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A Different Presentation of Urinary Tract Infections: Emphysematous Cystitis

Üriner Yol Enfeksiyonlarının Nadir Bir Başvuru Şekli: Amfizematöz Sistit

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ABSTRACT

Emphysematous cystitis (EC) tends to be seen in the geriatric population. Half of the patients have diabetes mellitus. Other predisposed factors are urinary retention, steroid and other immune suppressive treatments. We present the case of a 75-year-old female patient admitted to the emergency department with complains of abdominal pain and haematuria. She had diabetes mellitus type 2 and amputation below the knee of the left leg. Her vital signs were in the normal range except mild hypothermia. Her physical examination revealed abdominal sensitivity and a mass of 8x8 cm by palpation. Her laboratory results showed pyuria and haematuria, leukocytosis, and a high level of procalcitonin. Contrast-enhanced abdominal tomography showed gas in the wall and the air-fluid level within the lumen of the urinary bladder, which was pathognomonic for EC. There is great variability in clinical presentation and prognosis in cases of EC. Emergency physicians should know the radiological features of EC and associated pathologies of other abdominal organs to prevent the progression of infection.

Keywords: Urinary infection, emphysetamous cystitis, diabetes mellitus
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ÖZET

Amfizematöz sistit (AS) geriatrik popülasyonda görülmeye eğilimlidir. Hastaların yarısında diabetus mellitus vardır. Diğer predispozan faktörler üriner retansiyon, steroid ve diğer immün supresif tedavilerdir. Bu yazıda acil servise karın ağrısı ve hematüri şikayeti ile başvuran 75 yaşında kadın hasta sunulmaktadır. Hastanın hikayesinde diabetus mellitus tip 2 hastalığı ve sol ayağında diz altı amputasyon vardı. Hayati bulguları hafif hipotermi dışında normal sınırlarda ve fizik bakısında yaygın batın hassasiyeti ve 8x8 cm boyutlarında herniyasyona bağlı palpe edilebilir kitle tespit edildi. Laboratuvar sonuçları piyüri, hematüri, lökositoz ve yüksek prokalsitonin seviyesi şeklindeydi. Kontrastlı batın tomografisinde mesane duvarında gaz imajı ve lümen içinde hava sıvı seviyesi görüldü; öyle ki bu bulgular amfizematöz sistit için patognomoniktir. Amfizematöz sistitin klinik sunumunda ve prognozunda ciddi değişkenlik görülmektedir. Acil hekimleri amfizematöz sistitin radyolojik özelliklerini ve eşlik edebilecek diğer abdominal organ patolojilerini bilmelidir.

Anahtar Kelimeler: Üriner enfeksiyon, amfizematöz sistit, diyabetus mellitus
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Introduction

Emphysematous cystitis (EC) is a rare disease that tends to be detected in older and almsman patients, and presents rapid progression in cases of a delay in diagnosis and treatment. Approximately half of the patients are diabetic, and it is detected twice as often in women. Other predisposing factors include urinary retention, conditions that cause suppression of the immune system, and steroid treatment (1, 2).

Case Report

A 75-year-old female patient was admitted to the emergency department (ED) with complains of abdominal pain and haematuria. She had diabetes mellitus type 2 and amputation below the knee of the left leg as a result of diabetic complication. Her vital signs were: body temperature 35.1°C; blood pressure 130/70 mmHg; and heart rate 70 beats per minute. Her physical examina-

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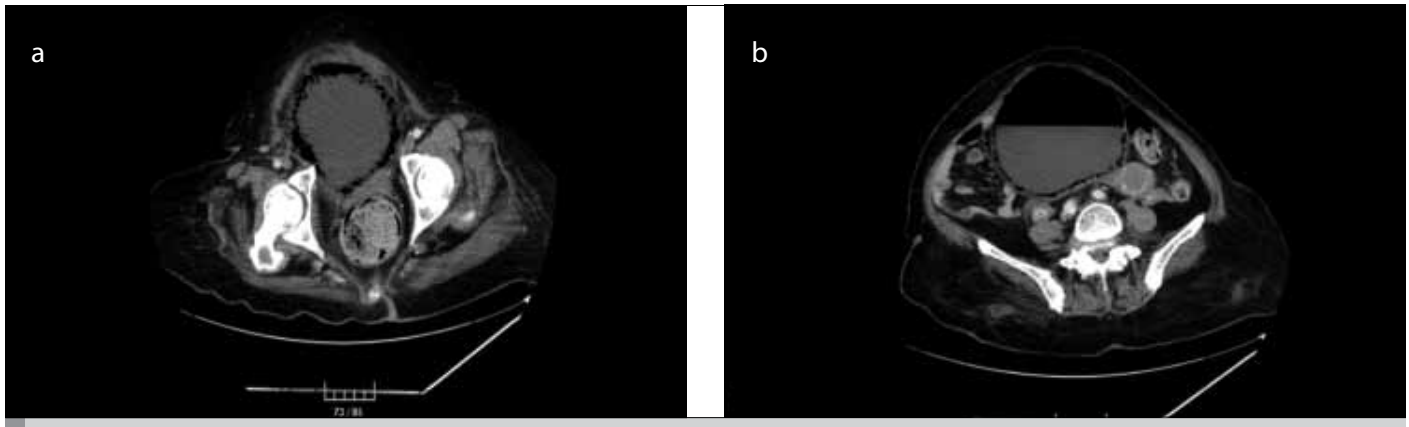

