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Surgery

THE CHILDREN WHO LIVED – A CASE SERIES OF ABDOMINAL TRAUMA IN CHILDREN

KEY WORDS:

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ABSTRACT

Trauma is an important cause of mortality and morbidity in children. Abdominal trauma is the 3rd leading cause of trauma death. Abdominal injuries can have a varied presentation. The first case is a child 8 yrs of age who presented with a penetrating injury abdomen with an associated colonic perforation .He underwent a laparotomy and primary closure of the colonic perforation. He recovered well and is on follow up. 2nd case is a child 2 years of age who came with history of a gas cylinder falling on him. Xray abdomen done showed evidence of pneumoperitoneum. X ray left leg showed fracture shaft of tibia. Laparotomy done showed a gastric perforation. A wedge resection with anastomosis was done. POP cast was applied for the fracture tibia. Child recovered well and is on follow up. 3 rd child was brought with history of having been hit by a bus. On examination she was found to have an extensive perineal injury with pelvic bone and right neck of femur fracture. She underwent laparotomy with SPC insertion , perineal reconstruction with external fixator application of the pelvic fracture. She also underwent a closed reduction and internal fixation of the right neck of femur fracture. After thorough evaluation she subsequently underwent a colostomy closure with good functional and cosmetic results. These 3 cases are a small sample of the varied presentation that abdominal trauma can have

INTRODUCTION

Trauma is one of the leading causes of morbidity and mortality in the paediatric population (1). The abdomen is the third most commonly injured anatomic region in children following head and the extremities (1). Abdominal trauma is associated with significant morbidity and may have a mortality as high as 8.5% (1). The abdomen is the most common site of initially unrecognized fatal injury in a child with trauma (!).

CASE 1

An 8 year old male child was brought by his parents with an alleged history of fall on a broken pane of glass at a shop near his house . On arrival in the hospital he was found to be pale but had stable vitals. He had a huge dressing placed around the abdomen which was opened in the theatre as an initial assessment at a peripheral hospital had documented a bowel injury. On examination he was found to have a complete transection of the anterior abdominal wall with evisceration of bowel namely the stomach and transverse colon . Greater omentum was found to be completely avulsed from the greater curvature of the stomach. There was linear laceration in the transverse colon of size 4 x3 cm. child underwent evacuation of intraabdominal haematoma with primary closure of the laceration in the transverse colon followed by a closure of the abdominal wall defect inflicted by the injury. Post operative period in the child was very stormy requiring PICU care for 1 week. Child subsequently recovered well and was discharged on postoperative day 14.

CASE 2

A 2 year old male child was brought by his mother to the ER with complaints of a gas cylinder falling on him while playing outside his house. Gas cylinders were being unloaded from a delivery vehicle when one of the cylinders toppled on the child. The child had just had his meals. History of injury to his left leg was also present. On examination child was found to be hypovolemic shock and was resuscitated with crystalloids and also also a blood transfusion was given. Child was started on ionotropes. Examination of the abdomen revealed gross abdominal distension with clinically appreciable free fluid. There was also a deformity involving the left lower limb. After stabilisation child was shifted for an X ray of the abdomen and bilateral lower limb. X ray of the abdomen revealed there to be a pneumoperitoneum. X ray of the lower limb showed a fracture of the lower one – third shaft of tibia. Child was taken up for an emergency laparotomy. On opening the abdomen , food particles were noted everywhere. A large gastric perforation was noted of size 5 x 3 cm was noted on the anterior wall of the stomach towards the greater curvature. Thorough peritoneal lavage was given with a primary closure of the perforation. A POP slab was applied to the left leg. child post operatively recovered well and was discharged on post operative day 8

