Recurrent spontaneous bladder rupture

A case report

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Summary

Spontaneous (non-traumatic) intraperitoneal rupture of the bladder in a 37-year-old pregnant woman was repaired at laparotomy. Nine months later she again presented with an intraperitoneal bladder rupture during pregnancy and fatal sepsis. Histological examination of the resected bladder wall showed acute ulcerative and necrotising cystitis. All patients with apparently spontaneous bladder rupture should undergo full urological evaluation to identify possible disease which might lead to recurrent rupture.

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Recurrent rupture of the urinary bladder appears to be a rare entity; only 12 cases were reported in English up to 1987.[1-5] In the course of a retrospective study of patients with bladder rupture treated at Tygerberg Hospital,[6] a case of recurrent spontaneous rupture was found. This is reported not only because of its rarity but also because it demonstrates some of the pitfalls in the diagnosis and management of spontaneous bladder rupture.

Case report

A 37-year-old woman was referred to the Department of Gynaecology at Tygerberg Hospital in November 1984 with a 7-day history of suprapubic pain, difficulty in passing urine, and vomiting of 'coffee-ground'-like material. She had been constipated for 4 days and had also had 2 months' amenorrhoea. On questioning she denied sustaining any trauma. She admitted to drinking a bottle of wine a day and more over week-ends, and had been treated for pulmonary tuberculosis 10 years previously.

On examination she was severely dehydrated, with signs of ileus and ascites. Epigastric tenderness and guarding were present and bowel sounds were absent but no rebound sign could be elicited. Clinically, a 22-week gravid uterus was thought to be present. Ultrasonography demonstrated a 12-week pregnancy, but no fetal heart beat was detected. On microscopic examination the urine contained numerous red blood cells with some white cells and bacteria. The serum urea value was 20,8 mmol/l (normal 3,3 - 6,5 mmol/l), creatinine 285 μmol/l (normal 60 - 120 μmol/l), sodium 129 mmol/l (normal 133 - 146 mmol/l), chloride 99 mmol/l (normal 96 - 106 mmol/l) and potassium 5,2 mmol/l (normal 3,5 - 5,3 mmol/l).

With a presumptive diagnosis of sepsis after spontaneous abortion, an immediate dilatation and suction curettage (D & C) was performed, but no evidence of intra-uterine sepsis was found. Histological examination of the curettings showed normal products of conception. An indwelling catheter was placed in the bladder. The day after the D & C the serum urea, creatinine and electrolyte levels were normal.

Two days later the patient again started vomiting and the abdomen became distended, with generalised tenderness, rigidity, a positive rebound sign and absent bowel sounds. Three days after the D & C a laparotomy was performed by a general surgeon. An intraperitoneal rupture of the bladder fundus was found and a urologist was called. A biopsy specimen from the bladder, obtained before suturing with two layers of 3/0 polyglycolic acid sutures (Dexon), revealed haemorrhage and atypia of the urothelium, which was ascribed to trauma or nonspecific inflammation. The microfiche records of this patient's hospitalisation did not contain any urine culture results.

The patient's postoperative recovery was uneventful. At discharge from hospital she was given an appointment to return a month later for urological evaluation, but she failed to keep the appointment.

Nine months later she presented at a rural hospital with a 6-day history of abdominal pain, retention of urine and signs of generalised peritonitis. A laparotomy was performed by a general practitioner and in intraperitoneal rupture of the bladder with severe sepsis was found. Postoperatively, the patient was transferred to Tygerberg Hospital.

On admission, she was in overt septic shock. While she was being resuscitated for surgery, she aborted. An evacuation of the uterus was performed before re-laparotomy. There was no evidence of genital trauma, infection or perforation of the uterus. Histological examination of the evacuated products of conception showed no signs of chorio-amnionitis.

At laparotomy the posterosuperior bladder wall was found to be necrotic and there were multiple abscesses between small bowel loops. The edges of the bladder perforation were excised before suturing and a segment of small bowel was also resected. Histological examination of the excised portion of the bladder wall showed acute ulcerative and necrotising cystitis, but no signs of tuberculosis or malignant disease and the small bowel showed an intramural abscess with purulent necrotising peritonitis and secondary perforation. A culture of *Escherichia coli* was obtained from pus swabs taken during the laparotomy. A urine culture performed 3 days later was negative. However, at this stage the patient was receiving intravenous cefamandole, metronidazole and tobramycin.

