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Case Report

Surgery Section

Spontaneous Bladder Rupture Secondary to Neurogenic Bladder Following Acute Cerebrovascular Accident

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ABSTRACT

Urinary bladder ruptures are commonly associated with penetrating or blunt abdominal injury, however it can occur spontaneously as well (1 in 126,000 people). Overall mortality rate is about 50% and it is often difficult to diagnose clinically even with the aid of imaging. These injuries are often initially misdiagnosed. The underlying causes for spontaneous bladder rupture include bladder tumour, diverticulum, cystitis and rarely neurogenic bladder. We report a case of spontaneous bladder rupture that happened few days after acute stroke in an elderly woman. She presented with acute abdomen in the medical ward. Emergency laparotomy was performed and the rupture of bladder was identified and repaired.

Keywords: Bladder dysfunction, Stroke, Urinary retention

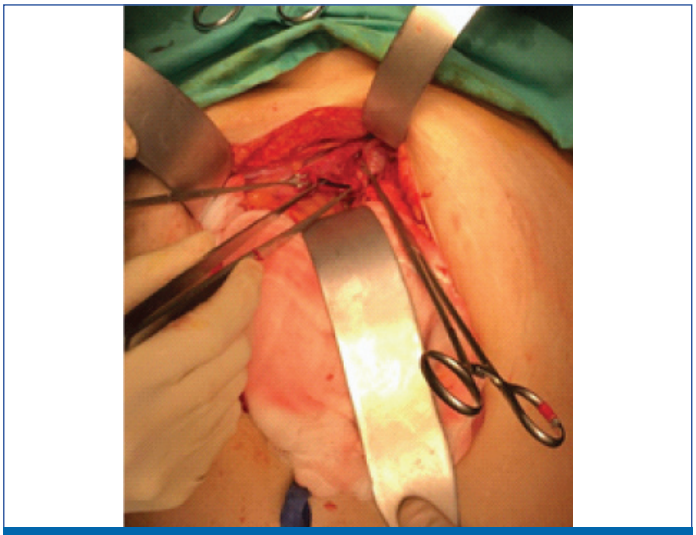
CASE REPORT

A 73-year-old, Chinese woman with underlying hypertension, presented to Emergency Department with the complaint of left sided body weakness with dysphasia for two days duration. Her Glasgow Coma Scale (GCS) was 15/15 (E4V5M6) and haemodynamic status was stable. Neurological examination revealed absence of gag reflex and left hemiparesis with the power of 3/5. However, the power of right side of body was 4/5. Reflexes and Babinski were equivocal. First Electrocardiogram (ECG) revealed rate controlled atrial fibrillation. Plain Computed Tomography (CT) brain reported as multifocal cerebral infarct of varying ages. She was admitted to general medical ward with the diagnosis of acute cerebrovascular accident and antiplatelet was started. Rivaroxaban was started on day two admission after discussion between family members, in view of high risk of recurrent stroke and embolus events due to atrial fibrillation.

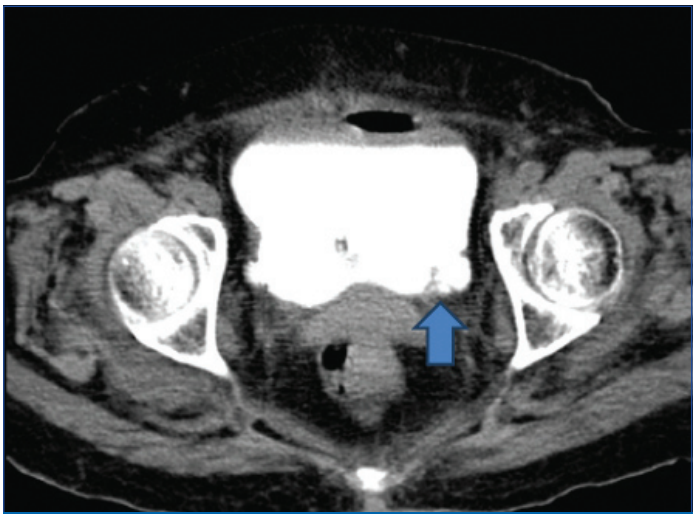
On day four admission, she complained of sudden onset of lower abdominal pain and profuse sweating. She was referred to surgical team for opinion. On assessment, she appeared alert and tachypnoeic (respiratory rate 30 breaths/minute), heart rate of 97 beats/minute, normotensive and afebrile. Her abdomen was distended with generalized peritonism. Haematuria was noticed along the urinary catheter and urine bag measuring 500 cc of light haematuria. Biochemical investigations showed white cell count of 15.2 × 10^9/litre, deranged renal profile and International Normalized Ratio (INR) was 2.29. Arterial blood gas showed compensated metabolic acidosis.

