VOLUME-8, ISSUE-8, AUGUST-2019 • PRINT ISSN No. 2277 - 8160

Original Research Paper

General Surgery

ISOLATED INTRAPERITONEAL URINARY BLADDER RUPTURE ON LAPAROTOMY - IN A SUSPECTING CASE OF HOLLOW VISCUS PERFORATION FOLLOWING BLUNT TRAUMA ABDOMEN : A CASE REPORT

Jiban Debnath*	MBBS, Post graduate trainee, General Surgery Department of Surgery, Regional Institute Of Medical Sciences, Imphal-795004 *Corresponding Author
Harish Naik	MBBS, Post graduate trainee, General Surgery Department of Surgery, Regional Institute Of Medical Sciences , Imphal-795004
Khagokpam Hirina Devi	MBBS , Post graduate trainee , General Surgery Department of Surgery, Regional Institute Of Medical Sciences , Imphal-795004
Nagha D. Marak	MBBS, Post graduate trainee, General Surgery Department of Surgery, Regional Institute Of Medical Sciences, Imphal-795004
Manoharmayum Birkumar Sharma	MS (General Surgery) , Professor & Head , Department of Surgery, Regional Institute Of Medical Sciences , Imphal-795004

ABSTRACT Bladder injuries occur due to blunt, penetrating or iatrogenic trauma. The ones that occur following blunt trauma are commonly associated with pelvic fractures and can range from contusions to bladder rupture. Extra-peritoneal ruptures occur more commonly than intra-peritoneal ruptures. Here we are reporting a rare case of intra-peritoneal bladder rupture without any bony or solid organ injury. Following a physical assault in the means of forceful kick over abdomen a 33-year-old gentleman presented to us with abdominal pain and disability to pass urine with features of peritonism. Plain X-ray chest and erect abdomen showed pneumoperitoneum (air under diaphragm). No other radiological and external injuries were detected. The patient was taken up for emergency laparotomy for suspicious of hollow viscus perforation and a full thickness linear rent at the bladder dome, ~3cm in length was found which was repaired in two layers. The patient improved post operatively and was discharged on the 9th post-operative day.

KEYWORDS : Blunt Trauma abdomen , X-ray erect abdomen , pneumoperitoneum ,hollow viscus perforation , isolated intra-peritoneal bladder rupture

INTRODUCTION

Bladder injuries account for 1.5% of patients with blunt trauma abdomen. The most common cause being road traffic accident (90%).1 Among the hollow visceral injury, small bowel is the most commonly involved.2 Bladder injuries are suspected when there is an associated pelvic fracture. Extra peritoneal ruptures are more common than intra-peritoneal ruptures.3 Rupture of the bladder occurs when the bladder is distended and intra-vesical pressure exceeds 300 cm of H2O.4 Operative management is the treatment for intra-peritoneal bladder rupture while the extra-peritoneal injuries can be managed conservatively.[8-10]

CASE REPORT

A 33-years old male presented to the RIMS casualty with complaints of lower abdominal pain with inability to pass urine following physical assault in the means of kick over abdomen by a unknown person.

On examination patient was conscious , vitals were stable with neither external bleeding nor neurological deficits. Abdominal examination showed mild generalized tenderness and voluntary guarding at epigastric and suprapubic regions. Pelvic, genitourinary & rectal examinations revealed no abnormality.

The patient was catheterized and about 500 ml of blood tinged urine was drained which later cleared. Plain X-ray chest and erect abdomen showed air under right dome of diaphragm (pneumoperitoneum) (Figure 1A & 1B). USG screening and X-ray pelvis were unremarkable. No other external injuries. The hemogram and other biochemical profile were normal.

The patient was taken up for emergency laparotomy as a case of hollow viscus perforation. Intra operatively, a 3 cm linear rent at the dome of the urinary bladder was identified (Figure 2). Foley's bulb felt from the rupture site. There was no other organ injury. The bladder was repaired with 2-0 vicryl in two layers with keeping the urethral catheter in-situ.

The post-operative period was uneventful and the patient was discharged on the 9th post-operative day with urethral catheters in situ. The urethral catheter was advised to keep for more 2weeks by Urologist and was removed after 2 weeks during follow-up.

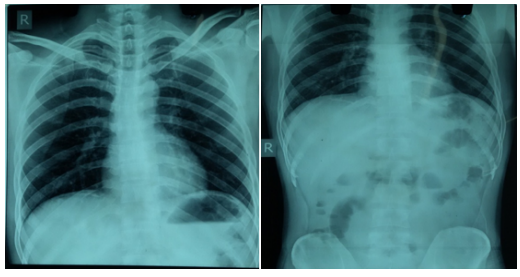

Figure 1A & 1B : X-ray chest & erect abdomen showing air under diaphragm

Figure : Intra-operative image showing rupture of dome of urinary bladder

DISCUSSION

The most common etiology for bladder rupture is road traffic accident accounting for 90% of bladder injuries. In patients with blunt trauma abdomen, bladder injuries occur in only about 1.5%. Pelvic fractures are the most common associated injuries occurring in 80% of instances of bladder injury. An additional 80% of patients have bowel injury or intra-peritoneal solid organ injury.[1]

Extra peritoneal rupture (EPR) occurs in approximately 60-65% of cases, and intra peritoneal rupture (IPR) is seen in 25%.[3]

An isolated intra-peritoneal bladder rupture without any other injuries thereby is a rare occurrence. Other causes of bladder injury are falls and industrial trauma.

