

A Case of Bilateral Pleuritis Secondary to Discitis of the Thoracic Spine

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Received March 20 1998; accepted May 20 1998

Summary: A 64-year-old woman was admitted to our hospital with fever and back pain of two weeks' duration. Chest X-ray on admission disclosed a massive bilateral pleural effusion, and computed tomography (CT) showed a paravertebral lesion of the thoracic spine, indicating an abscess spreading to the bilateral thoracic cavities. Thoracocentesis showed exudative pleural effusion with neutrophils dominant in cytology, but a negative culture for bacteria. Magnetic resonance imaging (MRI) revealed discitis at T9/10 disc. According to the above findings, pleuritis extending from thoracic vertebral discitis was suspected. The patient was treated with antibiotics (Imipenem/ Cilastatin Na (IPM/ CS), Clindamycin (CLDM)), and pleural effusion was almost resolved within three weeks. Discitis of thoracic vertebra should be included as one of the origins of acute pleural disease, and MRI is useful for the early diagnosis of discitis.

Key words—acute pleuritis, discitis of thoracic spine.

INTRODUCTION

Intervertebral discitis remains a diagnostic problem. Nonspecific symptoms (low grade fever, malaise and weight loss) may dominate. Even with fever, back pain, and point tenderness over the vertebral column, the correct diagnosis is difficult because of the failure to recognize the radiological findings of the lesion in its early stage. Patients may have symptoms resulting from a secondary paravertebral abscess. We experienced a case of bilateral pleuritis spreading from a paravertebral abscess due to dis-

citis of the thoracic spine. To our knowledge, there have been only two case reports of pleuritis secondary to disc space infection^{1,2}. We here present this case, and discuss the difficulty of diagnosis and the utility of magnetic resonance imaging (MRI) and computed tomography (CT).

CASE REPORT

A 64-year-old woman experienced sudden fever up to 38°C on May 6, 1996. She awakened with low back pain on May 10. The back pain gradually increased and became uncontrollable with a diclofenac sodium suppository. She was admitted on May 22 to the Department of Orthopedic Surgery at our hospital on a suspicion of discitis. Chest X-ray on admission (Fig. 1) revealed a massive bilateral pleural effusion and discoid atelectase of the lower lung fields. She was therefore referred to the Department of Internal Medicine on May 23. She had no remarkable family history, but had a history of an operation for gastric ulcer at the age of thirty-five.

Her temperature was 38.9°C. Blood pressure was 140/80mmHg, pulse rate was 96/min regular, and respiration rate was 32/min. Bulbar conjunctiva was not icteric, but palpebral conjunctiva was anemic. There was no lymphadenopathy. There was cyanosis in the lips and nail beds. Pulmonary auscultation revealed diminished respiratory sound, and coarse crackles at the lower back reflecting discoid atelectase of the lower lobes. Cardiac sound was normal. There was no hepatosplenomegaly nor pretibial edema. There were spontaneous pain and tenderness in the lower thoracic spine, but neurological findings were normal in the lower extremities.

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Laboratory data on admission (Table 1) revealed that erythrocyte sedimentation rate was 89mm/1 hr and C-reactive protein (CRP) was 20.8mg/dl. Leucocyte count was 13100/mm³ with 77% neutrophils, 16% lymphocytes and 7% monocytes. Renal function was normal, while there was a marked increase in ALP (911IU/l). FBS was 99mg/dl, and urinalysis was normal. Cultures of blood and urine were negative. Diagnostic right thoracentesis showed a turbid yellowish in appearance and exudate with neutrophils was dominant in cytology. Protein concentration was 3.6g/dl, glucose concentration was 165mg/dl, LDH was 1571IU/l, and adenosin deaminase activity (ADA) was 24.7IU/l in pleural effusion. No malignant cell was detected, and cultures were negative for bacteria and acid-fast bacillus from the pleural effusion. Blood gas analysis disclosed hypoxemia (PO₂: 51.8Torr) and hypocapnia (PCO₂: 29.7Torr). ECG and cardiac echogram were normal.

X-ray of the thoracic spine on admission was almost normal, but an x-ray of the thoracic spine after two months showed a narrowing of the T9/10 disc (Fig. 2). T₂ weighted MRI of the thoracic spine on admission revealed an enhanced lesion in the T9/10 disc, suggesting the existence of inflammation (discitis) (Fig. 3). CT-film on admission showed a massive bilateral pleural effusion and paravertebral mass lesion indicating the paravertebral abscess spreading to the bilateral thoracic cavities (Fig. 4).

