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A Clinical Study on Management of Splenic Injuries in Abdominal Trauma

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ABSTRACT
From the prospective observational study on 25 cases admitted with abdominal trauma and splenic injury that are hemodynamically stable in the department of general surgery. Maximum number of cases was in 26-35 years age group (40%). 84% of cases were in 15-45 years age. 96% of cases were males. M: F ratio was 24:1.Road traffic accident was the most common cause of splenic (72%). And blunt trauma was most common type of injury. All (100%) patients presented with pain abdomen. Vomiting was present in 40% cases and distension of abdomen in 20%. Most common sign on admission was tenderness (100%) followed by guarding (80%) and Rigidity (40%). Rib fracture was the most common associated injury (60%). CT-scan abdomen was most sensitive investigation to grade the splenic injuries. Commonest grade of splenic injury was grade II (28%). 9 cases (36%) were managed operatively whereas 16 (64%) cases were managed non operatively. All the 9(36%) cases who underwent splenectomy were vaccinated. Wound infection was most common post-operative complication.

INTRODUCTION

With economic growth, industrialization and rapid growth of automobile industries, the number of road traffic accidents (RTA) is sharply on the rise in developing countries like India. The abdomen is a very vulnerable site with many vital organs and abdominal injuries are often life-threatening. Blunt trauma abdomen accounts for approximately 79% of all abdominal injuries[1-3]. The spleen and liver are the most commonly injured intra-abdominal organs following blunt trauma[4-6]. In up to 60% of patients, the spleen is the only organ injured, with a mortality rate of roughly 8.5%[2-4]. Over 75% of splenic injuries occur due to motor vehicle collisions. Operative management by splenectomy was the standard of care for blunt splenic trauma till recent years. This was based on the assumption that spleen has limited physiological role in adulthood and conservative management has a very high likelihood of potentially fatal haemorrhagic crisis. However, with the realization of immunological function of spleen in adults, recognition of overwhelming infections occurring post splenectomy and the advancement in imaging and monitoring modalities, conservative management of blunt splenic trauma has gained considerable acceptance[6,7]. Non-operative approach has now become the recommended mode of treatment in hemodynamically stable patients as it avoids the surgical and post-surgical complications of splenectomy[9-11]. Based on recent studies, as well as data from the American College of Surgeons National Trauma Data Bank, 10% to 15%of patients admitted with blunt splenic injury will undergo an urgent splenectomy within six hours of admission, primarily due to ongoing bleeding and hemorrhagic shock[12]. The remaining patients with blunt splenic injury are considered for non operative management and most of them are successfully managed in this manner.

MATERIALS AND METHODS

Study Design: It is a Prospective observational study.

Source of Data: Data will be collected from patients admitted in Department of General Surgery with splenic injuries in abdominal truama. Data collected by history taking, clinical examination, radiological and hematological investigations and appropriate operative, non operative methods.

Sample Size: 25 patients with splenic injury are selected.

Inclusion Criteria:

- Patients above 15 years of age.
- Patients admitted with history of abdominal trauma and subsequently diagnosed as having splenic injury shown by CECT abdomen.

Exclusion Criteria:

- Patients associated with head injury.
- Patients >15 years of age.
- Patients of abdominal trauma with other visceral injuries than spleen.

Patients attending the emergency department with history of abdominal trauma and satisfying the inclusion criteria were takenup for study. Demographic data like name, age, sex, occupation etc were recorded. Mechanism of trauma, time of the event, time to reach the emergency department, modes of presentation, vital signs were recorded in the proforma. All cases suspected to have splenic injury and hemodynamically stable underwent CT scan and grading of the injury was done. Splenectomy and conservative management was done depending on the grade. Intra operative findings, post operative complications were noted. Cases were followed up for 3 months.