Figure 1a, b. Contrast-enhanced abdominal tomography image showing gas in the wall of the urinary bladder and the air-fluid level within the lumen of the urinary bladder

tion revealed abdominal sensitivity and mass of 8x8 cm by palpation that was thought to be an umbilical hernia. Her laboratory results showed pyuria, hematuria, and positive nitrate test in urine, anaemia (7.5 g/dL; normal range [NR]: 12.1-17.2), leukocytosis (28,000 10^3/uL; NR: 4000–10,000), and a high level of procalcitonin (0.65 ng/mL; If <0.5, negative; if 0.5-2, severe inflammatory response syndrome; if 2-10, sepsis; if >10, severe sepsis and septic shock) in blood serum. Contrast-enhanced abdominal tomography reported gas in the wall and the air-fluid level within the lumen of the urinary bladder, which was pathognomonic for EC (Figures 1a, b). The patient was admitted to the observation unit of the ED for intravenous meropenem regimen (1000 mg tid) and supportive treatment. During the 7-day follow-up, her clinical situation and laboratory results improved and she was transferred to the infectious disease department to complete her treatment. The urinary cultures were negative during our follow-up and the rest of her hospitalisation period. The patient had been hospitalised for a total of 54 days in the emergency observation unit, infectious disease department, coronary intensive care unit (ICU), infectious disease department, surgery ICU, and reanimation ICU. She died after multiple choices of antibiotic regimens and surgical debridement for a soft tissue infection in her right leg.

Discussion

Clinical findings of EC are quite variable. Patients may be completely asymptomatic and the clinical picture may present a fatal progress. Irritating cystitis findings, and abdominal conditions in the form of cramps or pneumaturia are commonly observed. The microorganisms that are commonly isolated are *Escherichia coli* and *Enterobacter aerogenes* (3, 4).

The disease is generally diagnosed with radiography and frequently appears as an incidental finding in direct urinary system radiographs (5). Radiographic images are not necessary in most infectious cases involving the urinary bladder. However, radiography is the most valuable method in EC, where gas has collected in the wall or lumen of the bladder (2). Emphysematous urethritis, nephritis, adrenalitis, or cholecystitis may accompany this condition (6). Radiolucent lines located on the urinary bladder wall and cobblestone- or necklace-like lucency within the urinary bladder are detected in direct radiographs and excretory urography (1, 3). Computed tomography may be used to show the gas within the urinary bladder and to indicate the localisation and extent of gas accumulation (2). The diffuse wall thickening on the urinary bladder and echogenous focuses accompanied by acoustic shadow can be seen by ultrasonography (3). Acute cystitis findings as well as vesicular and interspersed haemorrhage zones are observed in cystoscopy (2, 3).

Causes for the gas detected in the urinary system trace by imaging methods include trauma, interventional procedures of the urinary system, and intramural gas appeared due to an intestine-related fistula. Rectal gas, emphysematous vaginitis, pneumatosis cystoides intestinalis, and emphysematous gangrene may provide images similar to EC (1).

Many important points should be considered for the treatment of EC. Prior interventions to the treatment include shock treatment, electrolyte and fluid gap recovery, control of diabetes, and infection treatment. Initial antibiotic treatment is mostly empirical. Therefore, treatment should be started by considering epidemiological data, possible factors, age of the patient, accompanying diseases and Gram staining characteristics of the urine sediment. After culture and antibiogram results are obtained, one drug antibiotic regimen should be continued parenterally. If bacteriological and clinical responses are not obtained 48 hours after treatment is begun, antibiotic therapy should be reconsidered. Antibiotherapy should be maintained for at least 14 days (7, 8).

Conclusion

To be familiar with the radiological findings of EC, which has very variable clinical findings and prognosis, is very important for the early diagnosis of the disease. To detect the gas image which may accompany in other regions of the urinary system and gall bladder may be significant for the prognosis of the disease.

Conflict of Interest

No conflict of interest was declared by the authors.

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Çıkar Çatışması
Yazarlar herhangi bir çıkar çatışması bildirmemişlerdir.

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