

Management of Retroperitoneal Haematoma

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This study was conducted for the management of retroperitoneal haematomas. The main objectives of the study were to find out the frequency of different visceral injuries in cases of retroperitoneal haematoma due to trauma to abdomen and to find out the morbidity and mortality related to different zones in retroperitoneal haematoma in patients with abdominal trauma. Over one year, 45 patients of retroperitoneal injury were admitted through emergency. The entire Zone I abdominal injuries were explored. Selective Zone II patients underwent surgery while most of Zone III patients were managed conservatively. This shows that the depending upon the mode and Zone of the injuries, retroperitoneal haematomas can be managed conservatively.

Key words: Retroperitoneal, blunt, haematoma

Diagnosis and management of retroperitoneal haematoma is problem of controversy. It appears most frequently in the range of poly trauma or various traumas of abdomen and retroperitoneal organs. The haematomas are caused by the rupture of kidneys, pancreas, duodenum, large bowel, bladder, retro-peritoneal large blood vessels and pelvic fractures.

Retro-peritoneal haematoma is caused by blunt trauma in most cases. During management, there are usually some diagnostic difficulties. In diagnosis we use clinical status of patients, radiography, angiography, ultra sonography, but the most secure is laparotomy. There are two approaches i.e. operative & conservative. Retroperitoneal haematoma is a consequence of ruptured retroperitoneal solid organs retroperitoneal blood vessels and associated with injuries of intra peritoneal organs. This is the reason for detailed exploration of abdominal cavity¹.

This study was conducted for the purpose of solution of this known dilemma of the management of retroperitoneal haematomas. The main objectives of the study were (1) to find out the frequency of different visceral injuries in cases of retroperitoneal haematoma due to trauma to abdomen (2) to find out the morbidity and mortality related to different zones in retroperitoneal haematoma in patients with abdominal trauma.

We have also tried to set a standard protocol for the management of patients of RPH, so that surgeons who are working in a set up where they do not have any facility of modern diagnostic tools should be able to explore the retroperitoneal confidently. The introduction of diagnostic peritoneal lavage (DPL) by Root on 1965, the CT scan in 1980 and diagnostic laparoscopy in the 1990s has refined the diagnostic workup

Materials and methods

It was a descriptive type of prospective study which was held at the Department of Surgery, south surgical ward Mayo Hospital, Lahore.. Duration of the study was June 2001 to May 2002. Unstable patients with suspected retroperitoneal haematoma were immediately subjected to exploratory laparotomy; damage control surgery was

performed where needed. Stable patients were investigated first. Exploration policy for the retro-peritoneal haematoma included mandatory exploration of Zone I and selective exploration of zone II & III Injuries. Procedures, complications and mortalities were noted down. All the 128 patients having abdominal trauma with suspected intra abdominal injuries out of which 45 patients had retro peritoneal haematoma presenting in the hospital from June 2001 to May 2002 were included in the study. The patients were managed according to the ATLS philosophy based on airway, breathing and circulation approach to the evaluation and treatment of the injured patients. The mode on injury was noted down. No specific investigations other than base line were performed except IVU in cases of haematuria to assess renal injury. Exclusion criteria of patients in the study was all patients with penetrating abdominal trauma suspicion of having retroperitoneal haematoma who were at extreme of their ages so that mortality risk due to their age factor could be excluded out. The patients with associated thoracic, head and limb injuries were excluded from the study. Patients with blunt abdominal trauma having bruise at their back or flanks were included in 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 mid line incision under general anesthesia and under the cover of suitable antibiotics. The peritoneal cavity was first explored and intra peritoneal injuries were assessed and managed accordingly. 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 no. of patients who underwent exploratory laparotomy was 128. Out 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. Total 29 (64.4%) out of 45 patients were male so male to female ratio was 1.8:1. The major cause of injury was firearm weapons (n=19) 42.22 % followed by stabs (n=13) 28.89% and blunt pelvic abdominal trauma (n=13) 28.89%. 40 (88.88) out of total 45 had associated intra peritoneal injuries. 21 (46.6%) patients had ZONE 1 injury, 13 (28.88%) patients had ZONE 2 injury and 11 (24.44) % patients had ZONE 3 injuries. **Zone 1:** In zone I venous injuries were more frequently seen as compared to arterial injuries. Inferior vena cava was repaired in all 9 cases, out of which 2 patients who had associated other intra peritoneal injuries died post operatively. Abdominal aorta was repaired in 01 patient who died on operation table secondary to hypo volaemic shock. The common iliac vessels injuries were also successfully repaired. Duodenal injuries were managed accordingly with primary repair and tube duodenostomy where indicated. **zone II:** 13(28.88%) out of 45 patients had zone II retroperitoneal haematoma. 6 (46.2%) patients presented with blunt trauma. All the 7(53.8%) patients with penetrating zone II injuries were explored while in blunt zone II retroperitoneal haematoma a selective policy was adopted; 03(23.07%) out of 06 were explored due to suspected renal injury. In 01(7.69%) patient, Nephrectomy was done. The only patient with ureteric injury was repaired over T tube stent. Left colonic injuries were managed by exteriorization as colostomy while right colonic injury was primarily repaired unless there is some contraindication. 01(7.69%) patient with pancreatic tail injury was managed with simple drainage. **Zone III:** In zone III retroperitoneal haematoma 11 (24.44%) patients were seen. 08(72.72%) out of 11 had pelvic fractures due to blunt trauma and 03(27.28%) patients had penetrating injury, out of which 01(9.09%) patient had rectal injury, which was primarily repaired with covering transverse colostomy and 01(9.09%) patient with urinary bladder injury, which was repaired. In 01(9.09%) internal iliac artery was ligated. There were 3(27.27) patients with pelvic fractures due to lateral compression (LC); 1(9.09%) had associated vascular injury, which lead the patient to shock. Antero-posterior compression (APC) caused fracture in 04(36.36%) patients out of which 03 had associated rectal and urinary tract injuries. 02 of them went into shock but recovered well. Vertical shear was seen in 01(9.09%) patient who also had associated urinary injury. This patient also presented with shock but recovered well.

