



Original Article

Study on Abdominal Injury: An Analysis of 50 Cases

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Abstract

Abdominal injury is an important aspect of trauma because of difficulty in diagnosis and its lethal potential if not properly treated. Fifty cases of abdominal injury admitted in the surgical wards of Rajshahi Medical College Hospital over 2 years have been studied here. All the patients underwent laparotomy for their management. The age range of the patient was 14 to 70 years and most commonly involved age group was 21 to 30 years. Male to female ratio was 15.6:1. The incidence of penetrating injury predominated (64%) over non-penetrating injury and majority had stab injuries. Road traffic accident predominated in blunt injury. Small gut injury outnumbered all other injuries in both groups. Abdominal pain was the most frequent symptom. Most of the patient arrived in the hospital within 24 hours. Considering clinical presentations and results of investigations, decision for laparotomy was taken with prior resuscitation.

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Introduction

Abdomen is the third most commonly injured region with injuries requiring operation in about 20% of civilian trauma victims.¹ Abdominal injury either blunt or penetrating, may be associated with extra abdominal injuries. Injury sites are obvious in the penetrating group. Abdominal pain is the most frequent symptom. Other common symptoms and signs include tachycardia, vomiting, abdominal distension, hypotension and signs of peritoneal irritations. Failure of early diagnosis of abdominal injury continues to be a frequent cause of preventable death following trauma. The physical examination of the patient is often misleading. The diagnosis requires intelligent interpretation of the history, physical findings and the result of available laboratory procedures along

with other diagnostic procedure. Here 50 cases of abdominal injury, admitted in the Rajshahi Medical College Hospital were studied. This was carried out with a view to see the causes and nature of a abdominal injury, age incidence, sex distribution, diagnostic modalities, clinical presentations, organ involvement, management profile and their overall outcome.

Materials and Methods

This prospective study represents 50 cases of abdominal injury, either penetrating or non penetrating, who were admitted to general surgery wards, Rajshahi Medical College Hospital from July 1995 to July 1997. Only those patients who underwent laparotomy were included and studied following fixed protocol. Age, sex, causes and

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types of injuries, weapons used, site of injury, time interval between onset of injury and arrival at the hospital, all were noted. Clinical presentation and outcome following overall management were studied and evaluated. Investigations as diagnostic aids were done on emergency basis within limited facilities. Plain X-ray abdomen in erect posture was done in majority of the cases. Other investigations e.g. X-ray chest, X-ray limbs, IVU, Urinalysis, Hb% were performed according to the need. Indications for laparotomy were based on (a) presence of peritoneal penetration, (b) sub diaphragmatic free gas shadow, (c) persisting shock in spite of continued resuscitation, (d) persisting haemorrhage and (e) peritonitis in late cases.

Results

The age of the patients under-study ranged from 14 to 70 years. Highest incidence was observed between the ages 21 and 30 years (52%). Out of 50 cases 47 were male (94%) and 3 females (6%) giving male-female ratio 15.6: 1.

Table-I: Age distribution of the patients.

Age group (years)	Number of patients	Percentage
11-20	9	18.0
21-30	26	52.0
31-40	11	22.0
41-50	2	4.0
51-60	1	2.0
61-70	1	2.0

Mode of injury

In this series 32 (64%) patients experienced penetrating injury and 18 (36%) sustained blunt trauma. Of the 32 cases of penetrating injury 21 (65.62%) received stab injury. Road traffic accident (9.37%) and assault (9.37%) contributed equally. Among blunt trauma victims 9 (50%) were due to road traffic accidents. Assault (22.22%) and fall from height (22.22%) contributed equally.

Table-II: Types and causes of penetrating injury(n=32).

Causes	Number of patients	Percentage
Stab	21	65.62
Shotgun/Bullet	2	6.25
Road traffic accident	3	9.37
Assault (sharp object)	3	9.37
Bomb blast	2	6.25
Domestic animal	1	3.12

Table-III: Types and causes of blunt trauma (n=18).

