



CLINICAL STUDY AND MANAGEMENT OF BLUNT TRAUMA ABDOMEN in 59 CASES"

KEYWORDS

Blunt abdominal trauma; Four quadrant aspiration; Diagnostic peritoneal lavage; Ultrasonography; CT scan; Post operative complications; Mortality.

D. Lokanatham

B.Vanya

PROFESSOR AND HOD OF DEPARTMENT OF SURGERY,
ASRAM COLLEGE, ELURU, AP.

JUNIOR RESIDENT, DEPARTMENT OF GENERAL
SURGERY, ASRAM COLLEGE, ELURU, AP.
Corresponding Author

Dr.Ayyappa Srinivas

ASSISTANT PROFESSOR, DEPARTMENT OF GENERAL SURGERY, ASRAM COLLEGE, AP

ABSTRACT

Objective:

1. To evaluate the impact of blunt abdominal trauma on the intraperitoneal organs and various modes of presentation in early diagnosis.
2. To evaluate various modalities of treatment and common complications.

Background data: Blunt abdominal trauma is one of the most common injuries caused mainly by road traffic accidents. They are usually not obvious. Hence, often missed, unless repeatedly looked for. In view of increasing number of vehicles and consequently road traffic accidents, this dissertation has been chosen to study the cases of blunt abdominal trauma.

Material and methods: This is a prospective study of blunt abdominal injuries during the period from August 2014 to November 2016 in ASRAMS Hospital, Eluru. Number of cases studied is 59. Data were collected from the patients by their clinical history, examination and appropriate investigations. Post operative follow up was done to note for complications. Documentation of patients, which included, identification, history, clinical findings, diagnostic test, operative findings, operative procedures, complications during the stay in the hospital and during subsequent follow-up period, were all recorded on a proforma specially prepared. The decision for operative or non operative management depended on the outcome of the clinical examination and results of diagnostic tests.

Results: The majority of the patients belonged to 11-20 years age group, followed by 21-30 years age group. 53 cases were males, with females accounting for only about 6 cases. 44 patients were operated and 15 patients were subjected for non operative management. Road traffic accident was responsible for 61% of blunt abdominal trauma cases, while fall from heights accounted for 27% of cases and blow with blunt object was responsible for 12% of injuries. Majority of the patients presented with abdominal pain (86%) and abdominal tenderness (81%). Average latent period was between 16-20 hours. Majority of patients (30%) were taken for surgery between 11-15 hours of latent period. Associated extra abdominal injuries were found in 29 cases. Apart from routine investigations, abdomen x ray was done in 55 patients. 41 patients underwent four-quadrant aspiration. 21 patients underwent diagnostic peritoneal lavage. DPL was done in patients who had equivocal signs or obscured by adjacent soft tissue injury. Ultrasound of abdomen was done in 33 cases. CT scan was done in 6 cases.

Conclusion: Road traffic accidents form the most common mode of injury. Males are predominantly affected. A thorough and repeated clinical examination leads to successful treatment in these patients. Plain x ray abdomen, ultrasound scan, four quadrant aspiration and diagnostic peritoneal lavage are valuable investigations. Multiple organs are usually involved in most of the cases rather than an isolated organ injury. Associated extra abdominal injuries greatly influence the morbidity and mortality. Post operative complications like wound infection, dehiscence and respiratory complications are common in blunt abdominal trauma. The present study shows a mortality of 15%.

INTRODUCTION

Abdominal trauma is one of the most common causes among injuries caused mainly due to road traffic accidents. The rapid increase in motor vehicles and its aftermath has caused rapid increase in number of victims to blunt abdominal trauma. Motor vehicle accidents account for 75 to 80 % of blunt abdominal trauma¹.

Blunt injury of abdomen is also a result of fall from height, assault with blunt objects, sport injuries, industrial mishaps, bomb blast and fall from riding bicycle¹. Blunt abdominal trauma is usually not obvious. Hence, often missed, unless, repeatedly looked for. Due to the inadequate treatment of the abdominal injuries, most of the cases are fatal. The knowledge in the management of blunt abdominal trauma has progressively increasing due to the in-patient data gathered from different parts of the world. In spite of the best techniques and advances in diagnostic and supportive care, the morbidity and mortality remains high. The reason for this could be due to the interval between trauma and hospitalization, delay in diagnosis, inadequate and lack of appropriate surgical treatment, post operative complications and associated trauma especially to head, thorax and extremities. In view of increasing number of road traffic accidents, this dissertation has been chosen to study the cases of blunt abdominal trauma.

