ORIGINAL ARTICLE

A STUDY ON DEMOGRAPHIC PROFILE, CLINICAL PRESENTATION AND MANAGEMENT OF CASES WITH PENETRATING ABDOMINAL INJURY

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ABSTRACT

Background: Penetrating abdominal injuries may cause considerable troubles at emergency service. The rate of non-therapeutic or negative laparotomy has been reported to be approximately 30% if routine laparotomy is performed in all penetrating injuries. The present study was conducted with an objective to find out the demographic profile, clinical presentation, line of management, complications, morbidity and mortality occurring after such injuries and recent trends in management of penetrating abdominal injury.

Methodology: The present study was conducted on patients admitted with penetrating injury in the New Civil Hospital, Surat. The data of all patients regarding age, gender, laboratory and radiological investigations, surgical procedures, injured organs, length of hospital stay, follow-up were examined.

Results: There were total 38 cases involved in the study. Among the sex distribution, 37 (97.4) cases were male and 1 (2.6) cases were female. Most common region for external injury was epigastrium followed by umbilical. The commonest complication encountered in this study was shock (37%) & wound sepsis (18%). Average stay among the cases was 10 days. Most of the patient (70%) was discharge with in a period of 07-10 days.

Conclusion: The main problem in management of these patients are management of shock, recognition and management of multiple organ injury in emergency, control of hemorrhage, it's appropriate management. When in doubt regarding penetration of peritoneum, it is better to open and see in these circumstances then to wait and watch.

Keywords: Penetrating Abdominal Injury, peritoneum, laparotomy, wound sepsis

INTRODUCTION

Trauma is an unsolved epidemic of modern society[1]. Trauma is in general has been the most common cause of death in the civilian during active working hours. Abdominal trauma has been a subject of major concern as it has been rightly that abdomen is a magic box[2]. All traumatic lesions require emergency treatment with no previous knowledge of the patient medical or social history except for occasion of natural climatic. Trauma is potentially preventable.

Penetrating abdominal injuries may cause considerable troubles at emergency service. The rate of non-therapeutic or negative laparotomy has been reported to be approximately 30% if routine laparotomy is performed in all penetrating injuries[3,4]. Abdominal penetrating injuries are two way blunt and penetrating[5]. In most cases which is difficult to find whether peritoneum has been pierced or not. Even if peritoneum pierced, it is difficult to judge whether it has pierced internal underlying organ.

The present study was conducted with an objective to find out the demographic profile, clinical presentation, line of management, complications, morbidity and mortality occurring after such injuries and recent trends in management of penetrating abdominal injury.

MATERIALS AND METHODS

The present study was conducted on patients admitted with penetrating injury in the New Civil Hospital, Surat from July 2011 to November 2013 having penetrating injuries of abdomen. The data

of all patients regarding age, gender, laboratory and radiological investigations, surgical procedures, injured organs, length of hospital stay, follow-up were examined. Assessment of the area penetrated was also made and depending on that operative procedure was undertaken. Associated injuries if any were treated simultaneously.

Initial resuscitation measures were applied to all patients including tetanus and antibiotic prophylaxis. Decision for exploration was taken after resuscitation and after giving primary lifesaving treatment in form of intravenous fluid, IV antibiotic, injection TT and as on when inotropic support.

Regular clinical examination and careful watch like monitoring vitals and investigating the patient was done postoperatively. Postoperatively patients were subjected to broad spectrum antibiotics and fluids. The electrolyte balance of the cases was maintained. Nasogastric aspiration was routinely employed. Patient was kept nil orally till signs of intestinal motility returned post operatively. Chest physiotherapy was given routinely. Postoperatively investigation like Hb, blood urea, s.creatine, serum electrolytes, were carried out on 1st postoperative day and at regular interval as when needed. Patients were only discharged after, clinically well to do.

Patient who expired immediately after admission or after treatment were submitted to autopsy examination and the organ of injury was also, considered in this study.

