EJCRIM
European Journal
of Case Reports
in Internal Medicine

BLADDER PERFORATION AND VESICO-HAEMATOMA FISTULA: AN UNCOMMON COMPLICATION OF RECTUS SHEATH HAEMATOMA

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Received: 07/02/2024 **Accepted:** 12/02/2024 **Published:** 25/03/2024

Conflicts of Interests: The Authors declare that there are no competing interests.
Patient Consent: Patient consent was obtained.

How to cite this article: Cheng NLS, Wong CW, Yu WM, Tsang KH. Bladder perforation and vesico-haematoma fistula: an uncommon complication of rectus sheath haematoma. *EJCRIM* 2024;**11**:doi:10.12890/2024_004362.

ABSTRACT

Introduction: Rectus sheath haematoma (RSH) has become increasingly common but is often underdiagnosed. Prompt diagnosis will avoid unnecessary investigations and procedures, resulting in early treatment and a better outcome.

Case description: We described a case of a spontaneous RSH with intraperitoneal extension and formation of a vesico-haematoma fistula, which was initially misdiagnosed as a urinary tract infection. The diagnosis was made ten days after admission, when a CT scan showed an over-16 cm RSH with intraperitoneal extension, bladder perforation and a vesico-haematoma fistula. The patient was managed conservatively.

Discussion: RSH accounts for less than 2% of acute abdomen cases and is often unrecognised. Its presentation can mimic other intra-abdominal pathologies, and the diagnosis is often delayed or missed. Complications can arise from an RSH although it is generally viewed as a self-limiting condition.

Conclusion: RSH has become increasingly common, and we would like to highlight the need to include abdominal wall pathologies in the initial differential diagnoses of acute abdomen to avoid delay in diagnosis.

KEYWORDS

Rectus sheath haematoma, acute abdomen, epigastric vessel injury, bladder perforation, vesico-haematoma fistula

LEARNING POINTS

- Rectus sheath haematoma has become increasingly common due to the use of anticoagulants.
- The presentation can be non-specific and mimic other intra-abdominal pathologies. Misdiagnosis or delayed diagnosis can result in complications and unnecessary invasive procedures.
- Abdominal wall pathologies including rectus sheath haematomas should be included in initial differentials of acute abdomen.

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INTRODUCTION

A rectus sheath haematoma (RSH) is a relatively uncommon cause of acute abdominal pain, accounting for less than 2% of acute abdomen cases[1]. An RSH can occur with or without precipitating factors. The absence of predisposing factors in a spontaneous RSH could lead to delayed diagnosis. We report a case of a spontaneous RSH which was initially misdiagnosed as urinary tract infection. The incidence of RSH is on the rise, probably due to the increased use of anticoagulant and antiplatelet therapies[1,2]. We would like to improve the understanding and recognition of an RSH and emphasise the need to include abdominal wall pathologies in the differential diagnoses of acute abdomen[2].

CASE DESCRIPTION

An 85-year-old female with a background medical history of diabetes, hypertension and hyperlipidaemia presented to the emergency department with respiratory distress and intermittent haematuria. She was otherwise afebrile and haemodynamically stable. Blood tests on admission revealed normal inflammatory markers and acute kidney injury; urinalysis revealed large numbers of red blood cells. Radiographs of the chest and abdomen were normal. She was admitted to the geriatric ward and treated empirically for urinary tract infection. Her haemoglobin level dropped from 11.8 g/dl to 8.6 g/dl the next day, which was initially attributed to fluid resuscitation. Septic work up including blood, urine and sputum culture all came back negative a couple of days later. The patient's haemoglobin level remained static for a few days, renal function improved, and her clotting profile remained normal. Her medications were reviewed, and she was not on anticoagulants or antiplatelets. Her symptom of haematuria was mild and intermittent, she had no symptoms of gastrointestinal or external blood loss. In view of her clinical improvement, the plan was to continue rehabilitation and follow up as an outpatient.