The patient's postoperative condition remained critical. Five days later a laparotomy was performed for wound dehiscence and severe sepsis, but after a further 3 days the patient died.

Discussion

Spontaneous (non-traumatic) bladder rupture is not uncommon and is usually the result of some underlying disease (Table I).[7,8] Some of these conditions may be difficult to diagnose, and it has been suggested that urodynamic investigation should be included in the full urological evaluation of patients with spontaneous bladder rupture.[9] Some of the cases reported as

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TABLE I. CAUSES OF SPONTANEOUS BLADDER RUPTURE

- **Affecting bladder wall**
  - **Inflammatory**
    - **Acute**
      - **Cystitis**
    - **Chronic**
      - **Tuberculosis**
      - **Schistosomiasis**
      - **Previous surgery**
      - **Radiation**
  - **Neoplastic**
    - **Bladder carcinoma**
  - **Vascular**
    - **Atherosclerotic emboli**
  - **Miscellaneous**
    - **Indwelling catheter**
    - **Diverticulum**
    - **Amyloidosis**
- **Outside bladder wall**
  - **Inflammatory**
    - **Appendiceal abscess**
    - **Tubo-ovarian abscess**
    - **Diverticulitis**
  - **Foreign bodies**
    - **Surgical drains**
- **Overdistension of bladder**
  - **Prostate**
    - **Benign prostatic hyperplasia**
    - **Carcinoma**
  - **Urethra**
    - **Stricture**
    - **Carcinoma**
    - **Valves**
  - **Bladder calculi**
  - **Neurogenic bladder dysfunction**
  - **Gynaecological**
    - **Uterine leiomyomata**
    - **Gravid uterus**
    - **Uterine prolapse**
  - **Increased intra-abdominal pressure**
    - **Coughing, retching**
    - **Constipation**
    - **Weight lifting**
  - **Drugs**
    - **Alcohol**
    - **Carbachol**
    - **Methamphetamine**
    - **Cyclophosphamide**
- **Idiopathic**

idiopathic rupture (no precipitating cause identified) may have been caused by unrecognised neurogenic bladder dysfunction.

In our patient, the finding of 'ascites' and elevated serum urea and creatinine levels, which returned to normal within 24 hours of catheterisation, are typical of unrecognised bladder rupture.[6] Our case also illustrates the fact that patients with spontaneous bladder rupture often present to doctors other than urologists and that the diagnosis is often initially missed.[10]

Recurrent bladder rupture appears to be rare.[1-5] Of the 12 reported cases, 7 patients were male and 5 female. The average age was 48 years (range 27-75 years), and the average time between the first and second bladder rupture was 18 months (range 1-58 months). With 2 exceptions, none of the patients had a history of trauma. Precipitating conditions were identified in all and included urethral stricture, neurogenic dysfunction, previous bladder trauma or surgery, alcoholism, epilepsy, bladder carcinoma, calculus, previous radiotherapy, and necrotising cystitis. All 12 patients recovered.

In our patient, pregnancy and urinary tract infection were probably the precipitating causes of the recurrent rupture. The finding of white cells and bacteria in the urine with histological atypia of the urothelium at the first rupture, together with the presence of *E. coli* peritonitis and histological evidence of necrotising cystitis at the second rupture indicate an underlying urinary tract infection, probably associated with pregnancy. Alcoholic overdistension of the bladder may have played a role, while minor trauma during a period of severe inebriation is difficult to exclude with certainty.

It is imperative that all patients with spontaneous bladder rupture undergo an adequate urological investigation. If the patient appears unreliable, these studies should be performed before discharge from hospital. As our case demonstrates, failure to comply with treatment and/or follow-up may result in a fatal recurrence of the bladder rupture.

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Giant colonic diverticulum — a radiological diagnostic problem

A case report

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Summary

Giant diverticulum of the colon is a rare condition, mentioned only sporadically in the literature and usually presenting on an abdominal radiograph as an air-filled cyst. This poses an interesting clinical and radiological diagnostic problem. A case is presented and a radiological approach suggested.