RESULTS AND DISCUSSIONS

From the prospective observational study on 25 cases admitted with abdominal trauma and splenic injury who are hemodynamically stable in the department of general surgery. In the study majority of the cases were between 26-35 years which is a common age for occupational trauma and road traffic accidents. Youngest of the cases was 15 years boy with trauma and oldest was 57 years. 60% of the cases were between 26-45 years. Mean age of presentation was 33.52 years. In this study male cases were predominant and only 1 case was female. In the study road traffic accidents account for majority (72%) of the cases with abdominal trauma followed by fall from height and assault. Blunt trauma accounts for 100% of the cause of abdominal injury in our study. No case of penetrating injury was noted. In the study all the patients had pain abdomen at the time of presentation and only 40% had associated vomiting, 20% had abdominal distension. In the study all case had abdominal tenderness and 80% had guarding and only 40% rigidity. CT grading showed majority of the cases with grade II injuries. In the study majority had Grade I and II injuries on CT grading and hence conservative management was done in 64% of cases and 36% of cases had operative management. In the study 60% cases had rib fractures, 32% cases had external injuries. None of the cases had bowel injuries. In the 9 operated cases 3 had wound infection, 2 had wound dehiscence, 1 had pneumonia. In the study 64% of cases had a hospital stay of around 6-15 days.

In the present study, the maximum number of cases was in second decade (24%) and third decade ((36.6%). This indicates trauma is more common in young people. The Range was from 15-57 years. In our study male to female ratio was 24:1. In the study, the most

common symptom was pain abdomen (100%). Vomiting was the second most common symptom 10 (40%) followed by distension of abdomen 5 (20%). Out of 25 cases in the study, all had abdominal tenderness at the time of admission. Local or generalized guarding was present in 20 (100%) cases. 5 (20%) patients presented with shock. Systolic BP of less than 90 mmHg at admission was considered as shock. Out of 5 patients in shock 1 had associated liver injury. Rigidity was observed in 10 (40%) cases and abdominal distension was observed in 4 (16%) cases. The most common cause of splenic injury in abdominal trauma was Road traffic accidents (72%) in this study which is comparable to most other studies. In the study, duration of stay varied from 1-23 days with a mean duration of 12.4 days. Mean duration for operated cases was 11.5 days and that for non operated cases was 20 days. In the study, x-ray erect abdomen was done in 25 cases. It detected rib fracture in 15 cases. In our study USG abdomen was done in 25 cases. In 18 cases it diagnosed splenic laceration, but in 7 cases it failed to diagnose splenic laceration which was subsequently diagnosed using CT-scan. In our study CT-scan was done in all 25 cases and it was positive in all the cases and was found to be the best modality to diagnose and subsequently to select method of management. Out of 25 cases in our study 9(36%) were managed surgically and 16 (64%) were managed conservatively, that is by observation. Among 9 patients who were managed surgically all underwent splenectomy. Among 9 cases of splenectomy group, 2 cases had grade V splenic injury, 5 cases grade IV, 2 cases grade III injuries. 16 cases managed conservatively by observation, out of these 6 cases had grade I, 7 cases had grade II splenic injury and 3 cases had grade III splenic injuries. Non operative management consisted of I.V Fluids, blood transfusion, nasogastric aspiration, antibiotics, analgesics, serial haemoglobin estimation. All 9 cases, who underwent splenectomy were vaccinated with all 3 vaccines. There was no mortality in operative group whereas 6 patients had morbidity in the form of post operative complications. The results were comparable to a study by Sinha S *et al.* High incidence of splenectomy in our study is attributed to number of patients with higher grades of splenic injury. Also, unlike in western countries where patients present within few hours of injury and in relatively stable clinical state71 most of our patients presented to the emergency department in poor clinical state within 6-15 hours of injury.

CONCLUSION

Spleen is most commonly solid organ injured organ after blunt and penetrating trauma to abdomen. Improvement in assessment of injuries with adjuncts such as Focussed Assessment with Sonography for Trauma (FAST), Abdominal Computed Tomography (CT) has allowed reliable identification of splenic injury. CT scan is a valuable adjunct for detecting the grade of organ injury, presence of hemoperitoneum and intra parenchyma or extra parenchyma vascular abnormalities. All of these findings may influence the decision making in the management. From the study we conclude that

- Non operative management (NOM) has evolved to be the standard of care in hemodynamically stable patients.
- Only the most severe splenic injuries are taken for operative management.

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