Causes	Number of patients	Percentage
Road traffic accident	9	50.00
Assault (by blunt object or blow)	4	22.22
Fall from height	4	22.22
Domestic animal attack	1	2.55

Majority (46%) of the patients arrived at the hospital after 1 to 6 hours, 19 arrived after 6 to 24 hours. Their transports were usually auto-rickshaw, ambulance or rickshaw van.

Table-IV: Time lapse between occurrence and admission to the hospital

Time lapse (hours)	Number of patients	Percentage
Within 1	5	10.0
1-6	23	46.0
6-24	19	38.0
24-48	2	4.0
After 48	1	2.0

Presentations

Injury sites were obvious in the penetrating group. Most frequent symptom was abdominal pain. Other common symptoms and signs were vomiting, dyspnoea, dehydration, external bleeding evisceration, hypotension.

Table-V: Symptoms and signs: Penetrating group (n=32).

Symptoms and signs	Number of patients	Percentage
Abdominal pain	30	93.95
Tachycardia	14	43.75
Vomiting	8	25.00
Dyspnoea	4	12.50
Constipation	8	25.00
Hypotension	14	43.75
Dehydration	11	34.75
Cyanosis	3	9.37
Abdominal distension	8	25.00
Peritonitis	7	21.87
Evisceration		
Omentum	7	21.87
Gut	3	9.37
Thoracoabdominal injury	2	6.25
Multiple injury	4	12.50
External bleeding	14	43.75

Table-VI: Symptoms and signs: non-penetrating group (n=18).

Symptoms and signs	Number of patients	Percentage
Abdominal pain	16	88.88
Tachycardia	10	55.55
Vomiting	3	16.66
Constipation	4	22.22
Distension	6	33.33
Hypotension	6	33.33
Dehydration	3	16.66
Peritoneal irritation	10	55.55
Haematuria	2	11.11
Extra abdominal injury	10	55.55
Unconsciousness	2	11.11
Asymptomatic	2	11.11

Investigations

Abdominal X-Rays in erect posture were done in 40 (80%) cases and 10 cases with evisceration were exempted from the investigation. Grouping and cross matching of blood were done routinely. Hb% and PCV were done for 21 cases. Other investigations included urine R/M/E (20 cases), X-ray chest (20 cases), X-ray pelvis (8 cases), X-ray limbs (upper-6 cases and lower 3 cases) and IVU (2 cases of renal injury).

Operative findings

On exploration, peritoneal collections were examined. Organ involved were located for specific treatment. Multiple organ injury was found in 11 cases (22%). Specific measures taken according to the organ involved.

Table-VII: Organ involved in penetrating group (n=32).

Organ involved	Number of patients	Percentage
Small gut	14	43.75
Stomach	7	21.87
Colon	6	18.73
Liver	3	9.37
Mesentery	4	12.50
Gallbladder	1	3.12

Table-VIII: Organ involved in non-penetrating group (n=18).

Organ involved	Number of patients	Percentage
Small gut	11	61.11
Colon	3	16.66
Urinary bladder	1	5.55
Kidney	2	11.11
Spleen	3	16.66
Gallbladder	1	5.55
Liver	1	5.55
Mesentery	2	11.11

Table-IX: Operative procedure adopted.

Organ	Procedures
Stomach	Repair
Small gut	Repair Resection and anastomosis
Colon	Repair Resection anastomosis and proximal colostomy Exteriorization
Liver	Repair and drainage Resection of devitalized portion
Gallbladder	Cholecystectomy
Spleen	Splenectomy
Kidney	Repair Nephrectomy
Urinary bladder	Repair Suprapubic cystostomy

14 cases developed postoperative pyrexia. 10 had wound infection and three had wound dehiscence. Three cases developed chest complications, one developed UTI and one patient developed intestinal fistula.

In this series, there were 3 hospital deaths. One patient died on the operation table due to uncontrolled haemorrhage from liver injury. One due to irreversible shock while in the recovery room and one died due to septic shock in the surgery ward.

Table-X: Mortality (n=50).

