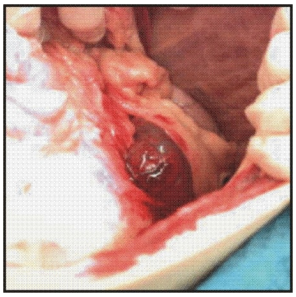
ORIGINAL PROF-875

MANAGEMENT OF RETRO PERITONEAL HAEMATOMA



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ABSTRACT ... j_sultan1@yahoo.comm **Objectives:** To find out the frequency of different visceral injuries and morbidity and mortality related to different zones in retro peritoneal haematoma due to trauma. **Place of study:** D.H.Q Teaching Hospital Rawalpindi. **Study Design:** Prospective study. **Duration of study:** June 1998 to May 1999. **Results:** There were total 45 patients with retro peritoneal haematoma. The policy for exploration of retro peritoneal haematoma included mandatory exploration of Zone I and selective exploration of Zone II and III. Out of total 45 patients, 40 had associated intra peritoneal injuries and Zone I was most commonly involved (n=21) followed by Zone II (n=13) & Zone III (n=11). Vascular, genitourinary and pelvic fracture injuries were the common injuries. Overall mortality was 6.5% mainly due to irreversible shock in patients with Zone I vascular injuries. **Conclusion:** Mandatory exploration of Zone I and selective exploration of Zone II & III is a valid policy in the management of retro peritoneal haematomas. Penetrating Zone I trauma causing vascular injuries is most common of all. Shock is the most common presentation, complication and cause of mortality.

INTRODUCTION

Diagnosis and management of retroperitoneal haematoma is the problem of controversy in actual moment. During the management there are usually some diagnostic difficulties. In diagnosis we use clinical status of patients, radiography, angiography, ultrasonography, but the most secure is laparotomy. There are two treatment approaches, operative and conservative. Retroperitoneal haematoma is a consequence of

ruptured solid organs and retroperitoneal blood vessels, and associated with injuries of intra peritoneal organs as well. This is the reason for detailed exploration of abdominal cavity[1].

This study was conducted for the purpose of solution of this known dilemma of the management of retroperitoneal haematomas. This is a descriptive type of study conducted on 45 patients of retroperitoneal trauma presenting in the emergency department of District Headquarter Teaching Hospital Rawalpindi. The main objectives of the study were to find out the frequency of different visceral injuries and morbidity and mortality related to different zones in retroperitoneal haematoma due to trauma.

MATERIAL & METHOD

Total 128 patients having abdominal trauma with suspected intra abdominal injuries out of which 45 patients had retroperitoneal haematoma presenting in the hospital from June 1998 to May1999 were included in the study.

The patients were managed according to the ATLS philosophy. No specific investigations other than baseline were performed except IVU in cases of haematuria to assess renal injury.

Following "CRITERIA" was observed for inclusion and exclusion of the patients in the study. All patients who were at the extreme of their ages were excluded out of study so that mortality risk due to their age factor could be excluded out.

The patients with blunt abdominal trauma having bruise at their back or flanks were included in the study. The patients with associated thoracic, head and limb injuries were excluded from the study.

We divided the patients in three groups according to the zone involved, seen per-operatively. Patients were also grouped on the basis of history and physical examination pre-operatively:

Group I- patients with refractory shock or unstable patients.

Group II- stable patients with signs of intra-peritoneal bleed.

Group III- asymptomatic patients.

Patients of group I & II irrespective of the zone involved were explored immediately after brief history and physical examination while patients of group III were evaluated with necessary available investigations like IVP, CT scan etc.

All the patients were explored through long midline incision under general anesthesia and under the cover of suitable antibiotics.

The peritoneal cavity was first explored and intraperitoneal injuries were assessed and managed accordingly. The presence of retroperitoneal haematoma was assessed and patients were grouped according to three anatomical retroperitoneal zones. The retroperitoneal haematomas of different zones were managed as per policy of the department and that of the study.

RESULTS

Total 128 patients underwent exploratory laparotomy. Of which, 45(35.15%) patients had retroperitoneal haematoma. The age range was 5 to 70 years; majority of them belonged to 3rd and 4th decade. There were 29 males and 16 females. The major cause of injury was firearm weapons (n=19) followed by stabs (n =13) and blunt pelvic abdominal trauma (n= 13). There were 21(46.66%) patients in zone I, 13(28.88%) in zone II and 11(24.44%) in zone III. 40 patients out of total 45 had associated intraperitoneal injuries.

In zone I venous injuries were more frequently seen as compared to arterial injuries. Structures damaged in Zone I injuries were as; inferior vena cava in 9, pancreas in 5, duodenum in 3, common iliac vessels in

3 and abdominal aorta in 1.