AIMS AND OBJECTIVES OF THE STUDY

1. To evaluate the impact of blunt abdominal trauma on abdominal organs like liver, spleen and hollow viscera like stomach, small

intestine and large intestine.

2. To evaluate various modes of presentation in early diagnosis.
3. To evaluate various available investigations for detection of abdominal injuries.
4. To evaluate various modalities of treatment available for solid and hollow organ injuries with aim to reduce the mortality and morbidity.
5. To evaluate common complications.

MATERIALS AND METHODS

SOURCE OF DATA:

This study is a prospective study of blunt abdominal injuries during the period from August 2014 to November 2016 in ASRAM Hospital, Eluru. Number of cases studied is 59.

METHODS OF COLLECTION OF DATA:

Data were collected from the patients by their clinical history, clinical examination with appropriate investigations on those patients who were admitted. Post operative follow up was done to note for complications. After initial resuscitation of the trauma victims, a careful history was taken to document any associated medical problem. Routine blood and urine tests were carried out in all the patients. Documentation of patients, which included, identification, history, clinical findings, diagnostic test, operative findings, operative procedures, complications during the stay in the hospital and during subsequent follow-up period, were all recorded on a proforma specially prepared. Demographic data collected

included the age, sex, occupation and nature and time of accident leading to the injury.

After initial resuscitation and achieving, hemodynamic stability, all patients were subjected to careful examination, depending on the clinical findings; decision was taken for further investigations such as four-quadrant aspiration, diagnostic peritoneal lavage, x ray abdomen and ultrasound.

The decision for operative or non operative management depended on the outcome of the clinical examination and results of diagnostic tests.

Patients selected for non operative or conservative management were placed on strict bed rest, were subjected to serial clinical examination which included hourly pulse rate, blood pressure, respiratory rate and repeated examination of abdomen and other systems. Appropriate diagnostic tests especially ultrasound of abdomen was repeated as and when required. CT scan was done in 6 patients in our study. As most of our patients were from low socio economic group, it was possible to get CT scan done for only few selected patients.

Apart from routine investigations, abdomen x -ray was done in 55 patients. 41 patients underwent four-quadrant aspiration. An aspiration of blood, which did not clot, was taken as positive. When the aspirate clotted, the test was taken as negative. 21 patients underwent diagnostic peritoneal lavage. DPL was done in patients who had equivocal signs or obscured by adjacent soft tissue injury. The method was a semi-open technique through and infraumbilical incision, inserting an infant feeding tube, irrigating the abdominal cavity with ringer lactate solution and aspirating. Ultrasound of abdomen was done in 33 cases.

DISCUSSION

A) AGE INCIDENCE

AGE GROUP (yrs)	NO.OF PATIENTS	PERCENTAGE (%)
0-11	1	1.7%
11-20	22	37.2%
21-30	20	33.8%
31-40	6	10%
41-50	4	6%
51-60	3	5%
61-70	2	3%
71-80	1	1.7%

B)SEX INCIDENCE:

GENDER	NO OF PATIENTS	PERCENTAGE
Male	53	90%
Female	6	10%

C)RATIO OF OPERATIVE TO CONSERVATIVE TREATMENT:

	NO OF PATIENTS	PERCENTAGE
Operative	44	74%
Conservative	15	26%

D)MODE OF INJURY

CAUSATIVE AGENT	NO.OF CASES	PERCENTAGE (%)
Road traffic accident	36	61%
Fall from height	16	27%
Blow to abdomen with blunt objects	7	12%

E)SYMPTOMS AND SIGNS:

SYMPTOMS AND SIGNS	NO OF PATIENTS
Abdominal pain	51
Vomiting	8
Abdominal distension	32

Hematuria	3
Abdominal guarding and rigidity	34
Abdominal tenderness	52
Rebound tenderness	19
Pallor	24
Pulse>90/min	48
BP<90mm of Hg systolic	28
Free fluid	32
Absent bowel sounds	33

G) ASSOCIATED INJURIES:

	NO OF CASES	PERCENTAGE
Head	9	15%
Thoracic	4	7%
Orthopedic	10	17%
Soft tissue	6	10%
Combination	6	10%

INVESTIGATIONS:

PLAIN XRAY ABDOMEN:

FEATURE	NO. OF PATIENTS	PERCENTAGE
Gas under diaphragm (GUD)	16	27%
Enlarged soft tissue shadow (ESTS)	14	24%
Ground glass appearance (GGA)	4	7%
No radiological abnormality (NRA)	21	35%
Not done (ND)	4	7%

DIAGNOSTIC PERITONEAL LAVAGE:

Diagnostic peritoneal lavage was done in 21 cases, out of which 13 were positive and 8 were negative.