From the clinical course and the MRI and CT findings, the patient was diagnosed as bilateral pleur-

itis extending from the T9/10 disc space infection (discitis). After antibiotic therapy (IPM/ CS, CLDM) was started with diuretics and therapeutic bilateral thoracentesis, pleural effusion gradually decreased, fever alleviated on May 30, and CRP became negative on June 13. The tenderness on the thoracic spine diminished, but pain on motion remained. The causative organism was not detected, and the focus of infection was undetermined by gynecological and urological examination, probably due to the early therapy of antibiotics.

DISCUSSION

In this case, both discitis and pleuritis were already observed on admission, but discitis was speculated to be a primary lesion from the findings of bilateral pleuritis, paravertebral abscess formation and clinical course.

Discitis may involve any level of the spine, but more frequently involved the thoracic and lumbar spine, according to a study of 32 adult cases by Bonfiglio et al.³⁾, which reports the following: thoracic: 13 cases (41%), lumbar: 11 cases (34%), thoracolumbar: 3 cases (9%), lumbosacral: 3 cases (9%),



Fig. 1. Chest X-ray on May 22 shows massive bilateral pleural effusion and discoid atelectase of the lower lung fields.

Table 1. Laboratory data on admission

ESR 89mm/hr	FBS 99mg/dl
PPD 0×0/5×5mm	TP 5.9g/dl
CRP 20.8mg/dl	
Hematology:	Urinalysis
RBC 286×10 ⁴ /mm ³	Protein ±
Hb 8.9g/dl	Glucose ±
P1t 51.8×10 ⁴ /mm ³	RBC 1-4/HPF
WBC 13100/mm ³	WBC 1-4/HPF
stab 6.5%	Blood gas analysis:
seg 70.5%	PH 7.448
lym 15.5%	PO ₂ 51.8mmHg
mo 7%	PCO ₂ 29.7mmHg
Biochemistry:	BE +0.6
Na 135mEq/l	Culture:
K 3.7mEq/l	Blood(-)
Cl 102mEq/l	Urine(-)
BUN 10.2mg/dl	Pleural effusion(-)
GOT 46 IU/l	Thoracentesis:
GPT 91 IU/l	Protein 3.6g/dl
ALP 911 IU/l	Glucose 165mg/dl
LDH 556 IU/l	LDH 1571 IU/l
	ADA 24.7 IU/l

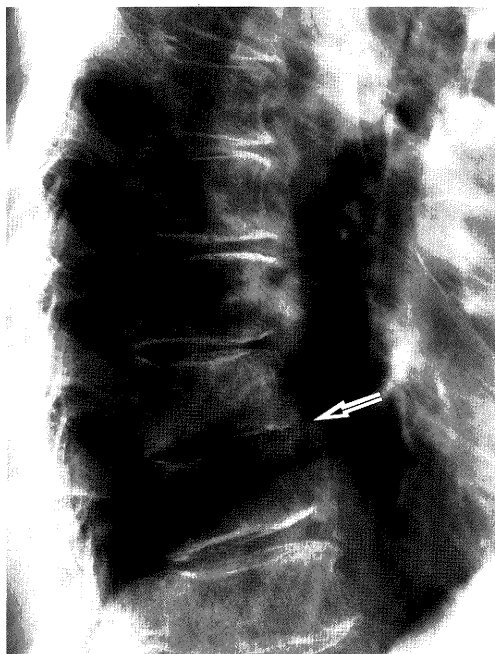


Fig. 2. X-ray of the thoracic spine on July 17 shows a narrowing of T9/10 disc with sclerosis of the adjacent vertebrae.

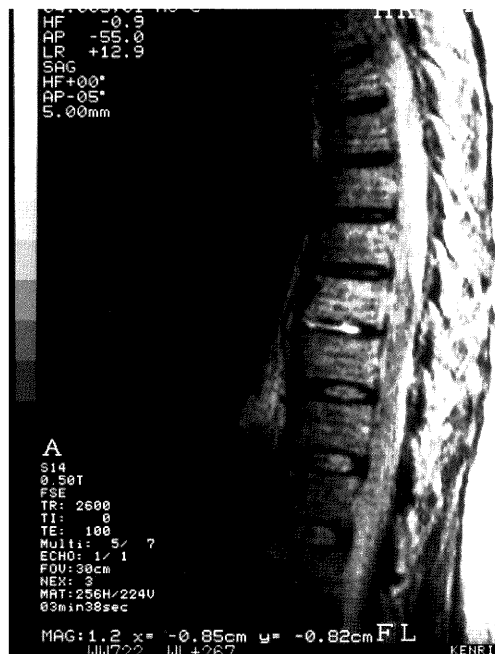


Fig. 3. T₂ weighted lateral MRI scan of the thoracic spine on May 23 shows the enhanced lesion in T9/10 disc, indicating the existence of discitis.