13 out of 45 patients had zone II RPH. 6 patients presented with blunt trauma while 07 with penetrating trauma. All the 7 patients with penetrating zone II injuries were explored while in blunt zone II RPH a selective policy was adopted; 03 out of six were explored due to suspected renal injury. Break up of zone II injuries was as; kidney was injured in 4, left colon in 2, right colon in one, tail of pancreas in one, gonadal vessels in one and ureter in one.

In zone III RPH total of 11 patients were seen. 08 had pelvic fractures due to blunt trauma and 03 patients had penetrating injury, out of which one patient had rectal injury, which was primarily repaired with covering transverse colostomy and one patient with urinary bladder injury, which was repaired.

In one patient internal iliac artery was ligated. Pelvic fracture was divided according to Young & Burgess Classification i.e. according to mechanism of injury. Associated injuries were recorded against the type of fracture, hence incidence of the correlation found out. There were three patients with pelvic fractures due to lateral compression (LC); one had associated vascular injury, which lead the patient to shock. Antro-posterior compression (APC) caused pelvic fracture in four patients out of which three had associated rectal and urinary bladder injury.

Table I: "Breakdown of different management protocol according to the Retroperitoneal Zones involved"

Zone	Damage control surgery	Conservative	Operative
I	1	0	21
II	0	3	10
III	2	8	3

Two of them went into shock but recovered well. Vertical shear (LC) was seen in one patient who also had associated urinary injury. This patient also presented with shock but recovered well.

Table II: "Out come of Retroperitoneal zone I injuries"

Injuries	No of pts	Procedure	Complications
IVC	09	Repaired	02 Expired
Pancreas	05	Drainage	Nil
Duodenum	03	Repaired	Nil
C Iliac vessels	03	Repaired	02 DVT
Abdominal aorta	01	Repaired	Expired

Table III: "Out come of Retroperitoneal zone II injuries"

Injuries	No of pts	Procedure	Complications
Kidney	04	1Nephrectomy 3 Repair	Nil
Left colon	02	Colostomy	Sepsis (1)
Gonadal vessels	01	Ligated	Nil
Right colon	01	Repaired	Nil
Ureter	01	Repaired	Nil
Tail of the pancreas	01	Drainage	Nil

Table IV: "Out come of Retroperitoneal zone III injuries"

Injuries	No of pts	Procedure	Complications
Pelvic fractures	08	Non operative	Nil
Rectum	01	Repair colostomy	Nil
Urinary bladder	01	Repaired	Nil
Internal Iliac artery	01	Repaired	Nil

Breakdown of different management protocols according to the Zone involved is shown in table I. The mortality of our study was 6.5 %. The most important complication was sepsis, and two patients had deep venous thrombosis. The fate of retroperitoneal injuries according to the zones is shown in tables no: II, III & IV.

DISCUSSION

Diagnosis and management of retroperitoneal haematoma is the problem of controversy in actual moment. Few emergencies pose as great challenge as retroperitoneal trauma. Because a multitude of organs are compressed into a compact conduit, any blunt or penetrating wound is capable of considerable harm.

A clear understanding of the anatomic relationships within the retroperitonium and the mechanism of injury is critical to devise a rational diagnostic and therapeutic strategy. In this study the major cause of injury was firearm weapons (n=19) followed by stabs (n=13) and blunt pelvic abdominal trauma (n=13). So majority of patients were having penetrating trauma. While in the study presented by Grieco et al, the main mode was blunt trauma[2]. Records of 100 consecutive patients treated in 1973 through 1977 with post-traumatic retroperitoneal haematomas (RH) were studied. Eighty retroperitoneal haematomas RH followed blunt injury and 20 were due to penetrating trauma.

Injuries of the retroperitoneal organs occur mainly in patients with multiple traumas. In this study 30 out of 45 patients had associated intraperitoneal injuries. Direct clinical examinations are limited by the specific anatomical situation; further invasive diagnostic procedures deal mainly with indirect effects of retroperitoneal injuries. Massive hemorrhage with consequent retroperitoneal haematoma is the dominant pathophysiologic course; mortality is high[3]. Chest and Abdominal radiographs were also advised in all patients with a GSW because findings help to predict the pattern of the injury based on the location of the missile. CT scan can be used in the work up of hematuria because it is relatively specific for helping detect renal injuries[4].

Ultrasonography has a function similar to that of DPL, enabling triage of patients rather than providing definitive diagnosis especially in renal trauma[5]. One shot of Intravenous pyelogram may be indicated for patients with hematuria who may need nephrectomy. Its purpose is to help evaluate contra lateral kidney function[6].

All patients were managed according to ATLS philosophy. The response of resuscitation is a valuable parameter in the management of multiple trauma with pelvic injury. Non-operative treatment may be tried in patients of good response to resuscitation. Poor prognosis can also be expected in those patients with poor response[7].

