Pneumococcal Psoas Abscess

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A 47-year-old woman was admitted to our hospital because of severe low back pain. A computed tomography (CT) scan revealed a left sided psoas muscle abscess. On the first hospital day, US-guided drainage was performed. *Streptococcus pneumoniae* was isolated from the pus. Thereafter, the open drainage of the abscess and antibiotic treatment were given with subsequent clinical improvement. Only 10 cases of pneumococcal psoas abscess have been previously reported in the world literature.

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Introduction

Various bacteria, including *Staphylococcus aureus* and β -*streptococcus*, have been reported as pathogens of psoas abscess. *Streptococcus pneumoniae* is an exceedingly rare cause of psoas abscess. We report a case of pneumococcal psoas abscess which is a rare entity previously hardly reported in Japan.

Case Report

A 47-year-old alcoholic woman was admitted to a local hospital with sudden low back and left hip pain. She also had symptoms suggestive of upper respiratory tract infection such as productive cough, and fever 2 weeks prior to admission. Her past medical history was significant only for pneumonia one year earlier. She did not recall any trauma. Magnetic resonance imaging (MRI) showed lumbar disc hernia and the patient was treated with analgesics. However, the pain progressively worsened and all movements of the left hip were severely limited because of excruciating pain. She was readmitted to another hospital with severe back pain, dyspnea and fever. On admission, a chest X-ray showed infiltration in the right lower lobe with pleural effusion (Fig. 1). Bacterial pneumonia was suspected and intravenous imipenem/cilastatin was begun. On the next day the systolic blood pressure fell to 60 mmHg and she became restless. An infusion of dopamine was begun and she was transferred to our hospital. On admission, she was slightly drowsy and had a blood pressure of 154/70 mmHg (with an

infusion of dopamine), a pulse rate of 108/min and a body temperature of 37.4°C. Respiratory sound was diminished and crackles were audible in the both lungs. Flexion contracture of the left hip was noted as well as tenderness in the lower quadrant ipsilaterally. Severe redness, swelling, and tenderness were found on the right foot joints. The white cell count was elevated at 34,100/mm³ with a left shift and the platelet count was 50,000/mm³. C-reactive protein (CRP) was 14.5 mg/dl. Liver function tests were also abnormal with aspartate aminotransferase (AST) 167 IU/l, alanine aminotransferase (ALT) 56 IU/l and alkaline phosphatase (ALP) 1,573 IU/l (Table 1). Immunoglobulin (Ig)G 5,360 mg/dl, IgA 979 mg/dl, IgM 450 mg/dl, coagulation parameters were also abnormal with a prothrombin time of 33%, fibrin degradative products (FDP) 10 µg/ml, D-dimer 4 µg/ml. Arterial blood gas on 10 liters of oxygen showed pH 7.361, pCO₂ 51.2 mmHg and pO₂ 62.2 mmHg. Her respiratory condition deteriorated quickly and mechanical ventilation was started. An abdominal X-ray showed an absence of the left psoas shadow (Fig. 1). A computed tomography (CT) revealed large low-density areas in the left swollen psoas muscle extending near the lower pole of the kidney (Fig. 2). These areas were clearly encapsulated and not enhanced by contrast media. From these findings, we made a tentative diagnosis of septic shock with severe pneumonia, left psoas abscess and septic arthritis of the right foot. Disseminated intravascular coagulation was also associated. Ultrasonography-guided percutaneous aspiration of the psoas abscess was carried out to obtain pus for culture. A penicillin-susceptible strain of *Streptococcus pneumoniae* was isolated from the pus. Cultures of the right foot joint fluid also

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Figure 1. (a) Chest X-ray on admission, showing infiltration in the lower lobe with right pleural effusion. (b) Abdominal X-ray on admission, showing absence of the left psoas shadow.