She was intubated in view of impending respiratory collapse and then taken immediately to the surgical theatre for exploratory laparotomy. Intraperitoneal, there was 300 cc of haemoserous foul-smelling fluid and large defect over the dome of bladder measuring 5 cm long [Table/Fig-1]. Small and large bowels were normal. Defect over the bladder was repaired with 2-layer fashion. Leak test was performed using methylene blue and tested to be water tight. Urinary catheter was keep in-situ and planned for CT-cystogram after two weeks.

She was admitted to Intensive Care Unit (ICU), post-surgery. Subsequently, GCS recovery was poor (GCS E2VTM5) and we repeated plain CT brain which showed evolving right fronto-temporal lobe, left frontal and left corona radiate recent infarct. In view of prolonged intubation, tracheostomy was indicated and performed on day five post-laparotomy. After that, she was transferred to general ward for nursing care and CT-cystogram was repeated on day 14 post-bladder repair, which showed no contrast leak with multiple bladder diverticuli [Table/Fig-2]. She was discharged home with tracheostomy and urinary catheter and given out-patient appointment.



[Table/Fig-1]: Defect over dome of bladder.



[Table/Fig-2]: CT-Cystogram with multiple diverticuli and no contract leak post-repaired.

DISCUSSION

Causes of urinary bladder rupture can be categorized into traumatic and non-traumatic. Traumatic bladder rupture is responsible for approximately 96.6% and spontaneous rupture is very rare [1]. Mortality rate can be up to 50%. Predisposed conditions associated with non-traumatic bladder rupture include previous pelvic radiotherapy, bladder surgery or diverticulum, huge bladder calculi [2], bladder tumour [3], pregnancy and bladder outlet obstruction [4,5]. Binge alcohol consumption is also reported as a risk factor for spontaneous bladder rupture and increasing in incidence recently [5]. Previously, a case report of spontaneous bladder rupture due to neurogenic bladder secondary to cerebrovascular accident was reported by Mitchell T et al., [6].

In this case, we postulated that bladder wall dysfunction was due to disturbance in neurological function because of recent cerebrovascular accident and possible neurogenic bladder leading to urinary retention as in report by Mitchell T et al., [6]. Other acquired neurological diseases such as spinal bifida [7] and diabetes mellitus [8] have been reported to cause spontaneous bladder rupture.

Non-traumatic bladder rupture poses a diagnostic challenge and usually only confirmed during laparotomy. Initial presentation of bladder rupture is often unspecific, often delaying diagnosis and treatment [9]. In this case report, ischaemic bowel was suspected initially in view of generalized abdominal pain with underlying new onset atrial fibrillation and her arterial blood gas showed compensated metabolic acidosis.

Management of urinary bladder rupture depends on the location of perforation [10]. It could be divided into extraperitoneal or intraperitoneal ruptures. Extraperitoneal ruptures are generally treated conservatively. On the other hand, intraperitoneal ruptures require surgical intervention and management. In this case, the patient was treated by laparotomy and 2 layer fashion repair of bladder. It was successful as evidenced by no contrast leak on CT-cystogram after two weeks of repair.

CONCLUSION

Diagnosis of spontaneous bladder rupture can be difficult as the initial symptoms are non-specific and in patients without any predisposing conditions of trauma, pelvic cancer and bladder disorder. In our patient, neurogenic bladder dysfunction secondary to acute stroke was a major factor leading to spontaneous bladder rupture and it is a rare condition in this era.

Consent

Written informed consent was obtained from the patient's daughter.

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