ORIGINAL RESEARCH PAPER

Volume-9 | Issue-5 | May-2020 | PRINT ISSN No. 2277 - 8179 | DOI : 10.36106/ijsr

INTERNATIONAL JOURNAL OF SCIENTIFIC RESEARCH

SPONTANEOUS RUPTURE OF URINARY BLADDER - A RARE COMPLICATION OF ACUTE CYSTITIS

Urology

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ABSTRACT

Spontaneous rupture of urinary bladder is a rare clinical entity that requires immediate medical attention due to its high morbidity and mortality. It presents a diagnostic challenge to the clinician. We report this case of a 78 year old lady diagnosed as a case of acute cystitis associated rupture of bladder. She presented to us with sudden onset abdominal pain and rapidly progressive distension with features of peritonitis. Abdominal imaging and biochemical analysis of ascitic fluid revealed a urinary ascites. Open repair of bladder was done. Biopsy from the bladder tissue indicated acute cystitis. Post-operative cystogram showed excellent healing of the bladder.

KEYWORDS

Bladder rupture, bladder perforation, spontaneous, acute cystitis, acute abdomen, atraumatic , urinary ascites

CASE REPORT

A 78 year old lady presented to our surgical emergency with symptoms of sudden onset generalised abdominal pain, oliguria and progressive abdominal distension. She had no known co-morbid conditions. Significant was history of fever over the past 2 weeks with lower abdominal pain, increased frequency of micturition, dribbling and dysuria. She was treated at home as a case of Urinary tract infection with oral antibiotics on the basis of her urine microscopic examination and urine culture reports. She also complained of fresh blood in stools over the past 2 weeks. As the amount was scanty she had not sought any medical advice yet.

On examination in the emergency room the patient was dull, pale, had a feeble pulse of 116/min and a blood pressure of 90/70 mm Hg. Abdominal examination revealed a rigid abdomen with maximum tenderness over hypogastrium and a positive shifting dullness. Per rectal examination and proctoscopy revealed a possible ulcer about 1x1 cm without any active bleed.

Initial investigations revealed- Hb-6.3g/dl, TLC-21000/cu.mm with neutrophils 98% , platelet count 300,000/cu.mm, Blood urea-166 mg/dl, Serum creatinine-5.9mg/dl. Plain radiographs of chest and abdomen (erect)were taken to evaluate the possibility of hollow viscus perforation and a bowel obstruction respectively. Both studies were normal. Ultrasound of the abdomen and pelvis revealed a gross ascites with echogenic debris. At this stage our D/D included diverticulitis, a ruptured ovarian cyst with a possibility of superimposed bacterial peritonitis and mesenteric ischemia. Patient was initially managed conservatively, packed cell transfusions and CVP guided fluids were given while being intensively monitored in an ICU setting. Continuous bladder drainage maintained. Urine microscopy showed plenty of pus cells and culture grew Klebsiella pneumoniae, sensitive to Amikacin, Chloramphenicol while resistant to fluroquinolones and 3rd generation cephalosporins. Diagnostic paracentesis revealed turbid fluid with debris. Microscopic examination of ascitic fluid showed plenty of neutrophils. However no bacteria were seen and culture was sterile. Ascitic fluid urea was 194 mg/dl and creatinine was 6.4mg/dl. This led to a suspicion of a possible urinary ascites and subsequent bacterial peritonitis. After an initial attempt at conservative management urine output kept on declining, serum creatinine increased to 8.2mg/dl and abdominal girth increased. In view of worsening ascites, biochemical parameters and features of peritonitis she was taken up for emergency laparotomy.

Exploratory Laparotomy revealed a pyoperitoneum with a 4x2 cm size tear in the dome of urinary bladder with Foleys bulb in situ. Thorough peritoneal lavage was done. Margins surrounding the ruptured area were necrotic. Bladder tissue was sent for histopathological examination. Debridement and primary repair in single layer with vicryl suture was done.For better drainage of the bladder a separate suprapubic cystostomy was done. A pelvic drainage ADK tube was also put in place. Colonoscopy was performed in the OT. Multiple large ulcers were seen in rectum.Rest of the large bowel (seen upto cecum) was normal. Biopsy was taken from the ulcers.

