CASE REPORT

K. Shigemura · S. Arakawa · T. Miura · T. Yasufuku · Y. Nakano · K. Tanaka · M. Fujisawa

Retroperitoneal abscess perforating into the thoracic cavity in an immunocompromised host

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Abstract A 71-year-old man with a retroperitoneal abscess caused by a ureteral stone was successfully treated by retroperitoneal drainage. He was considered to be at high risk of infection because of his bedridden state (resulting from a post-cerebral infarction and malignant rheumatoid disease) and steroid administration for the rheumatoid disease. He also had an empyema adjacent to the retroperitoneal abscess. This was thought to be separate from the retroperitoneal abscess because it did not resolve after the retroperitoneal drainage. Thoracic cavity drainage was undertaken, after which the empyema disappeared. The drainage fluid contained pus, similar to the fluid from the retroperitoneal drainage. Escherichia coli organisms were cultured from both drainage fluids. There were no signs of recurrence on computed tomography (CT) imaging. In conclusion, we report a case of retroperitoneal abscess perforating into the thorax, successfully treated by retroperitoneal and thoracic cavity drainage in an immunocompromised host. CT was a very effective imaging modality for this diagnosis, and we recommend early drainage of abscess in immunocompromised patients.

Key words Retroperitoneal abscess · Immunocompromised host

Introduction

Retroperitoneal abscesses are encountered in urological as well as other surgical departments. In urology patients, lithiasis and previous urological surgery are considered to be the main predisposing factors along with diabetes mellitus (DM). Immunocompromised hosts, such as bedridden patients or those receiving steroid administration, can easily develop retroperitoneal abscess from pyonephrosis or urine leakage from the renal pelvis that is caused by stone impaction in the urinary tract.

Formerly, open surgery and ablution of the intra- or retroperitoneal infected space were the common treatments for such abscesses, but percutaneous drainage has now become the first choice for treatment, usually accompanied by antibiotic administration. Computed tomography (CT) is very useful for imaging the abscess and helping to uncover its origins. The three-dimensional imaging capability of CT allows physicians to make detailed treatment plans for approaching the abscess.

This report is a useful demonstrative case for both conservative and surgical approaches, because the patient was an immunocompromised host and his abscess had perforated from the perirenal space into the thoracic space; this posed particular treatment difficulties owing to the separation of the abscesses.

Case report

A 71-year-old man with a right ureteral stone had low-grade fever and right costal-vertebral angle tenderness; he was diagnosed with urinary tract infection based on urine testing and his symptoms. CT findings showed a 90 × 80-mm mass in the right perirenal space and pleural effusion in the right thoracic space (Fig. 1). His serum laboratory data revealed a high white blood cell count (18 900/mm³) and high C-reactive protein (6.28 mg/dl). He was diagnosed as having a right retroperitoneal abscess perforating into the thoracic space, resulting from the right ureteral stone, and was subsequently referred to our department.

He was in a bedridden state, caused by post-cerebral infarction and malignant rheumatoid arthritis, and he took oral steroids for the malignant rheumatoid disease (prednisolone, 5 mg daily). Immediately after he was brought to our outpatient department, we performed drainage of the retroperitoneal abscess under abdominal ultra-
sound, because we judged that it was unlikely to be cured by antibiotics alone. Four hundred ml of pus fluid was aspirated and then antibiotic therapy with doripenem 0.75 g per day was initiated. After 2 weeks, we did not see any fluid from the retroperitoneal drain, but CT imaging showed that although the retroperitoneal abscess had disappeared, the right pleural effusion remained (Fig. 2). This suggested that the abscesses in the perirenal space and the thoracic cavity were separate. Therefore, we performed right thoracic drainage, and found pus fluid similar to that obtained from the perirenal abscess. The culture results from the drainage fluid was *Escherichia coli*, as had been shown from the perirenal abscess. In addition to thoracic drainage, we began antibiotic chemotherapy and carried out saline ablation of