ULTRASOUND EXAMINATION:

ORGAN INJURED	NO. OF PATIENTS	PERCENTAGE
Liver	10	30%
Spleen	14	43%
Kidney	2	6%
Free fluid without solid organ injury	7	21%

MULTIPLE ORGANS INJURED:

ORGANS INJURED	NO. OF CASES
Liver & spleen	1
Spleen & stomach	2
Intestine & mesentery	2
Spleen & retroperitoneum	3
Liver & retroperitoneum	2
Liver & intestine	1

OPERATIVE PROCEDURES:

In the present study closure of bowel perforation was done in 15 patients, colostomy in 1 patient, repair of mesentery in 2 patients, splenectomy in 10 patients, splenorraphy in 3 patients, hepatorrhaphy in 6 patients and resection and anastomosis in 2 patients.

In Khanna et al study closure of bowel perforation was done in 13 patients, colostomy in 2 patients, repair of mesentery in 9 patients, splenectomy in 4 patients, splenorraphy in 1 patient and hepatorrhaphy in 6 patients.

MORTALITY:

A total of nine patients died in the present study. Six patients belonged to operative group and died in the post operative period, majority of them due to peritonitis and septicemia. One patient died before surgery due to severe head injury.

Two patients died while being managed conservatively. This shows the disadvantages of conservative management like missed injuries and delayed treatment.

Therefore the mortality in the present study is 15%. This is comparable with other series published in our country (Khanna et al6). The mortality rate in Davis et al5 study is 13.3%, Di Vincenti et al10 study (1968) was 23%. Cox et al8 study reports a mortality rate of 10%.

SUMMARY AND CONCLUSIONS

This was a prospective study of 59 cases of blunt abdominal study, the following conclusions can be made.

1. Males are predominantly affected. It is mostly seen in the trauma in ASRAM Hospital in between 2014-2016. Most of them fall in 11-20 years which form the young and reproductive group. These patients are usually from lower socio economic income group.

2. Road traffic accident forms the most common mode of injury. Hence victims at the accident site. Well established trauma care centers should be established at least at every District hospital. Measures for early transport of the patients from the accident site to the trauma be undertaken.

3. A thorough and repeated clinical examination and appropriate diagnostic investigations lead to successful treatment in these patients.

4. Though conservative management is successful in carefully selected patients, operative management remains the main stay of treatment.

5. Plain erect x ray abdomen is a valuable investigation taken for gastrointestinal injuries.

6. Ultrasound examination gives a clear picture of solid organ injury and free fluid.

7. Four quadrant aspiration is a simple and an important tool for diagnosis. But better results are given by Diagnostic peritoneal lavage.

8. The most common injured viscera in the present study is small bowel and they were managed by simple suturing.

9. Splenic injury is the second most commonly injured organ and majority of them were managed by splenectomy. Few of them were managed by splenorrhaphy.

10. Liver injuries occupy the third position and were managed by hepatorrhaphy and spongistan packing.

11. Retroperitoneal hematoma was seen in a small proportion of patients, treated conservatively.

12. Multiple organs were involved in most of the cases rather than an isolated organ injury.

13. Associated extra abdominal injuries like head, thoracic and orthopedic injuries were found in 29 cases in the present study. The present study showed a mortality of 15%.

REFERENCES

1. Sabiston's Text book of surgery: 18th edition: vol 1: 2008: p501-519.
2. Decker, G.A.G., Lee McGregor's Synopsis of Surgical Anatomy, Bristol; John Wright and Sons LTD, 1986
3. Surgery of the liver and biliary tract: L.H. Blumgart: 4th edition: 2007: 1035-1085p.
4. Hamilton Bailey's Emergency surgery: 13th edition: 2000: p446-471.
5. Joe Jack Davis, Isidore Cohn, Francis C. Nance; Diagnosis and management of Blunt abdominal trauma. Ann, Surg, June 1976: vol 183: No 6: p672-678.
6. R. Khanna, S Khanna, P Singh, Puneet and A K Khanna; Spectrum of blunt abdominal trauma in Varanasi; Quart J; vol 35, No 1&2, Mar&Jun 1999; p25-28.
7. Cusheri A, Giles G. R., Moosa A. R: Essential Surgical Practice; Butterworth International Ed. 1998: p263-304.
8. Cox, Everard F; Blunt abdominal trauma: A 5 year Analysis of 870 patients requiring Celiotomy; Ann, Surg; April 1984 vol 199; p467-474.