In 3 out of 45 patients damage control surgery was performed because they were very unstable patient. Ninety percent of preventable deaths in trauma patients are related to shock from inadequate recognition of intra-abdominal hemorrhage caused by solid viscous injury. Those incurring severe multi-system trauma are particularly susceptible to the development of a fatal coagulopathic state secondary to hypothermia, acidosis, dilution, and consumption. Transfusion of 2 or more blood volumes of saline and packed RBCs decreases the level of coagulation factors to 15%. Due to large transfusion requirements and delay in coagulation profile results, coagulation factors should be replaced empirically[8].

Damage control involves rapid celiotomy to control major injuries, followed by temporary closure of the abdomen and another exploration after the patient is re-warmed and stabilized. With the use of this technique, approximately 40% of critically injured patients can be saved[9].

Mandatory explorations of Zone I haematoma irrespective of the mode of injury and Zone II & III haematoma in penetrating injuries were done. Selective exploration was done in cases of Zone II & III haematoma in blunt injuries. Rate of injuries is high in Zone I during exploration so mortality can be reduced with early exploration of Zone I haematoma. Again

mortality can also be reduced with early exploration of Zone II & III haematoma due to penetrating injuries[10].

While the majority of genitourinary trauma is not immediately life threatening, rapid recognition of genitourinary insult is imperative in order to minimize the morbidity and mortality associated with these injuries. Certain intra-operative findings at the time of laparotomy are, however, absolute indications for renal exploration. Presence of an expanding haematoma, pulsatile mass, and uncontained abdominal mass indicate need for investigation[11].

Relative indications for exploration or intra-operative intervention include extravasation of urine, impaired perfusion of the renal parenchyma, and inclusive staging of degree of injury by preoperative intravenous pyelogram (IVP) or computerized tomography scan (CT scan)[12]. In our study four patients had renal injury, one had ureteric and one had bladder injury.

Out of these six, five patients were stable at the time of arrival and they were investigated pre-operatively with the help of IVU, ultrasonography etc. One patient with the bladder injury was unstable, so he was urgently explored.

The pelvic fracture is the most common cause of retroperitoneal haematoma in zone III. Massive hemorrhage and coagulopathy is the major problem in these patients[13].

Blunt trauma patients with pelvic fractures have been shown to have a two-fold to five-fold increased risk of aortic rupture compared with the overall blunt trauma population[13]. In our study eight patients of Zone III injury had pelvic fractures. All these patients were managed successfully without any complication.

A duodenal injury does not cause significant hypotension and signs significant of peritonitis may be delayed if the retroperitoneal duodenum is injured. The morbidity and mortality is high if some one fails to recognize this injury[14]. In this study there were three cases of duodenal injuries.

Pancreatic trauma affects almost 10% of all abdominal injuries, but isolated pancreatic injuries are very rare[15].

We treated patient with serious injuries with internal drainage and less severe injuries with external drainage alone. Majority of studies confirm this approach, which include study done by Farrell et al[16]. Similarly a large series done in America, 372 out of 450 patients were treated with simple drains and only 10 fistulas persisted for more than 30 days[17].

In our study we treated six patients with simple drains with only two fistulas, which closed spontaneously. So fistula was the common complication seen in our study as confirmed by international literature.

With regard to the operative management of colon injury, we believe that correct surgical treatment of colonic injury and copious saline lavage of peritoneal cavity are essential for proper management.

Nowadays majority of trauma surgeons advocate primary repair of colon, the few examples are that of Beall et al[18], Shannon et al[19] and Demettriadws et al[20] In our study only 20% of patients were managed by primary repair. There were two reasons. Firstly, majority of our patients belonged to far off places. They were reporting to the hospital when they were hemodynamically unstable and peritoneal cavity contaminated.

Secondly, majority of our patients were victims of gunshot injuries, in which they were having multiple organ involvement, rendering patient unsuitable for primary repair of colon. Taking in consideration, the results of our study, we think that primary repair of colon injuries is safe only in carefully selected cases.

Approximately 80% of patients with abdominal missile wounds have a major vascular injury. The aorta, Inferior vena cava and the iliac vessels are most often involved. Aortic injuries have mortality rates from 50 to 90 percent depending in part on location of the injury[21,22].

Blunt trauma patients with pelvic fractures have been shown to have a two-fold to five-fold increased risk of aortic rupture compared with the overall blunt trauma population[23]. In our study only one patient had aortic injury but there was no associated pelvic fracture, however one patient with antro-posterior compression pelvic fracture had associated internal iliac artery injured.

The mortality of our study was 6.5 %. All mortality was attributed to initial state of irreversible shock as is confirmed by international literature[24].

CONCLUSION

We conclude on the basis of our study that mandatory exploration of Zone I haematoma irrespective of the mode of injury and mandatory exploration of Zone II & III haematoma in penetrating injuries only, should be done. Selective exploration should be done in cases of Zone II & III haematoma in blunt injuries.

Rate of injuries is high in Zone I during exploration so mortality can be reduced with early exploration of Zone I haematoma. Mortality can also be reduced with early exploration of Zone II & III haematoma due to penetrating injuries.

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