Ten days after admission, the patient deteriorated and developed abdominal discomfort. She was found to have worsening anaemia, and her haemoglobin level had dropped to 5.5 g/dl. The clotting profile was again normal. A radiograph of the abdomen showed prominent loops of large and small bowel. The patient was resuscitated and transfused with packed red cells; she was assessed by the surgical team whose impression was anaemia caused by malignant intestinal obstruction. A single-phase CT scan was performed and revealed a 16.6 × 6.7 × 10.3 cm left RSH with intraperitoneal extension, compressing on the partially collapsed urinary bladder *(Fig. 1 and 2)*. A multiphasic CT scan was arranged the next day, which showed a similar left RSH without active contrast extravasation, and a small ~2 mm fistulous connection between the posterior aspect of the RSH with the distended urinary bladder *(Fig. 3)*, which was not apparent on the first CT study. The diagnosis of a left-sided RSH with intraperitoneal extension and a vesico-haematoma fistula was established. Given the clinical and imaging findings, the patient's age and co-morbidities, a decision was made for conservative management. She was treated with a prolonged course of antibiotics and urinary catheterisation.

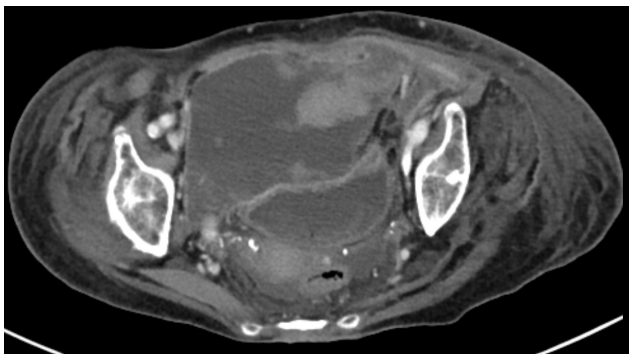

Figure 1. An axial post-contrast CT scan of the pelvis shows the large rectus sheath haematoma of mixed densities with intraperitoneal extension.

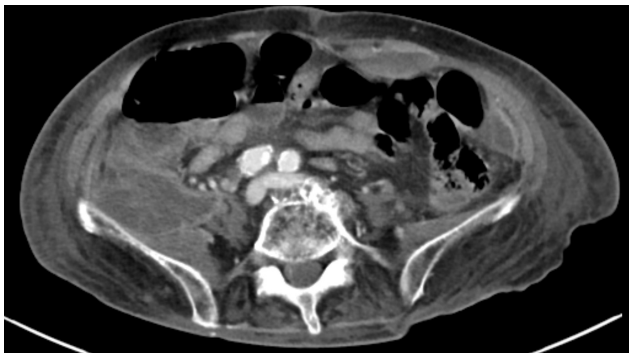

Figure 2. An axial post-contrast CT scan of the abdomen and pelvis shows the haematoma extending to bilateral paracolic gutters superiorly.

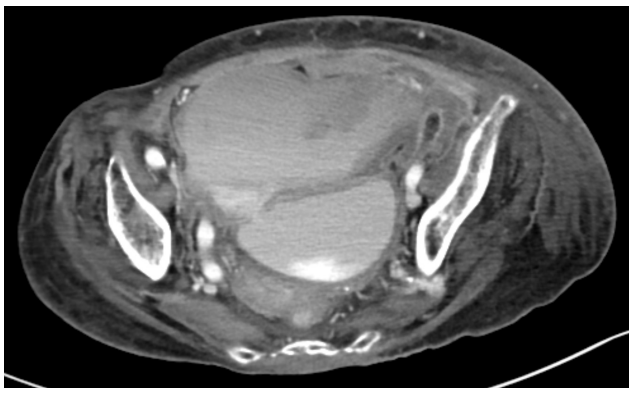

Figure 3. An axial post-contrast CT scan of the pelvis shows the small 2 mm fistulous connection between the rectus sheath haematoma and the urinary bladder.