RESULTS

There were total 38 cases with penetrating injuries to the abdomen who are involved in the study. Among the sex distribution, 37 (97.4) cases were male and 1 (2.6) cases were female. The age distributions of cases are as shown in table 1.

As shown in table 2, most common region for external injury was epigastrium. Although umbilical and epigastrium is the most common region in which the higher proportion of injury to internal organs is seen but the injury was not limited to the organs of the same region. Most common associated injury was found to be incised wound of upper limb, maybe due to using upper limb for defense. Second most common involved region was thorax.

Pain in abdomen was the most common presenting symptom and was present in almost all the patient. Abdominal pain was nonspecific complaint though.

Table 1: Distribution of cases according to Age

Age group (in years)	No of cases (%)
11-20	03 (7.9)
21-30	21 (55.3)
31-40	11 (28.9)
41-50	02 (5.3)
>50	01 (2.6)

Table 2: Site of injury among the cases

Site	Cases (%)
Right hypochondrium	04 (10.52)
Epigastrium	14 (36.84)
Left hypochondrium	04 (10.52)
Right lumber	02 (05.21)
Umbilical	06 (15.79)
Left lumber	04 (10.52)
Right iliac fossa	05 (13.16)
Hypogastrium	01 (02.63)
Left iliac fossa	02 (05.21)

Table 3: Common presenting symptom

Symptom	Cases (%)
Pain in abdomen	37 (97.37)
Abdominal distension	02 (05.26)
Something coming out of wound (evisceration)	23 (60.52)
Bleeding from wound	35 (92.10)
Vomiting	-- (--)
Altered consciousness	01 (02.63)
Dyspnea	01 (02.63)
Chest pain	01 (02.63)
Hematuria	01 (02.63)
Bleeding per rectal	01 (02.63)

Table 4: Physical signs of the cases

Signs	Cases (%)
Abdominal tenderness	34 (89.47)
Evisceration	11 (28.94)
Abdominal distension	03 (07.89)
Restriction of RR	20 (52.63)
Bleeding from wound	32 (84.21)
Obliteration of liver dullness	01 (02.63)
Absence of peristalsis	23 (60.52)
Bleeding per rectal	01 (02.63)
Peritoneal breach present	29 (76.31)

Bleeding from wound and something coming out of were only 2nd to pain in abdomen but they also had a good rate of prevalence as the presenting symptom.

Bowel sound were absent in about 60% of patient and majority were those whose coils of intestine were involved in the injury. Peritoneal breach was found to be in 70% of cases and was the one of the indication of emergency exploratory laparoto-

my. One patient who had injury over the perianal region and had rectum injury revealed blood in DRE examination & Proctoscopy.

Knife was the most commonly used instrument for wounding for homicidal injuries. It was observed that iron bar were the wounding agents in case of all accidental injuries. It was seen that only 7 (18.4) cases were brought to the hospital within the first hour of injury while 33 (87) cases were brought within 3 years of trauma. Four patients who had sustained accidental injuries were admitted with a time lag of more than 4 hours. In this study 90% cases underwent some operative procedure remainder cases were managed by serial clinical examination and radiological investigation.

Table 5: Complication encounter during management

Complication	Cases (%)
Shock	14 (36.84)
Hemorrhage	2 (05.26)
Systemic Sepsis	-- (--)
Electrolyte imbalance	06 (15.79)
Pneumonia	01 (02.63)
Jaundice	01 (02.63)
Wound infection	07 (18.42)
Wound dehiscence	04 (10.52)
Intestinal obstruction	-- (--)
Incisional hernia	01 (02.63)
Fistula	01 (02.63)

Table 6: Duration of stay of the patient in the hospital

Total stay in days	Cases (%)
Stay up to 10 days	27 (71.05)
11-20	07 (18.42)
21-30	02 (05.26)
Readmission	02 (05.26)

The commonest complication encountered in this study was shock (37%) & wound sepsis (18%). This was followed by electrolyte imbalance 6 (15.8) and wound dehiscence (10.52) (Table 5).

