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A Case of Emphysematous Cystitis after Treatment for Depression

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Abstract: A 70-year-old female patient underwent an infusion of clomipramine and was admitted to the psychiatry department of our hospital because she could not eat. She had a history of depression and diabetes mellitus. On the evening of that day, she had a fever. The following day, she underwent whole body computed tomography to detect the focus of inflammation, which depicted diffuse air bubbles within the bladder wall, suggesting potentially life-threatening, emphysematous cystitis (EC). An infusion of piperacillin-tazobactam was initiated and an indwelling catheter was inserted into the bladder. On the third day of hospitalization, her blood pressure, respiratory condition and consciousness deteriorated, and she was transferred to the intensive care unit. She was diagnosed with septic shock with multiple organ failure including takotsubo cardiomyopathy, induced by emphysematous cystitis and continuous treatment with antibiotics along with mechanical ventilation and noradrenalin support were provided. Her multiple organ failure gradually improved even she became temporally cardiac arrest. After she became able to eat for herself and walk with assistance, she was transferred to another hospital for rehabilitation. The patient was an elderly woman with diabetes mellitus, thus these factors might have affected the occurrence of EC. It is also possible that it was a side effect of the administration of tricyclic or tetracyclic antidepressants, because these antidepressants have side effects such as urinary hesitancy, dysuria and urinary retention.
Keywords: emphysematous cystitis; diabetes mellitus; antidepressant.

INTRODUCTION

Emphysematous cystitis is a rare form of complicated urinary tract infection, its characteristic feature being gas within the bladder wall and lumen [1-3]. Amano *et al.* and Thomas *et al*. summarized the case reports of emphysematous cystitis and concluded that patients with emphysematous cystitis present with variable clinical manifestations ranging from asymptomatic to severe sepsis [2, 3]. Emphysematous cystitis is typically observed in elderly women with severe diabetes mellitus. *Escherichia coli* and *Klebsiella pneumoniae* are often isolated from urine cultures. Computed tomography is highly sensitive in the detection of EC. Although most cases can be treated conservatively, emphysematous cystitis is potentially life-threatening, with a mortality rate of 3–12%. Early medical intervention can contribute to the achievement of a favorable prognosis. We herein report a case of emphysematous cystitis after treatment for depression and discuss the mechanism of occurrence.

CASE REPORT

A 70-year-old female patient underwent an infusion of clomipramine (25 mg) for 8 days and was admitted to the psychiatry department of our hospital because she could not eat. She had a history of depression, diabetes mellitus, hyperlipidemia and hypertension. On the evening of that day, she had a fever. The following day, she underwent whole body computed tomography (CT) to detect the focus of inflammation, which depicted diffuse air bubbles within the bladder wall (Figure 1), suggesting emphysematous cystitis. An infusion of piperacillin-tazobactam was initiated and an indwelling catheter was inserted into the bladder. On the third day of hospitalization, her blood pressure, respiratory condition and consciousness deteriorated, and she was transferred to the intensive care unit after underwent tracheal intubation. When our staff checked her, she had a blood pressure of 90/60 mmHg, a heart rate of 130 beats per minute (BPM), a respiratory rate of 30 BPM, and an axillary temperature of 40.0°C. The main results of a biochemical analysis of the blood are shown in Table 1. An electrocardiogram showed elevation of the ST segment at the precordial leads and cardiac sonography showed akinesis at the apex. She was diagnosed with septic shock with multiple organ failure including takotsubo cardiomyopathy, induced by emphysematous cystitis and continuous treatment with antibiotics along with mechanical ventilation and noradrenalin support were provided. On the 5th day of hospitalization, she temporarily displayed pulseless electrical activity, just after a platelet transfusion to treat thrombocytopenia (3.1×10^4 /μl); this was treated by an infusion of adrenalin, steroids and vasopressin. After this event, her multiple organ failure gradually improved. The infusion

of vasopressor was ceased on the 9th day of hospitalization and she was extubated on the 13th day of hospitalization. After moving to the general ward, she developed drug-induced general dyskinesia, aspiration pneumonia, and paroxysmal supraventricular tachycardia and was treated with supportive therapies, including drugs and rehabilitation. Because she had weak bladder constriction, her indwelling bladder catheter was kept in place. After she became able to eat for herself and walk with assistance, she was transferred to another hospital for rehabilitation without the removal of her bladder catheter.