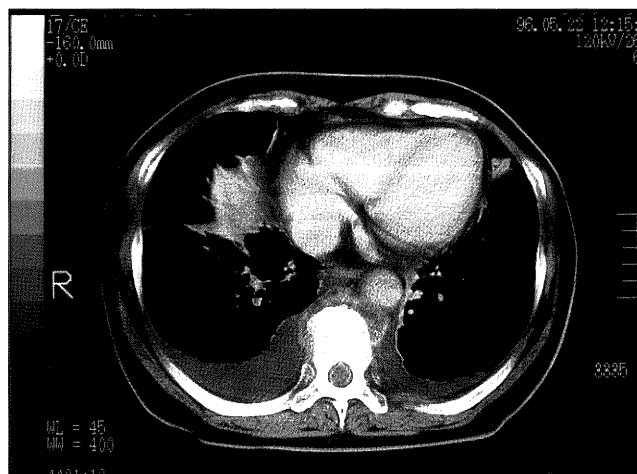


Fig. 4. CT on May 22 shows a paravertebral abscess spreading to the bilateral pleural effusion.

and cervical: 2 cases (2%). In their study, peak incidence is in the sixth and seventh decades, with an age span from 24 to 83 years, and equal frequency between men and women. Discitis was suspected to be due to hematogenous spread, and predisposing conditions include urinary tract infection, instrumentation of the infected urinary tract, indwelling intravenous lines, drug addiction, previous back surgery and bacteremia from other causes⁴. Diabetes mellitus

is a most frequent underlying disease³. *Staphylococcus aureus* is the most common pathogen, although other microorganisms may be responsible^{3,4}.

The clinical diagnosis of discitis is based on the findings of localized pain and tenderness over one or more vertebrae in patients who have fever⁴. The patient may have symptoms resulting from a secondary paravertebral abscess, for example, neck pain⁵, chest pain or abdominal pain⁶. Diagnosis is delayed

in most patients, however. This is due partly to a failure to recognize the radiological signs of the lesion in early stages⁷⁾. Earlier diagnosis may be facilitated by the use of isotopic bone scanning⁷⁾, but recently MRI has become the most useful means to establish the diagnosis¹⁾.

There have been only two case reports of acute pleuritis secondary to an infected disc^{1,2)}. One case²⁾ is that of a 30-year-old woman, who awakened suddenly with right side pleuritic chest pain. A roentgenogram of the thoracic spine after two months demonstrated a ballooning of the disc space with vertebral erosion. A needle biopsy of the affected disc interspace provided culture material which was positive for staphylococcus aureus. The patient was treated with methicillin, and was asymptomatic nine months later. The other case¹⁾ is of a 29-year-old man with alcoholic cirrhosis, who experienced dull pain in the back that was aggravated by motion. He had a history of a left pleuropneumonia due to staphylococcus aureus 18 months earlier. A roentgenogram of the thoracic spine after six weeks demonstrated the spontaneous fusion of T4/5 and T8/9 discs with sclerosis of the adjacent vertebrae, and CT scan of the thorax revealed a paravertebral soft tissue mass with liquid portions, indicating a paravertebral abscess descending from the level of the aortic arch to the level of the suprarenal glands. Diagnostic thoracocentesis revealed pus, from which staphylococcus aureus was isolated. The patient was treated with intravenous antibiotics and underwent decortication of the pleural empyema and debridement and irrigation of paravertebral spaces. As in the above two

cases, the diagnosis of discitis is delayed due to defects of radiological signs on the spine in early stages. In our case, MRI was useful for a definitive diagnosis of discitis.

Pleuritis due to disc infection is uncommon, but discitis should be considered in the differential diagnosis of pleuritic chest pain and effusion of a sudden onset. MRI and CT are the most appropriate means to establish the diagnosis and determine the extension of paravertebral soft tissue involvement.

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