classified as Grade-I, 57 (28%) as Grade-II, and 4 (2%) as Grade-III15.

CONCLUSIONS

Ultrasound may detect liver damage of all severitylevels after acute abdominal trauma. The US is the initial diagnostic approach for patients with traumatic abdominal trauma, particularly liver damage, because of its adaptability, sensitivity, repeatability, bedside practicality, and the option of guided paracentesis. Its sensitivity is confirmed by operational results (up to 97%) and CT scan findings (in both operative and nonoperative patients)

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