Table 1. The laboratory analysis results

Arterial blood gas (FiO2 0.4)			
pH	7.49	pCO_2	26 mmHg
pO_2	56 mmHg	Bicarbonate	20.6 mmol/l
Lactate	6.3 mmol/l		
Cell blood count			
White blood count	8300 /μl	Hemoglobin	8.9 g/dl
Platelet	6.3 x10^4/μl		
Serum biochemical data			
Aspartate aminotransferase	1456 IU/l	Alanine aminotransferase	697 U/l
Creatine phosphokinase	424 IU/l	Total bilirubin	1.0 mg/dl
Blood urea nitrogen	29.1 mg/dl	Glucose	93 mg/dl
Creatinine	1.9 mg/dl	Sodium	154 mEq/l
Potassium	3.2mEq/l	C reactive protein	4.9 mg/dl
Coagulation			
Activated partial thromboplastin time	40.0 sec	Prothrombin time %	38 %
Fibrinogen degradation products	4.9 μg/mL		

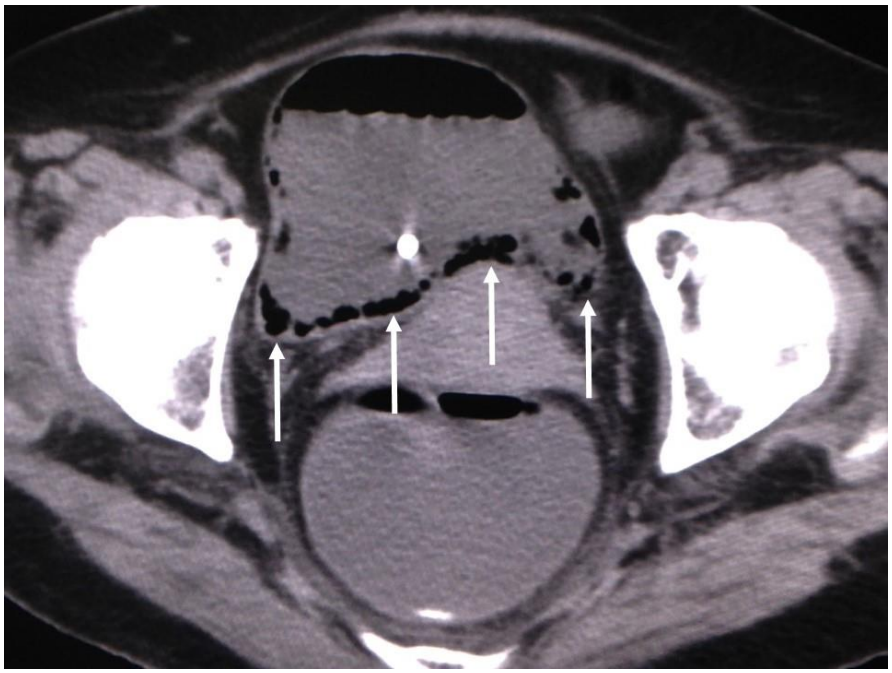

Fig-1: Whole body computed tomography (CT) to detect the focus of inflammation

The CT depicts diffuse air bubbles within the bladder wall, suggesting emphysematous cystitis (white arrow).

DISCUSSION

In the present case, a patient developed emphysematous cystitis after treatment for depression. The patient was an elderly woman with diabetes mellitus, thus these factors might have affected the occurrence of emphysematous cystitis [2, 3]. It is also possible that it was a side effect of the administration of tricyclic or tetracyclic antidepressants. These drugs have peripheral anticholinergic effects and are prescribed to treat the symptoms of chronic urethral and trigonal irritation due to interstitial cystitis, overactive bladder or urethral hyperaesthesia [4-6]. However, tricyclic and tetracyclic antidepressants have side effects such as urinary hesitancy, dysuria and urinary retention due to their anticholinergic effects [7-9]. Urinary retention is a risk factor for urinary tract

infection [10, 11]. Although we could not find any reports of patients with complications of anticholinergic effects and urinary tract infection, the present case may suggest this possibility; however, the patient's risk factors, which included age, sex and diabetic neurogenic bladder, should also be considered when encountering such cases.

CONCLUSION

When a patient being treated with tricyclic or tetracyclic antidepressants shows signs of infection, a physician should consider the possibility of a urinary tract infection, including EC.

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