Mortality factor (Causes)	Number of patients
Irreversible shock with multiple organ failure	1
Uncontrolled haemorrhage	1
Septic shock	1

Discussion

The management of abdominal injury has undergone marked changes during the last few years. Interest in this subject was aroused during the World War II and many articles appeared which reported experiences with large number of war injuries². Mortality rates from this injury have fallen steadily.

The distribution of types of injury in a given population is highly dependent upon geographic location, life style and other environmental factors. This series has similarities in patient profile, symptomatology and treatment but has dissimilarities with the causes, weapon used and injury pattern with those of western record.

The highest incidence (52%) in this series was in the age group 21-30 years. Allen et al² reported in their series 28% of patient in the age group 20-29 years and 68% were in the age range 10 to 39 years. Fitzgerald et al³ showed highest incidence (55%) between the ages 21 to 50 years. Male patients (94%) predominated in this series. Allen et al² showed 75.4% male patient, Perry⁴ reported 78% male patient. This is because of the fact that female in our society are less out going and less involved in social violence.

Penetrating injury predominated (64%) over non-penetrating injury (36%). Allen et al² reported 77.5% and Perry et al⁴ showed 66.33% patient in the non-penetrating. Gidding⁵ showed high incidence of penetrating injury (99.5%) in Military Hospital. This variable incidence reflects geographic and social influences. Higher incidence of penetrating injury in this series might be due to social unrest during that time. Majority of the patients in the penetrating group had stab injuries 65.62% and gunshot injuries contributed very little in this group. In the non-penetrating group majority of the patients suffered road traffic accident. Allen et al² reported 55.2% gunshot wound and 37.3% stab wounds. In the non-penetrating group 69.5% suffered road traffic accident. The higher incidence of stab injury in comparison to gunshot injury in this series might be due to easy availability of household knife, dagger or other sharp objects than guns in our country.

In the present series, very limited investigations were done for the confirmation of diagnosis but there is little impact on the overall mortality and morbidity.

In this series, small gut injury outnumbered all other injuries in both groups. 14 (43.75%) cases in penetrating and 11 cases (61.11%) were on the non-penetrating group Goldman et al⁶. in their study reported 47 cases had small bowel injury out of 146 patient of penetrating group. Pancreatic and bladder injuries were frequent. No pancreatic, duodenal or great vessel injury reported in present series. Gall bladder & urinary bladder injuries were very infrequent.

Splenic and kidney injuries in this study were found in the non-penetrating group. All stomach injuries and majority of liver injuries were due to penetrating injury. Allen et al² reported higher incidence of renal injury (13.5%), splenic injury (1.26) in non-penetrating group and in the same series higher incidence of liver (16.5%), stomach (13.5%) and colonic injuries (19.5%) in the penetrating group.

Majority of cases operated within 24 hours of sustaining injury and only three cases were delayed. Transportation problems, ignorance of general people and absence of specialized trauma center are few important factors for delay.

Regarding postoperative complications; this series showed postoperative pyrexia as the common complication (14 cases) and wound infection in 10 cases. Most delayed cases and colonic injury cases developed these complications. One patient developed intestinal fistula, which healed spontaneously with conservative treatment.

Goldman et al⁶ in their study of 146 cases showed wound infection in 6 cases, wound dehiscence 17 cases, atelectasis in 4 cases. Agent of injury and brief time interval prior to surgery were the factors for lower incidence of sepsis.

Overall mortality on this study was 6% (3 cases). Wilson and Sherman⁷ in their study showed that mortality was 6.1% in under 40 and 12% in above 40 years of age.

Conclusion

Management of trauma, especially abdominal injury is now considered a teamwork. Provision of modern diagnostic aids, intensive care unit facilities and a team approach by those trained in trauma management for swift co-ordinate management by introducing ATLS course of injured patients may reduce preventable suffering and deaths. Since stab/gunshot or road traffic accidents remain the common causes of abdominal

injury, real possibility of decreasing death from these injuries lies in the social stability and prevention of automobile accidents by improvement of law and order and mass people awareness. Major advances in the rapid transportation of the injured patients by trained personnel in well-equipped ambulances and helicopters could save the lives of many of the victims of major trauma.

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