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The differential diagnosis of a large intra-abdominal air-filled cavity that is visible radiologically can be very difficult. While the diagnosis may be made macroscopically at operation, occasionally microscopic section is required.[1] The following case demonstrates chronic and almost symptomless development and subsequent perforation of a giant colonic diverticulum.

Case report

A 72-year-old white woman had been aware of the presence of an abdominal mass for 3 months. She reported no pain, abdominal discomfort, alteration of bowel habit, fever or weight loss.

On clinical examination a well-defined firm abdominal mass with a smooth surface was palpable just left of the umbilicus. The mass was ballotable but returned to its original position. It was not tender and was hyper-resonant to percussion. Rectal and vaginal examination was non-contributory.

The results of biochemical examinations as well as the white cell count were within normal limits.

The presence of gas in the diverticulum as well as in the surrounding bowel made the findings on ultrasound examination confusing. A plain abdominal radiograph (Fig. 1) demonstrated a large, round, well-defined air-filled cavity in the left lower abdomen. A barium enema examination (Fig. 2) showed the presence of numerous widespread diverticula, particularly in the sigmoid and descending colon. The gas-filled cavity appeared to have no radiological connection with the colon. An intravenous urogram showed only slight medial displacement of the middle portion of the left ureter. Computed tomography revealed a large air-filled mass in the left lower abdomen (Fig. 3).

At operation a large, thick-walled, macroscopically cystic mass was found in intimate relation to the wall of the sigmoid colon. While it was being dissected from the colon it perforated, air escaped and collapse of its air-filled portion resulted. The base of the cyst consisted of solid tissue in the vicinity of the left ovary, displacing the uterus to the right. The left fallopian tube was identified within the wall of the mass. The mass was dissected and total abdominal hysterectomy and bilateral salpingo-oophorectomies were performed under the impression that the mass represented an ovarian carcinoma. The postoperative course was uneventful.

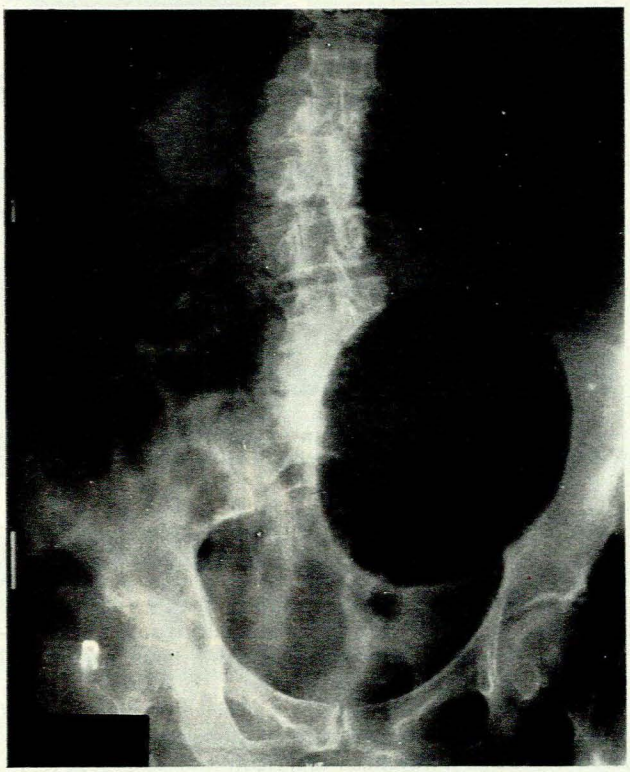

Fig. 1. Supine frontal abdominal radiograph demonstrating the large, round, well-filled gas collection in the left lower abdomen.

Histological examination of the resected specimen showed a foreign-body granuloma containing giant cells and faecal material surrounded by lymphocytes and histiocytes. The presence of faecal material indicates the colonic origin of the lesion.

Discussion

The differential diagnosis of a large air-filled cavity on a plain abdominal radiograph includes giant colonic diverticulum, volvulus of the caecum and sigmoid, grossly dilated stomach and intra-abdominal gas-forming infective conditions. Rarer causes would include connections between the intestine and the gall passages or urogenital tract, and duplication cysts.

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