

## Rare case of gangrenous cystitis revealed by acute peritonitis

Anass Elalaoui<sup>a,\*</sup>, Anouar Elmoudane<sup>a</sup>, Mohamed Mokhtari<sup>a</sup>, Hammou Elfarhaoui<sup>a</sup>, Abdessamad Motaouakil<sup>a</sup>, Ali Barki<sup>b</sup>

<sup>a</sup> Department of Urology, Mohamed VI University Hospital Center, Mohamed I University, Oujda, Morocco

<sup>b</sup> Department Head of Urology, Mohamed VI University Hospital Center, Mohamed I University, Oujda, 62000, Morocco

### ARTICLE INFO

#### Keywords:

Peritonitis

Gangrenous cystitis

Bladder perforation

### ABSTRACT

Gangrenous cystitis complicated by intraperitoneal perforation is an extremely rare pathology, the major etiological factor is ischemia of the bladder wall, it has disappeared with the advent of antibiotic therapy and the development of means of bladder drainage. We report a case of a 17-year-old patient, who had a medical history of spinal cord transection by stabbing, who presented a chronic urinary retention leading to a gangrenous cystitis, a surgical exploration was performed and excision of necrotic tissues and reconstruction of the wall bladder with a well recovery.

### 1. Introduction

Gangrenous cystitis is a pathology defined by necrosis of the bladder mucosa and submucosa, the necrosis may involve the entire bladder wall including the muscular and the serosa leading to a spontaneous rupture into the peritoneal cavity<sup>1</sup>

Gangrenous cystitis is a rare condition but has been known since the 17th century, it has disappeared since the advent of antibiotic therapy and the development of means of bladder drainage. Nevertheless, and a few rare cases have been described recently in the literature.<sup>2</sup>

We report a case of gangrenous cystitis complicated by a spontaneous intraperitoneal bladder perforation.

### 2. Report case

A 17-year-old child with a history of spinal cord transection by stabbing for which he had been operated on by neurosurgeons 2 weeks earlier. He was admitted to the emergency room for diffuse abdominal pain with hematuria associated with several episodes of acute urine retention occurring since the accident.

On examination, the patient was not febrile but his general condition was altered with a clinical presentation suggestive of acute peritonitis, the abdomen was very distended, painful and contracted to palpation.

Laboratory tests were typical of a biological inflammatory syndrome. The CRP was elevated and associated with leukocytosis (18,000/mm<sup>3</sup>),

Renal function and ionogram were normal but urine culture was in favour of a urinary infection by *Escherichia coli* sensitive to cephalosporin third generation.

CT scan (Fig. 1) of the abdomen showed gas in the anterior wall of the bladder that was not enhanced by contrast solution, indicating necrosis; injection of the contrast solution revealed extravasation into the peritoneal cavity; suggesting the primary cause of the peritonitis then, the patient was put immediately on triple antibiotic therapy including ceftriaxon 2g/j, gentamycin 3–5 mg/kg/j for 3 days and metronidazole 500mg/8h and an emergency surgery was decided.

The explorative laparotomy revealed acute generalized peritonitis, with 1400 ml of serous exudate in the abdominal cavity was drained; we discovered a perforation of 5 cm at the bladder; extensive debridement, excision of the necrotic tissues (Fig. 2), insertion of ureteral double-J stent, and bladder reconstruction were performed, with transurethral and Retzius drainage.

Transurethral drainage was prolonged for 1 month, antibiotic therapy for 15 days, no postoperative complications were observed, at the following up of the third month the double-stent was removed and urinary heterocatheterization was indicated for him.

### 3. Discussion

Multiple factors have been cited in the literature as predisposing to gangrenous cystitis, making etiologic diagnosis a real challenge for the

\* Corresponding author.

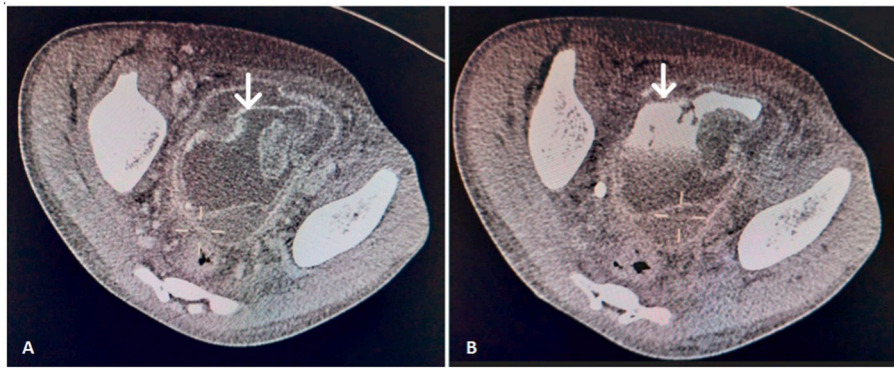
E-mail addresses: [mranasselalaoui@gmail.com](mailto:mranasselalaoui@gmail.com) (A. Elalaoui), [anouar.elmoudane@gmail.com](mailto:anouar.elmoudane@gmail.com) (A. Elmoudane), [Docmokhtarimohamed@gmail.com](mailto:Docmokhtarimohamed@gmail.com) (M. Mokhtari), [h.elfarhaoui@gmail.com](mailto:h.elfarhaoui@gmail.com) (H. Elfarhaoui), [a.motaouakil@gmail.com](mailto:a.motaouakil@gmail.com) (A. Motaouakil), [Alibarki@hotmail.com](mailto:Alibarki@hotmail.com) (A. Barki).