The mechanism of intra-peritoneal rupture is due to sudden increase in intra-vesical pressure when the bladder is full. This leads to rupture of the dome as its muscles fibres are widely separated and hence not well supported. This area has least resistance to sudden change in the intra-vesical pressure. A pressure above 300 cm of H2O causes the bladder to rupture.4

The most common feature of bladder rupture is hematuria, either microscopic or gross and is a good indicator of bladder injury. IPR results in urine getting collected in the peritoneum resulting in signs of peritonism, making it difficult to differentiate it from other causes of peritonitis such as bowel or solid organ injury. Hematuria is absent in 15% of cases of IPR.[4]

A delayed presentation in seen in some cases with non-passage of urine and lower abdominal pain.5 Intra-peritoneal rupture of the bladder leads to urinary ascites which causes movement of solutes across a concentration gradient through the peritoneum. This leads to increase in the levels of serum urea, creatinine and potassium with decrease in serum sodium concentration. This phenomenon is called 'reverse autodialysis' and presents with 'pseudo renal failure'.[6]

Although computed tomographic cystography (CTC) and/or retrograde cystography (RGC) are the standard imaging tools for the diagnosis of bladder injury,7 in our case we did not wait for CT scanning as the decision of surgery was already taken considering the clinical emergency and on the basis of X-ray findings and USG screening only.

The treatment for intra-peritoneal bladder rupture is operative as urinary leak into peritoneum can cause chemical peritonitis. An explorative laparotomy should be done with repair of the bladder rent.8 However, there have been case reports in literature in which post-surgical (for transurethral resection of bladder tumour) and blunt trauma abdomen have been managed conservatively.9 Extraperitoneal bladder ruptures can be managed conservatively with adequate urinary drainage.10 Recently, laparoscopic repair of intraperitoneal bladder injuries has been preferred provided that the patient is stable, but the plan should be changed to open surgical intervention on development of any hemodynamic instability or surgical complication.[11]

CONCLUSION

Bladder rupture must be suspected in any case of blunt abdominal trauma. A bladder injury can occur due to blunt trauma abdomen even in the absence of any other bony or soft tissue injury and a high clinical suspicion helps identify these injuries early. The treatment for intra-peritoneal bladder rupture is operative as urinary leak into peritoneum can cause chemical peritonitis. An explorative laparotomy should be done with repair of the bladder rent with adequate urinary drainage.

REFERENCES

1. Gomez RG, Ceballos L, Coburn M. Consensus statement on bladder injuries. BJU International. 2004;94(1):27-32
2. Abbas SM, Upadhyay V. Hollow viscus injury in children: Starship hospital experience. World J Emerg Surg 2007;2:14.
3. Morey AF. Genital and lower urinary tract trauma. AJ Wein, LR Kavoussi, AC Novick, AW Partin, CA Peters (Eds.), Campbell-Walsh urology (10th ed.), Saunders, Philadelphia, PA; 2011:2513.
4. Gupta S, Ram NK, Bansal N. Intraperitoneal rupture of urinary bladder: a diagnostic conundrum. Open Access Scientific Reports. 2013;2:660.
5. Alhamzawi HH, Abdelrahman HM, Abdelrahman KM, El-Menyar A, Al-Thani H, Latifi R. Delayed presentation of traumatic intraperitoneal rupture of urinary bladder. Case Rep Urol 2012;2012:Article ID 430746.
6. Aber A, Hyder SA, Arumuham V. An unusual case of spontaneous bladder perforation with associated autodialysis of the ensuing urinary ascites. Case Reports in Medicine. 2011:Article ID 145084.
7. P. V. Quagliano, S. M. Delair, and A. K. Malhotra, "Diagnosisof blunt bladder injury: a prospective comparative study of computed tomography cystography and conventional retrograde cystography," Journal of Trauma 2006;61(2):410–21
8. Arumugam PK. Isolated intra-peritoneal rupture of the urinary bladder following blunt trauma abdomen. Int Surg J 2017;4(5):1822-4.
9. Geng JH, Chang HC, Chang HC, Chang HC, Chung SD, Chen PH, et al. Nonoperative treatment for intra-peritoneal bladder rupture. Urological Sci. 2014;25(2):70-2.
10. Fu CY, Shih CH, Chang PY, Hsiao CH, Wang YC, Chen RJ. Conservative treatment of concomitant extra-peritoneal bladder rupture and intra-bladder blood clot formation: Case report of application of ureteral catheterization. Canadian Urol Assoc J 2012;6(6):E256-8.
11. Kim B, Roberts M. Laparoscopic repair of traumatic intra-peritoneal bladder rupture: Case report and review of the literature. Canadian Urol Assoc J 2012;6:E270-3.