POLSKI
PRZEGLĄD CHIRURGICZNY
2013, 85, 12, 727–729
10.2478/pjs-2013-0111

SPONTANEOUS, IDIOPATHIC URINARY BLADDER PERFORATION – CASE REPORT

MARIA WIELOCH, KAMILA BAZYLIŃSKA, PIOTR ZIEMNIAK

Department of General and Oncological Surgery, Hospital in Kutno
Kierownik: dr n. med. *P. Ziemniak*

Spontaneous, idiopathic urinary bladder rupture is a very rare disease entity, which may face the problem of proper preoperative diagnosis. In many cases the medical history, physical examination, and additional tests raise false suspicion of gastrointestinal perforation. The study presented a case of a female patient with spontaneous urinary bladder perforation, paying particular attention to the diagnostic difficulties associated with the above-mentioned pathology. The aim of the study was to analyse the presence of symptoms and imaging and laboratory results observed in case of spontaneous urinary bladder rupture, as well as differentiate the above-mentioned pathology with gastrointestinal perforation. Whenever diagnosing a patient with acute peritonitis symptoms, in whom the predominating symptoms include sudden abdominal pain, peritoneal cavity fluid presence, hematuria, oliguria, and coexisting increased urea, creatinine, and potassium levels, one should consider the possibility of urinary bladder rupture.
Key words: spontaneous urinary bladder perforation**,** peritonitis

The most common cause of urinary bladder perforation is damage to the urinary bladder wall during massive abdominal trauma or iatrogenic, endoscopic excision of urinary gallbladder tumors.

Damage to the urinary bladder wall may also occur as a result of inflammatory perforation of the urinary diverticulum, in case of Hirschsprung's disease, during continuous urinary catheterization, as well as vesico-intestinal fistula development during the course of inflammatory and neoplastic diseases.

Spontaneous, idiopathic urinary bladder perforation is a rare disease entity, who may face a common problem of proper preoperative diagnostics. In many cases, the medical history, physical examination, and additional exams raise false suspicion of gastrointestinal perforation.

CASE REPORT

An 84-year old female patient was admitted to the Department of General Surgery, Hospital in Kutno, due to several days of constantly increasing abdominal pain. History of chronic gastrointestinal and urinary bladder diseases proved negative. The patient had a history of arterial hypertension and atrial fibrillation. The patient was after three laparotomies: cholecystectomy due to cholecystitis, partial gastric resection, due to ulcer disease, and umbilical hernia plasty.

On admission, the physical examination showed a raised abdomen above the level of the chest, painful on palpation with symptoms of peritonitis. Imperceptible peristalsis and liver dullness were observed. Goldflam's sign proved negative on both sides. Laboratory results showed leukocytosis (WBC – 17.25 thousand- the remaining parameters were within normal limits). Considering the negative history towards kidney and urinary bladder diseases, and no clinical symptoms of dehydration, the physician on duty seemed troubled with the increased values of urea and creatinine (183.1 mg/dl and 2.25 mg/dl, respectively). After urinary bladder catheterization, blood-tinted urine was observed.

The abdominal X-ray performed in the standing position showed signs of gastrointestinal perforation. The abdominal ultrasound showed intraloop and Douglas's sinus fluid presence without specifying its character and quantity.

Due to constantly increasing abdominal pain and symptoms of peritonitis the patient was qualified for emergency laparotomy with suspicion of gastrointestinal perforation. The intraoperative examination revealed the presence of one liter of turbid fluid in the peritoneal cavity. The stomach, small and large bowel were controlled without finding gastrointestinal perforation. During further control the operating surgeons observed posterior urinary bladder wall necrosis with perforation. The necrotic segment was excised and the urinary bladder sutured. The removed sample was submitted for histopathological examination. A drain was left in the peritoneal cavity.

The histopathological examination result was as follows: fragments of adipose tissue and muscles with abundant purulent infiltration, and areas of necrosis. The microscopic picture did not confirm the presence of a cancerous lesion, which could lead to its necrosis and perforation.

During the postoperative period, despite the patients' severe condition and continuous respiratory insufficiency, urea and creatinine values were reduced. Two days after surgery the creatinine level was 1.1 mg/dl, urea – 68 mg/dl, and potassium – 4.2 mmol/l. Despite intensive treatment at the ICU the patient died four days after initial surgery.

DISCUSSION

Spontaneous urinary bladder perforation is associated with many diagnostic and therapeutic problems. The diagnosis of idiopathic urinary bladder rupture can be placed only after the exclusion of all other possibilities of its rupture (perforation during the course of cancer, iatrogenic damage during surgical procedures, after radiotherapy in case of cervical (1) and prostate cancer, as well as during the course of inflammatory diseases).

Each patient admitted to the surgical department with symptoms of acute peritonitis, with suspicion of gastrointestinal perforation should be suspected of idiopathic urinary bladder rupture. This fact explains the great similarity of the clinical course and additional examination results performed during diagnosis in both of the above-mentioned cases.

Both in case of urinary bladder and gastrointestinal perforation one may observe the sudden appearance of increasing abdominal pain. The patients' general condition deteriorates, one may observe tachycardia and fever. Imaging examinations, such as abdominal ultrasonography show peritoneal cavity fluid presence in both cases. Abdominal X-ray examinations also raise suspicion of gastrointestinal perforation (2). The presence of peritoneal cavity air during the course of gastrointestinal perforation appears after urinary bladder catheterization. An important aspect considering differential diagnostics is the reduced amount of abdominal cavity fluid after patient catheterization, as compared to the pre-catheterization period (2), which is not observed in case of gastrointestinal perforation.