<https://doi.org/10.1016/j.eucr.2022.102239>

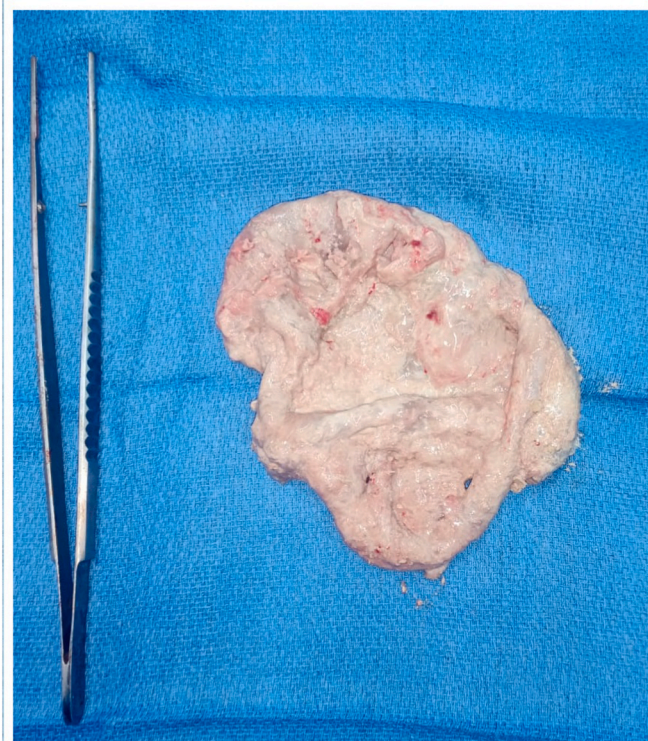
Received 8 August 2022; Received in revised form 16 September 2022; Accepted 23 September 2022

Available online 23 September 2022

2214-4420/© 2022 The Authors. Published by Elsevier Inc. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).



**Fig. 1.** CT scan showing a bladder rupture in the anterior wall of the bladder (arrow).



**Fig. 2.** Specimen of necrosis bladder mucosa.

clinician.

The etiology of gangrenous cystitis results from ischemia of the bladder wall favoured by previous surgical or medical history that intervenes either directly, such as pelvic irradiation or chemical irritation, or indirectly by depriving the bladder of its vascular and nutrient supply, such as previous pelvic surgery, chronic bladder distension, or atherosclerosis of the vessels of the pelvis<sup>1,3</sup>

In our case, the etiology follows the same principles already described as our patient had chronic retention of urine after the spinal cord transection.

The clinical presentation of gangrenous cystitis is manifested by nonspecific symptoms evoking simple cystitis (mictional burning, polakiuria, dysuria, hematuria, hypogastric pain) but the evolution is quickly made towards the presentation of an acute abdomen<sup>3,4</sup>

CT scan is the test of choice for the diagnosis of gangrenous cystitis but, unfortunately, it is only performed when the patient presents with signs and symptoms of acute abdomen. However, cystoscopy could also be useful for diagnosis by allowing direct visualization and the possibility of biopsies.<sup>5</sup>

Currently, most cases require surgical treatment: extensive debridement of all non-viable bladder tissue and adequate drainage, partial cystectomy is only justified in case of viable trigone to ensure bladder regeneration. If the necrosis is too extensive, total cystectomy remains the only therapeutic option to heal the patient.<sup>3</sup>

#### 4. Conclusion

Gangrenous cystitis complicated by intraperitoneal perforation is an extremely rare pathology. The aim of this case report is to present a rare condition of bladder perforation which should be recognized at an earlier stage to improve its management.

#### Declaration of competing interest

None of the contributing authors have any conflict of interest, including specific financial interests or relationships and affiliations to the subject matter or materials discussed in the manuscript.

#### References

1. Devitt AT, Sethia KK. Gangrenous cystitis : case report and review of the literature. *J Urol.* 1993;149:1544–1545.
2. Ballas K, Rafailidis S, Pavlidis T, et al. Gangrenous cystitis. *Int UrogynEcol J Pelvic Floor Dysfunct.* 2007;18:1507–1509. <https://doi.org/10.1007/s00192-007-0430-9>.
3. Hinev A, Anakievski D, Krasnaliev I. Gangrenous cystitis: report of a case and review of the literature. *Urol Int.* 2010;85:479–481. <https://doi.org/10.1159/000321010>.
4. De Rosa A, Amer T, Waraich N, et al. Gangrenous cystitis in a 42-year-old male. *BMJ Case Rep.* 2011 Feb 2. <https://doi.org/10.1136/bcr.11.2010.3526>. pii: bcr1120103526.
5. Konstantinos K, Chrysostomos G. Acute diffuse peritonitis caused by urinary retention: a rare case of gangrenous cystitis. *Case Rep Urol.* 2018. <https://doi.org/10.1155/2018/4948375>. Article ID 4948375, 4 pages.