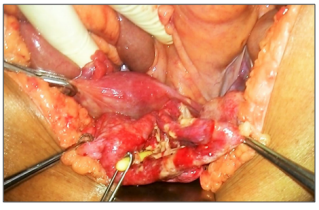

Image 1 : Intraoperative image of perforated urinary bladder with Foley's catheter in situ

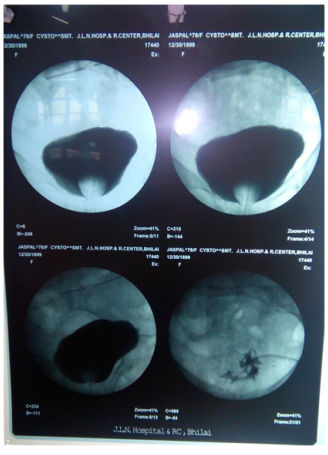

Image 2 : Postoperative cystogram showing no intra-abdominal leakage of contrast indicating a well healed bladder

Postoperatively patient showed steady improvement. Serum creatinine was 2.2 mg/dl 24 hours after surgery. TLC showed a steady decline. General condition and urine output improved. Pelvic drain and suprapubic catheter were removed by day 7. Post-operative cystogram revealed no intra-abdominal leakage. Biopsy from the bladder and rectal ulcer revealed acute cystitis and benign SRUS respectively.

Patient was discharged on 10th postoperative day with foley's in situ. She remains asymptomatic at 3 months post operation.

DISCUSSION

Spontaneous bladder rupture is a rare clinical entity that demands a high index of suspicion for diagnosis[1]. Risk factors that have been described include pelvic tumors , prior pelvic irradiation, bladder tumors especially when malignant, tubercular cystitis, large ureterovesical stone, postpartum females , diabetic cystopathy and

neurogenic bladder [1-7].Other factors that have been identified include alcoholic binge, cocaine and amphetamine abuse[7,8]. Common denominators within these risk factors are pathological bladder wall weakening with or without increased intravesical pressure.

Our patient lacked all of these risk factors. The only risk factor identified was an acute pyogenic cystitis.

Essentially two different types of urinary bladder rupture have been documented, with varying signs and symptoms, viz. intraperitoneal rupture of the urinary bladder (associated with high mortality and morbidity around 47%)[2,9] and extraperitoneal rupture of the urinary bladder. Common sites of urinary bladder rupture are the dome of the urinary bladder (associated with binge alcohol intake, neurogenic bladder, diabetic cystopathy), the anterior wall (mostly seen in postpartum women), and the posterior wall (mostly seen in patients who have received irradiation for pelvic tumours in the past)[10].

A previously normal but suddenly elevated serum urea and creatinine may be a key feature in the diagnosis of urinary ascites.The new onset of renal failure[11] in this case is based on the concept of "reverse autodialysis" across the peritoneal membrane- a reverse form of continuous ambulatory peritoneal dialysis, most apparent when there is a delay in presentation. In this condition,instead of diffusion of metabolic waste products into a dialysate, the peritoneum reabsorbs urea and creatinine from the leaked urine. This causes a subsequent rise in serum levels of urea and creatinine. In the past, the gold standard for diagnosis was the cystogram [12]; however in an acute situation with worsening physiological variables, it may not be feasible for the clinician. Ramcharan et al. described the importance of analysing for urinary constituents via DPT. This is objective, rapid and sensitive in analysing intra-abdominal fluid for urine. An ascitic creatinine:serum creatinine ratio >1.0 is termed highly suggestive of an intraperitoneal urine leak [13].

High index of clinical suspicion alongside imaging studies viz.cystogram, Ultrasonogram and CT scan of abdomen with pelvis supplemented by ascitic fluid creatinine: serum creatinine ratio clinch the diagnosis of an intraperitoneal bladder rupture. Management is essentially surgical and emergency surgery is often warranted. A cystorraphy (laparoscopic or open) is recommended. In our setting, clinical findings suggestive of a peritonitis , a DPT that revealed pyoperitoneum with ascitic creatinine: serum creatinine ratio >1(as described by Ramcharan et al), weakening general condition of the patient and features of septicemia led us to perform a laparotomy and cystorraphy. A separate suprapubic cystostomy was done to expedite adequate drainage and allow healing of the bladder. Also as necrotic bladder tissue was excised we preferred a single layer repair to avoid further reduction in bladder capacity postoperatively. A cystogram is useful postoperatively to evaluate the success of the repair. In light of this case we were able to identify acute pyogenic cystitis as a possible independent risk factor for spontaneous rupture of urinary bladder.

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