Morbidity & mortality

On the whole damage control surgery was performed in 03(6.66%) patients; 11(24.4%) patients on Zone II & III were managed conservatively while 13(28.88%) patients were operated; and all patients of zone I were explored. The mortality of our study was 6.5%. The most important complication was sepsis, and two patients had deep venous thrombosis.

Discussion

Diagnosis and management of retro-peritoneal haematoma is the problem of controversy in actual moment. Seemingly innocuous wounds may not manifest clear signs or symptoms, and potentially lethal injuries could be over looked or discounted. It appears most frequently in the range of Poly trauma or various traumas of abdomen and retroperitoneal organs. In this study the major cause of injury was firearm weapons 19 (42.22%) followed by stabs 13 (28.88%) and blunt pelvic abdominal trauma 13 (28.88%). So majority of patients was having penetrating trauma. While in the study presented by Grieco JG et al, in 1980, the main mod was blunt trauma. Direct clinical examinations are limited by the specific anatomical situation; X-Rays abdomen was the part of a routine work up in all patients. Abdominal CT scan with oral, intravenous, and sometimes rectal contrast provides the most information about solid organs and retroperitoneal structures. Ultrasound and CT scan has low diagnostic sensitivity for small bowel, diaphragmatic and pancreatic injuries. Intravenous pyelogram may be indicated. All patients were managed according to ATLS philosophy. Poor prognosis can also be expected in those patients with poor response. Damage control surgery was also performed in unstable patient. All of them had retroperitoneal as well as intra peritoneal bleed due to gunshot wounds. Transfusion of 2 or more blood volumes of saline and packed R.B.C's decrease the level of coagulation to 15%. According to Rontondo et al² and Moore et al³ due to large transfusion requirements & delay in coagulation profile results, coagulation factors should be replaced empirically. Damage control involves rapid celiotomy to control major injuries; temporary closure of the abdomen and another exploration after the patient is re-warmed and stabilized. With the use of this technique, according to Hirshberg et al⁴ and Selivanov et al⁵ approximately 40% of critically injured patients can be saved. Mandatory exploration 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 haematomas due to penetrating injuries as described by Feliciano et al⁶ and Leppaniemi et al⁷ in their studies.

While the majority of genitourinary trauma is not immediately life threatening, rapid recognition of genitourinary insult is imperative in order to minimize the morbidity & mortality associated with these injuries. In the hemodynamically unstable patient, exploratory laparotomy is mandatory regardless of the mechanism of injury. In the hemodynamically stable patient, certain intra operative findings at the time of laparotomy are, however, absolute indications for renal exploration. According to Knistjansson et al⁸ and Jakes et al⁹ presence of an expanding haematoma, pulsatile mass and uncontained abdominal mass indicate need for investigation. Relative indications for exploration or intra-operative intervention include extravasations of urine, impaired perfusion of the renal parenchyma and inclusive staging of the degree of injury by pre-operative intravenous pyelogram (IVP) or computerized tomography scan (CT Scan) Pollack et al¹⁰ Bali et al¹¹ Cox et al¹² all have explained same fact in their respective studies. The pelvic fracture is the most common cause of retro-peritoneal haematoma in zone III. A duodenal injury does not cause significant hypotension and signs of peritonitis may be delayed if the retroperitoneal duodenum is injured. Whalen et al¹³ Jones et al¹⁴ have confirmed and explained that the morbidity and mortality is high if some one fails to recognize this injury. Pancreatic trauma affects almost 10% of all abdominal injuries, but isolated pancreatic injuries are very rare. Majority of studies confirm this approach, which include study done by Farrell et al in 1996¹⁵.

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 on 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.

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