In the presented case, liver dullness was not observed after urinary catheterization. The abdominal X-ray performed in the standing position showed signs of gastrointestinal perforation. Due to the continuously deteriorating general condition of the patient, presence of peritonitis symptoms, and suspicion of gastrointestinal perforation on the basis of the physical and imaging examinations (X-ray, ultrasound), the patient was qualified for emergency laparotomy. Abdominal CT could bring additional, valuable information as to the proper diagnosis. However, abdominal CT without contrast (only available possibility in many Polish centers) does not increase, in a significant way, the chance for a definitive diagnosis, due to the rare visualization of urinary bladder wall damage. Cystography is the examination with a high degree of sensitivity, which consists in performing abdominal CT or X-ray examinations with previous administration of contrast to the urinary bladder by means of the catheter (3, 4).The above-mentioned is often difficult to perform during emergency shifts, being associated with suspicion of urinary bladder perforation, requiring diagnostics. In case the patient is stable and in the absence of emergency indications for laparotomy, contrast abdominal CT seems to be appropriate. Considering the diagnostics of the above-mentioned patient explorative lap-

aroscopy would seem justified. Available literature data showed that explorative laparoscopy and urinary bladder perforation suturing is the therapeutic method of choice (5). However, the above-mentioned method requires skills and experience of the operating surgeons, especially during emergency shifts.

No matter how the urinary bladder perforation is supplied, all patients treated for urinary wall rupture require catheterization for at least two weeks after the surgical procedure. Patients with idiopathic urinary bladder rupture, in which an organic pathology was excluded, do not require cystoscopy and consecutive tissue samplings.

Symptoms that differentiate urinary bladder from gastrointestinal perforation include hematuria, constantly decreasing urine quantity, and laboratory values-markers of kidney function damage, as well as dehydration. The biochemistry of the peritoneal cavity fluid in patients with urinary bladder perforation shows increased values of urea and creatinine (2). Simultaneously, one may observe increased blood values of urea, creatinine, and potassium (6, 7). In the presented study case values of urea, creatinine, and potassium were as follows: 183.1 mg/dl, 2.25 mg/dl, 5.54 mmol/l, respectively. Increased renal parameters in elderly patients is a very common phenomenon observed in acute surgical pathology cases. The above-mentioned increase, often erroneously indicates acute renal failure during initial diagnostics of patients with an "acute abdomen" (8). In each case, diagnosis of a patient with acute peritonitis in whom predominating symptoms include sudden abdominal pain, peritoneal cavity fluid, hematuria, oliguria, and coexisting elevated values of urea, creatinine, and potassium, one should consider the possibility of urinary bladder wall rupture (9, 10, 11).

REFERENCES

1. *Fujikawa K, Yamamichi F, Nonomura M* et al.: Spontaneous rupture of the urinary bladder is not a rare complication of radiotherapy for cervical cancer: report of six cases. *Gynecol Oncol* 1999; 73(3): 439-42.
2. *Izumi J, Hirano H, Kato T* et al.: CT findings of spontaneous intraperitoneal rupture of the urinary bladder: two case reports. *Jpn J Radiol* 2012; 30(3): 284-87.
3. *Albino G, Bilardi F, Gattulli D* et al.: Spontaneous rupture of urinary bladder: a case report and review. *Arch Ital Urol Androl* 2012; 84(4): 224-26.
4. *Gomes CA, de Figueiredo AA, Soares Júnior C* et al.: Acute abdomen: spontaneous bladder rupture as an important differential diagnosis. *Rev Col Bras Cir* 2009; 36(4): 364-65.
5. *Zonca P, Cambal M, Jacobi CA:* Laparoscopic management of spontaneous intraperitoneal perforation of urinary bladder. *Bratisl Lek Listy* 2011; 112(5): 282-86.
6. *Kotani K, Takaki O*: Anesthetic management of exploratory laparotomy for a patient with panperitonitis with hyperkalemia: a case report of spontaneous rupture of the urinary bladder. *Masui* 2006; 55(7): 907-09.
7. *Basavaraj DR, Zachariah KK, Feggetter JG*: Acute abdomen--remember spontaneous perforation of the urinary bladder. *J R Coll Surg Edinb* 2001; 46(5): 316-17.
8. *Mardani M, Shahzadi M, Rakhshani N:* Spontaneous perforation of urinary bladder secondary to Candida cystitis: acute abdomen of urologic origin. *Surg Infect* (Larchmt) 2008; 9(5): 525-27.
9. *Maheshwari PN, Bhandarkar DS, Shah RS*: Laparoscopic repair of idiopathic perforation of urinary bladder. *Surg Laparosc Endosc Percutan Tech* 2005; 15(4): 246-48.
10. *Dubey IB, Mohanty D, Jain BK*: Diverse presentation of spontaneous rupture of urinary bladder: review of two cases and literature. *Am J Emerg Med* 2012; 30(5): 832.e1-3.
11. *Limon O, Unluer EE, Unay FC:* An unusual cause of death: spontaneous urinary bladder perforation. *Am J Emerg Med* 2012; 30(9): 2081.e3-5.

Received: 18.03.2013 r.
Adress correspondence: 99-300 Kutno, ul. Kościuszki 52
e-mail: m.wieloch@interia.pl