A follow-up CT scan a month later showed partial resolution of the RSH. A cystogram demonstrated contrast leakage from the right-sided urinary bladder wall and accumulation of contrast anterior to the urinary bladder, suggestive of persistence of the fistula tract *(Fig. 4 and 5)*. The patient completed an 8-week course of antibiotics; she was otherwise clinically stable, and her symptoms had resolved. After multidisciplinary discussion between the geriatricians, urologists and surgeons, a plan was made to keep the urinary catheter to allow healing of the bladder and arrange for a

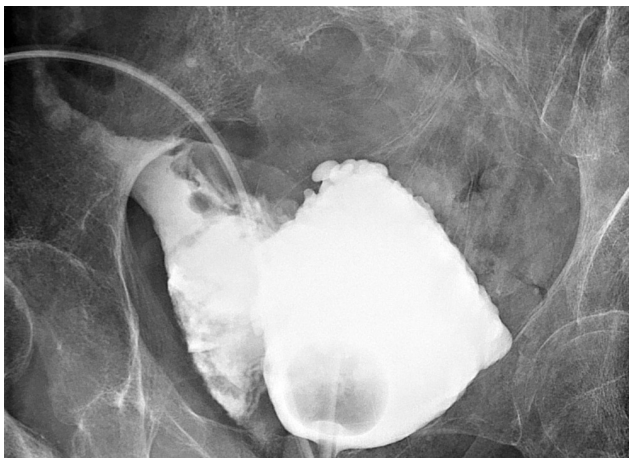

Figure 4. An anteroposterior view of the cystogram demonstrates contrast leakage from the right side of the urinary bladder.

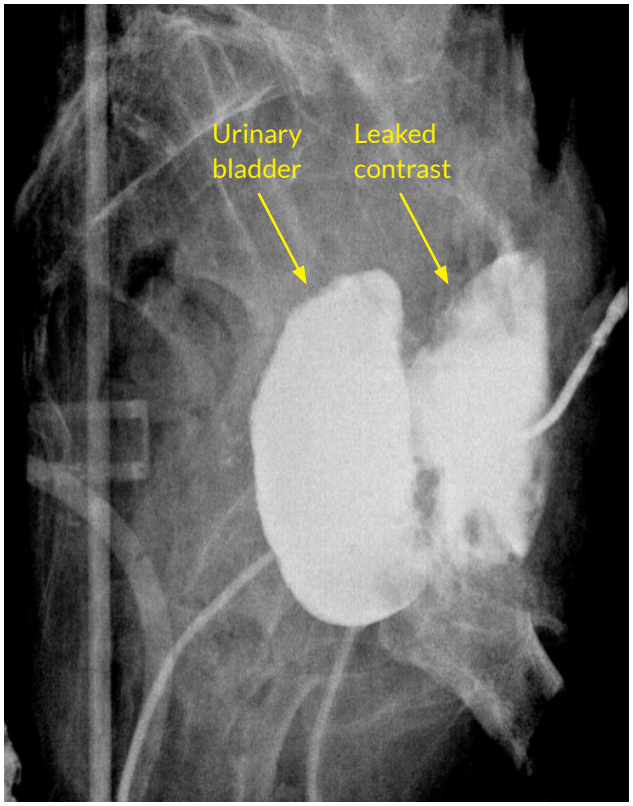

Figure 5. A lateral view of cystogram demonstrates the accumulation of leaked contrast anterior to the urinary bladder.

cystoscopy and cystogram in three months. The patient was subsequently readmitted for cystoscopy and cystogram, which confirmed resolution of the vesico-haematoma fistula. The patient unfortunately developed desaturation due to sputum retention and passed away the following day.

DISCUSSION

An RSH occurs when blood accumulates within the rectus sheath which could be a result of injury to the epigastric vessels or the rectus muscles[1-3]. An RSH above the arcuate line usually results from injury to the superior epigastric artery. They are often small in size and self-limiting, due to the tamponade effect of the rectus sheath. An RSH below the arcuate line tends to be larger due to the absence of posterior rectus sheath and therefore its tamponade effect. Such haematomas can extend beyond midline and posteriorly, resulting in haemoperitoneum[1,2].