Table 1. Laboratory Findings on Admission

Peripheral blood		Biochemistry	
White blood cell	34,100/mm ³	Total protein	6.2 g/dl
Red blood cell	233×10 ⁴ /mm ³	Albumin	1.4 g/dl
Hemoglobin	8.5 g/dl	Aspartate aminotransferase	167 IU/l
Hematocrit	25.8%	Alanine aminotransferase	56 IU/l
Platelet	5.0×10 ⁴ /mm ³	Lactate dehydrogenase	346 IU/l
Coagulation test		Alkaline phosphatase	1,573 IU/l
Prothrombin time	33%	Total bilirubin	2.7 mg/dl
FNG	306 mg/dl	Blood urea nitrogen	23 mg/dl
Fibrin degradative products	10 µg/dl	Creatinine	1.1 mg/dl
AT-III	12.1%	Na	138 mEq/l
D-dimer	4 µg/ml	K	3.9 mEq/l
C-reactive protein	14.5 mg/dl		

grew *Streptococcus pneumoniae*. Blood and sputum cultures were negative. Surgical drainage of the abscess was performed with intravenous penicillin (Penicillin G: 16 million units per day). A CT scan performed 4 weeks later showed almost complete resolution of the abscess (Fig. 3). White blood cell count and CRP became normal and she was discharged on the 60th hospital day (Fig. 4).

Discussion

Psoas abscess is an uncommon condition which may be classified as primary, from haematogenous spread, or secondary resulting from direct extension of intraperitoneal, intrapelvic or retroperitoneal process such as appendicitis, diverticulitis, Crohn's disease, colon neoplasm, and perinephric abscess (1, 2). The most frequently reported pathogen associated with

primary psoas abscess is *Staphylococcus aureus* (1). In recent years primary psoas abscesses caused by a variety of pathogens which including *β-streptococcus*, *E. coli*, *Bacteroides* (1), *Proteus mirabilis* (3), *Haemophilus influenzae* (4), *Streptococcus milleri* (5) and methicillin-resistant *Staphylococcus aureus* (6) have been reported.

Since most symptoms and signs of the psoas abscess are of non-specific origin, prompt diagnosis often tends to be difficult. The classical symptomatic triad of psoas abscess includes abdominal or low back pain, limping and fever. Most patients also have malaise, weight loss, anorexia and mass (7). The diagnosis of psoas abscess is usually made by ultrasonography (US) or CT scan (CT) (8). US may show an enlarged psoas or a hypoechoic mass and CT usually shows a low density mass.

The standard treatment of psoas abscess is drainage of the abscess and proper antibiotics. US-guided or CT-guided drain-

Figure 2. Computed tomography shows large low-density areas in the left swollen psoas muscle.

Figure 3. Computed tomography after drainage. Psoas abscess was successfully drained.

Figure 4. Clinical course of laboratory data and treatment. AZT: aztreonam, VCM: vancomycin, PCG: penicillin G.

age is the first choice treatment (8, 9). Occasionally, however, when access is difficult to drain or the pus is very thick, open drainage is necessary.

Streptococcus pneumoniae is an exceedingly rare pathogen of psoas abscesses. Recently only 10 cases of pneumococcal

psoas abscess have been reported in the world literature (10–18). Giladi et al reported on these 10 cases of pneumococcal abscess (19). Three of the 10 cases had pneumococcal meningitis as a complication of pneumococcal psoas abscess. In the present case, a lumbar puncture was not done because of her

poor condition and cooperation. Therefore, it is difficult to assess whether meningitis was present or not. Four out of the 10 cases had underlying illness. One patient had undergone splenectomy, another had multiple myeloma, and two were alcoholics. A history of previous trauma was found in 4 of the 10 cases, such as traffic accidents, multiple lumbar punctures and multiple injections.

The present case consumed a large amount of alcohol and this probably predisposed her to develop pneumonia due to *Streptococcus pneumoniae*. It seems likely that pneumococcal pneumonia is the primary focus of infection with pneumococcal bacteremia, which caused pneumococcal psoas abscess and septic arthritis hematogenously. In general, the prognosis of pneumococcal psoas abscess is quite good with prompt surgical intervention as well as appropriate antibiotic treatment.

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