

CLINICAL IMAGE

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High-grade fever and unique shaped gas in pelvic region

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CASE REPORT

A 91-year-old male on treatment for type 2 diabetes mellitus was admitted to our hospital complained of general fatigue and high-grade fever since one day. He noticed hematuria for two days before admission. On physical examination, costovertebral angle tenderness pain was not observed. His body temperature was 39.1 °C, and heart rate was 110 beats per minute. Blood laboratory examination showed that white blood cell counts were 18,050/L, C-reactive protein 17.9 mg/dL, blood sugar was 254 mg/dL, and procalcitonin was 10.1 ng/mL. Urinalysis revealed moderate hematuria and proteinuria. On plain pelvic X-ray [computed tomography (CT) scan positioning image], unique linear circular-shaped gas was observed (arrow in Figure 1A). On plain abdominal CT demonstrated mildly thickened bladder wall and emphysematous region of bladder lumen (arrow in Figure 1B). We diagnosed this case as emphysematous cystitis. Urine culture revealed *Staphylococcus aureus* as the pathogen of this case. Intravenous administration of ampicillin sodium/sulbactam sodium (3.0 g every 8 hour for seven days) was started and a balloon catheter was placed in the bladder. Then hematuria was improved. After seven days of treatment, administration of ampicillin sodium/sulbactam sodium and placement of ballooned-bladder catheter were discontinued. Moreover, the patient was discharged ten days after admission.

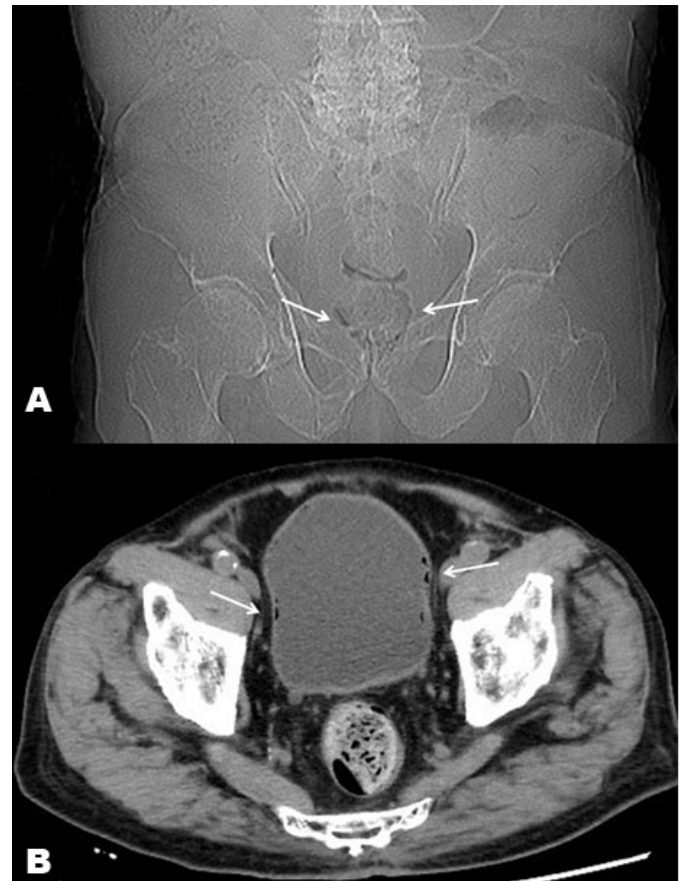


Figure 1: Pelvic X-ray and CT: (A) Pelvic X-ray: Linear circular-shaped gas was observed in the pelvic lesion (arrow). (B) Pelvic CT: Emphysematous region was observed in the urinary bladder wall (arrow).

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DISCUSSION

Emphysematous cystitis is a rare disease, which is known as one of the complications of elderly diabetes [1, 2]. As the pathogen, *Klebsiella pneumoniae*, *Escherichia coli*, and *Staphylococcus aureus* are reported [2, 3]. The mortality of emphysematous cystitis is around 7% when advanced into septic state [1], but most cases could be improved by conservative treatment. Generally, bladder cystitis would not complicate high-grade fever, but half of emphysematous cystitis cases show high-grade fever

like our patient [1, 3, 4]. Therefore, the possibility of emphysematous cystitis should be considered, when high-grade fever is observed with bladder cystitis patients. The mechanism of emphysematous change is realized that infecting bacterial pathogen producing gas accumulates under the mucosal membrane [3–5]. Early diagnosis could be performed in this case by confirming specific emphysematous gas with bladder lumen on CT imaging as previously reported [5, 6].

CONCLUSION

A case of bladder cystitis with high-grade fever was reported. Appearance of emphysematous change within the bladder lumen on CT imaging or abdominal X-ray is useful for diagnosis.

Keywords: Emphysematous cystitis, High-grade fever, *Staphylococcus aureus*

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Author Contributions

Yasuyuki Taooka – Conception of the work, Design of the work, Acquisition of data, Analysis of data, Drafting the work, Revising the work critically for important intellectual content, Final approval of the version to be published, Agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved

Junya Inata – Analysis of data, Interpretation of data, Revising the work critically for important intellectual content, Final approval of the version to be published, Agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved

Hiroki Yoke – Analysis of data, Interpretation of data, Revising the work critically for important intellectual content, Final approval of the version to be published, Agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved

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Consent Statement

Written informed consent was obtained from the patient for publication of this article.

Conflict of Interest

Authors declare no conflict of interest.

Data Availability

All relevant data are within the paper and its Supporting Information files.

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