The incidence of RSH is on the rise, probably related to the increased use of anticoagulant and antiplatelet therapy in elderly patients[1,2]. An RSH is more common in women, which can be explained by the relatively less muscle mass and pregnancy[1,2]. Other common predisposing factors include trauma, iatrogenic causes such as previous operations, subcutaneous injection and trocar injury, medical conditions such as atherosclerosis, blood dyscrasias and collagen vascular disorders, as well as pregnancy[1-5]. Potential triggering events that often go unnoticed, include defecation, strenuous exercise, sneezing, vigorous coughing and other activities with increased Valsalva effort[1-4].

Being a great masquerader, RSH can mimic other intra-abdominal pathologies and lead to unnecessary investigations and invasive procedures including laparotomy[2,4,5]. Our case has demonstrated the importance of awareness of RSH in acute abdomen. In cases of spontaneous RSH (including ours) there are often no identifiable precipitating factors, and the clinical presentation can be rather non-specific[1,2,5]. A high index of suspicion is needed for timely diagnosis[1,2].

The usual presentation of an RSH would be a clinical triad of abdominal pain, fall in haemoglobin and the presence of risk factors[1,2,5]. Physical examination may reveal a lower abdominal mass that remains conspicuous upon contracting the rectus muscles by head or leg raising, which is known as Fothergill's sign[1,2]. Carnett's test can be performed, by raising patient's head or leg off the bed and palpating for tenderness simultaneously. The test is considered positive if the localised tenderness remains the same or increases in severity, which would suggest that the mass originates from within the abdominal wall[1,2,4]. Other clinical signs may include ecchymoses in the flanks or periumbilical region, which occur on average four days after symptom onset[1,2].

Although an RSH is generally a self-limiting condition, detrimental local and systemic complications can occur, including haemodynamic instability, intraperitoneal rupture and abdominal compartment syndrome[3]. In our case, the RSH extended into the peritoneal cavity and caused perforation of the urinary bladder. This could have developed due to pressure erosion of the haematoma on the urinary bladder[6].

In terms of imaging, ultrasonography is useful for initial screening, diagnosis and follow up[1,3,4]. It is also the first-line imaging modality in pregnant and paediatric patients[1,5]. CT scanning is the preferred imaging modality and allows grading of the disease severity, which could guide management[2,3]. Type 1 haematomas are intramuscular and unilateral[2,3]. Type 2 haematomas are also intramuscular, but can be bilateral and dissect between the rectus abdominis and transversalis fascia without significant drop in haematocrit[1-3]. Type 3 haematomas can extend outside the muscle, into the peritoneum and prevesical space[1-3,7].

There are no standardised guidelines about the treatment

of an RSH[3,7]. Generally, type 1 and 2 haematomas can be managed conservatively by fluid resuscitation, bed rest, timely reversal of coagulopathy and blood transfusion if indicated[2,3,7]. Up to about 80% of RSH are managed conservatively[7]. In cases of failed conservative management and type 3 haematomas, higher interventions including angiographic embolisation and surgery may be indicated[2,3,7]. Other predictors for higher intervention include large haematoma size, enlarging haematomas, haemodynamic instability despite adequate resuscitation, rate of haemoglobin drop and the number of packed cell units transfused[1,3,7]. For interventional radiology embolisation, we can consider microcoil embolisation which is often the first-line option but is time-consuming and more expensive, or alternatively, the use of n-butyl cyanoacrylate and glue, which allow for a quicker administration[2,7]. Surgical intervention is usually indicated if embolisation fails, or in cases of increased intra-abdominal pressure that may result in abdominal compartment syndrome[3,7]. The surgical procedure usually involves ligation of bleeding vessels and haematoma evacuation[3]. Each treatment option has its advantages and risks; treatment decision should be made on a case-by-case basis[1,7].

CONCLUSION

Rectus sheath haematoma is a relatively rare cause of acute abdominal pain, and its presentation can mimic intra-abdominal pathologies[2]. Although an RSH in general is considered a benign and self-limiting condition, misdiagnosis or delayed diagnosis can result in complications[3,5,6], and unnecessary investigations or invasive procedures[4]. We would like to emphasise the importance of abdominal wall pathologies, in particular, RSH, in the differential diagnoses of acute abdomen.

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