Minimum duration of stay was found to be 2 days in patient who had no intra-abdominal injury to maximum of 26 days who intra-abdominal injury. Average stay among the cases was 10 days. Most of the patient (70%) was discharge with in a period of 07-10 days. In this study only single mortality was found in the patient who had multiple stab wound over abdomen and thorax.

DISCUSSION

In this study 97.37% of cases occurred in male while only 2.63% occurred in female., Demetriades[6], Pridgen[7], Cameron[8], Steichen[9], Seth[10] reported male patients injured as 90%, 88%, 86%, 84% and 84% respectively. This is due to outside world and indulgence in conflicts and limited outdoor activity of female. 92.10% of patients had homicidal injury due to quarrels for some or the other reason. 7.90% of the patients had injury due to accident in form of road traffic accident or machinery tools or falling on object. Demetriades[6] reported 58% and 16% respectively in his study.

Knife is the commonest wounding agent in developing countries like India because easily availability while in African countries and in Developed countries Gun Shot injuries are common. In this study knife (80%) was most commonly causing penetrating abdominal injury.

In civil practice the incidence of injuries with sharp cutting instruments has increased considerably because of increased antisocial activities, drug addiction and conflicts. In a series of 267 patients studied by Richter and Zaki[11] in 224 cases (84%), the wounding agent was knife, sword or scissors. In my study all most all cases had injury either due to knife, gupti or sword. Most of the civilian wounding agents differ from those in the war wounded. Weapons used in civilian injuries are rarely used in military combat.

All the patients in this study were residents of Surat city and so majority (68%) patients were admitted within the first 2 hours of injury. Four patients had been admitted with a time lag of more than 4 hours and in these cases patients had sustained homicidal injuries and had no relative or transport facility to shift the patient to the hospital. Most of the patients were brought to the hospital by their relative, friends or road passer with involvement of EMRI 108. On analysis it was found that there was one death among the patients report in this series.

Four patients who reported to this hospital with a time lag of more than 4 hours were given some primary treatment in the form of intravenous fluid, packing or dressing of the wound. None of these patients died. In all these patients the intra-abdominal visceral injury was limited to one or two organs only without any other significant associated life threatening injury. Hence it can be inferred from this study that multiple organ involvement is more important factor mortality rather than time lag.

In a comparative study of cases operated immediately and after a delay of 6 hours. It was ob-

served that incidence of complications was the same in patients operated upon immediately and in those in whom surgery was delayed for a few hrs. The incidence of complications reflected more to the nature of injury and the organ involved.

Data have been published supporting the matter that the delay in exploration does not increase the mortality and on the basis of this data selective conservative management protocol was decided.

In a study by Francis Nance[12] (1969) of 600 cases of stab wounds of abdomen it was observed that old policy of early exploration was associated with high rate of postoperative complications. The rate of negative laparotomies was 24%. If a policy of selective conservative management is employed the rate of negative laparotomies can be subsequently brought down.

The primary argument for routine exploration of all stab wounds rests on the basis that delay in explorations until signs of peritonitis or shock become manifest, will adversely affect patients clinical course. When obvious signs are present exploration should be carried out without delay but the results of the comparative studies showed that incidence of complications was the same. The incidence of complications reflected that the nature of injury rather than the delay in surgery was the prime factor in its causation though there is a crucial group of patients where the delay in surgery harms the patients where the delay in surgery harms the patients.

CONCLUSION

It can be concluded from the present study that the most common age group involved is 2nd to 3rd decade male patient. Majority of these patient have multiple organ injury and hence a thorough look for different organ injury is required at the time of laparotomy. The main problem in management of these patient are management of shock, recognition and management of multiple organ injury in emergency, control of hemorrhage, it's appropriate management. When in doubt regarding penetration of peritoneum, it is better to open and see in these circumstances then to wait and watch.

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