CASE 3

A 2 ½ yr female child was brought with alleged history of being hit by a bus while getting down from another bus at 5.00 pm on 13/8/16 at tirupathi .There was no history of LOC or vomiting. There was no history of headache , ENT bleed ,seizures, breathlessness ,abdominal distension . History of having voided urine was present. On examination child was

found to be pale with features of dehydration. Examination of the abdomen revealed mild tenderness and there was a dressing around the pelvis with soakage. The child was not able to move her right lower limb. On removing the dressing in the operation theatre there was an open laceration involving the external genitalia. Bladder was visualized and distended . There was pubic bone fracture and the broken ends were seen .Vaginal and ureteral orifice could not be visualized . Examination of the anal orifice showed disruption of the anterior wall. Child was taken up for a laparotomy and proceed. Vaginal orifice and uretheral meatus was avulsed and disrupted. Perineal body was disrupted along with the anterior wall of rectum and anal canal .Vagina was opened out. Hence proceeded with supra pubic catheter insertion , perineal reconstruction and diversion colostomy along with application of external fixator for the pelvic fracture. Child had an uneventful post operative period .She also underwent a closed reduction and internal fixation of fracture neck of right femur. After 2 months child underwent a distal loopogram and colonoscopy to assess distal patency of bowel which was found to be adequate. Micturating cystourethrogram was done which showed normal contour of the bladder. Cystoscopy was done which was found to be normal. Supra pubic catheter was removed and child underwent a colostomy closure. Child is now mobilizing well , voiding urine and passing stools with continence.

DISCUSSION

Abdominal trauma accounts for 8- 10% of admissions at paediatric trauma centers. It is the 3rd most common cause of death in paediatric trauma. It is also a common cause for hidden fatal injuries (1).

85% of paediatric abdominal trauma is accounted for by blunt abdominal trauma with motor vehicle accidents being the most common cause followed by sports injuries and fall (2) .

Penetrating trauma constitutes the remaining 15% of cases. Gun shot and stab injuries are the most common causes. It has a higher mortality when compared to blunt abdominal trauma.Anatomical location and the type of weapon are important determinants of the extent of injury (3)

There are certain anatomical factors which makes abdominal trauma in children relatively more common .Solid organ are larger and more anteriorly placed .They also tend to have a less subcutaneous fat and thinner abdominal wall musculature. The result of these factors is an increase in incidence of solid organ injuries and associated bowel injuries History and proper examination may give a clue as to the severity of the injury sustained, for example presence of a patterned abrasion in the epigastrium, the so called london sign should raise the suspicion of an injury to the pancreas or duodenum .However it is to be remembered that absence of external signs does not rule out the presence of an intra abdominal injury. In fact 7.1% of children with normal physical examination had intra abdominal injuries on CT (2).

Plain x ray abdomen can be done which can show free air ,indicating the presence of bowel injury. However presence of free air in an X ray most commonly indicates the presence of a gastric , duodenal bulb or colonic injuries , as only 25 – 33% of children with jejuno ileal injuries demonstrate free air in a plain x ray abdomen. Retained shrapnel can sometimes be detected in a plain x ray abdomen in a penetrating injury (4).

FAST or focussed abdominal sonography in trauma is a very important adjunct in the identification of solid organ injuries. However, its inability to identify the extent of injury and failure to visualise the retroperitoneum as well its operator dependency limits its efficacy .Holmes et al has documented in his prospective study of 244 patients that FAST has a sensitivity of 82 % and a specificity of 95% , Soudack et al , in their retrospective study of 313 children have demonstrated a sensitivity of 92.5 % and a specificity of 97% (2) . In a penetrating injury abdomen FAST has a specificity of 95 – 97% and a sensitivity of 46 – 67%(4)

CECT abdomen is the investigation of choice in a haemodynamically stable patient , to assess the extent of injury .however, the radiation exposure and its inability to detect accurately bowel injuries is a limiting factor (2).

Management of a child with blunt abdominal trauma is expectant unless there is evidence of ongoing intra abdominal bleed like tachycardia , hypotension, reduction in urine output and fall in haematocrit or if bowel injury is suspected. Serial abdominal assessment of children should be advocated as bowel injuries may be detected many hours after the inciting event (5).

In penetrating injuries , the initial dictum was that a laparotomy is required in all cases . However now there is a shift towards expectant management in such cases also with a success rate of 50% for anterior abdominal and 80% for posterior abdominal penetrating injuries. Shaftan et al in their study have opined that while 70% have violation of peritoneum only 25% of them require surgery . One major worry in the non operative management of penetrating injuries is missing bowel injuries which can result in severe morbidity and mortality (2) .

CONCLUSION

Abdominal trauma in children is a spectrum .From the not too obvious to what was reported above .While it may not be possible to diagnose every injury in a patient with trauma, effort should be taken to not miss the obvious

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