Bilateral Extraordinary Huge, Multi-compartmental Tuberculous Abscesses: A Case Report

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Objective : *To illustrate computerized tomography (CT) and magnetic resonance imaging (MRI) findings of tuberculous spondylitis with extensive abscess collections.*
Method : *A review of one patient with tuberculous spondylitis and extensive paraspinal, subligamentous, retroperitoneal, and subcutaneous abscesses including pertinent history, important physical examination, CT and MR imaging findings was performed.*
Result and Conclusion : *This case demonstrates multiple patterns of tuberculous abscess formation secondary to spinal tuberculosis; included are paraspinal, subligamentous, retroperitoneal, and subcutaneous locations. The extension of the abscess should be kept in mind when treating a patient with tuberculous spondylitis. MR imaging is a modality of choice to illustrate full extension of the disease process, which is necessary for therapeutic decision making and planning.*

Keywords : *Tuberculous, Retroperitoneal, Abscess*

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More than half of the patients with spinal tuberculosis have paravertebral masses consisting of abscess and/or granulation tissue. Most of the reported paravertebral abscesses were moderate to large in size [1-6], almost always compressed the dural tissue[1,2,4,5], and may penetrate multiple adjacent organs[7,8].

The authors illustrate images of an extraordinary tuberculous infection with multilevel spinal involvement and extensive paraspinal extension.

Case Report

A 20 year-old farmer-housewife had a 1-year history of back pain and generalized weakness. The initial symptoms were insidious and became gradually worse. Fifteen pounds of weight loss was observed. A large fluctuant non-tender mass was noted to gradually enlarge over her right flank area. She denied any bowel or bladder symptoms. Two months before admission, the pain became so excruciating that she was no longer able to engage in daily activities, had difficulty in walking, and she was sent to the hospital. She denied any history of trauma and past history of pulmonary tuberculosis.

Physical examination revealed a cachetic Thai woman with atrophy of both lower legs muscles. Diffuse tenderness over the thoracolumbar spinous process and paraspinal were noted on palpation. A large subcutaneous fluctuant mass located at the right flank area was palpable. The waist circumference through the umbilicus was 29 inches. Motor strength of the muscle was graded as III/IV. The sensation and position sense were normal, and the Babinski reflex was positive bilaterally. Perianal sensation, rectal tone,bowel and bladder functions were normal.

Laboratory studies showed: hematocrit 23%, WBC 11,000 per cu.mm, ESR 100 mm/Hr, C-reactive protein 3.9, albumin/globulin was 3.4/4.3 gm%. Other laboratory studies including electrolytes, blood urea nitrogen, creatinine, calcium, phosphorus, and alkaline phosphatase were normal. The serologic test results for HIV infection and hepatitis were negative. A tuberculin skin test was positive with 20 mm of induration reported. Chest radiograph showed pulmonary

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infiltration in the right upper lobe with pleural effusion. Thoracolumbar spine radiographs demonstrated bone destruction at T_{11}-L_1 vertebrae, loss of intervening disc height, and a kyphotic Cobb's angle of 15 degree. The organism from the sputum culture was Mycobacterium tuberculosis.

Computerized tomography (CT) scan and MR imaging (performed without and with intravenous contrast enhancement) revealed bone destruction at the T11, T12 & L1 vertebral bodies with vertical extension beneath the anterior longitudinal ligament (subligamentous extension) and epidural involvement (Fig. 1). Also seen was evidence of thecal sac compression (Fig. 1). Prevertebral as well as paravertebral soft tissue abscess of about 1.8 cm thick containing multiple small bone fragments were observed (Fig. 2). The epidural component caused central spinal and lateral neural canals compromised at T12-L1 and L1-2 levels (Fig. 2). The abscess on the left side involved psoas muscle and enlarged to be a huge iliopsoas (retroperitoneal) abscess, size 9.2 x 10.4 x 25.0 cm in anteroposterior (AP), transverse and vertical dimension, respectively. It extended down to the pelvic cavity and was causing mild pressure effect to the uterus and rectum (Fig. 3). On the right side, the size of iliopsoas (retroperitoneal) abscess was about 4.5 x 6.0 x 24.0 cm in AP, transverse and vertical dimension, respectively, and also extending down to the pelvic cavity (Fig. 3). The abscess extended from the right retroperitoneal space into subcutaneous tissue of back, curving along the right posterior and lateral abdominal wall, and enlarging to the size of 5.0 x 14.0 x 12.0 cm in AP, transverse and vertical dimension (Fig. 4), respectively.

Local incision and drainage of the abscess at the right flank was performed initially on day 14 after conventional antituberculous drugs and medical support to improve her condition. The content of the abscess appeared yellow in color, containing pus fluid of 850 ml with a small amount of caseous material. Subsequently, surgical drainage and radical debridement of the collapsed T11-L1 vertebrae were simultaneously performed through bilateral retroperitoneal approaches with removal of the 12th ribs. The granulation tissue was found in the involved vertebral bodies. The estimated volume of pus collection within the psoas muscles obtained from the left and right retroperitoneal space was approximately 2.5 litres and 650 ml, respectively. The collapsed vertebral segments were reconstructed with rib struts. Histologic examination of the excised tissue showed features typical of tuberculous granulomatous inflammation, acid-fast bacilli were not found in the specimen. The patient's neurologic status remained stable immediately post operation. The recommended doses of antituberculous drugs were continued for 18 months. The patient was allowed out for ambulation wearing a body jacket at 3 weeks after surgery and continuing for 3 months. She gradually gained her muscle strength and function, and steadily improved over an 8-month period. She was observed and followed up for 48 months.

Discussion

Diagnosis of osteoarticular tuberculosis is difficult, an average 16-19 months of delayed diagnosis was reported in several series[9-11]. Multilevel spine involvement and progression of the patient's neuro-

Fig. 1 T1-weighted sagittal MR image reveals involvement of the T11-L1 vertebral bodies with compression fracture of the L1. Epidural extension is also detected (arrow heads). Anteriorly, subligamentous spreading is seen up to level of T8 (arrows)

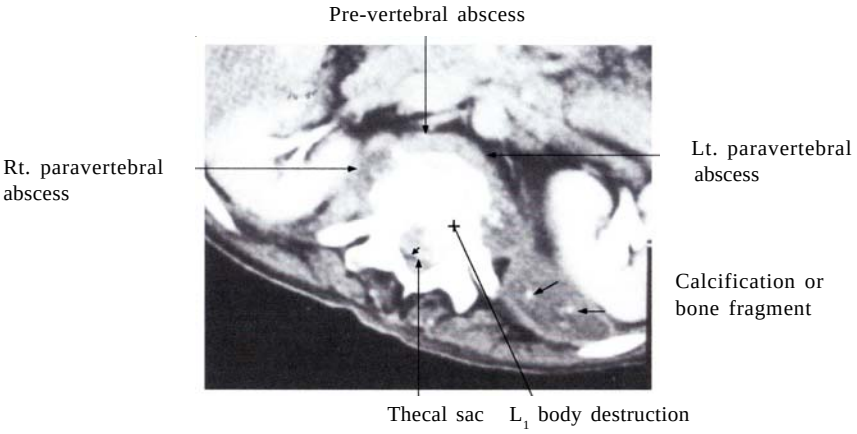

Fig. 2 Intravenous contrast enhanced axial CT scan through the L1 reveals bone destruction of the body L1. There are pre- and paravertebral soft tissue abscesses (arrows), containing multiple small bone fragments or calcification (arrows). Also seen is epidural extension compromising the central spinal canal and lateral neural canals (arrow head). The thecal sac is compressed (arrow)

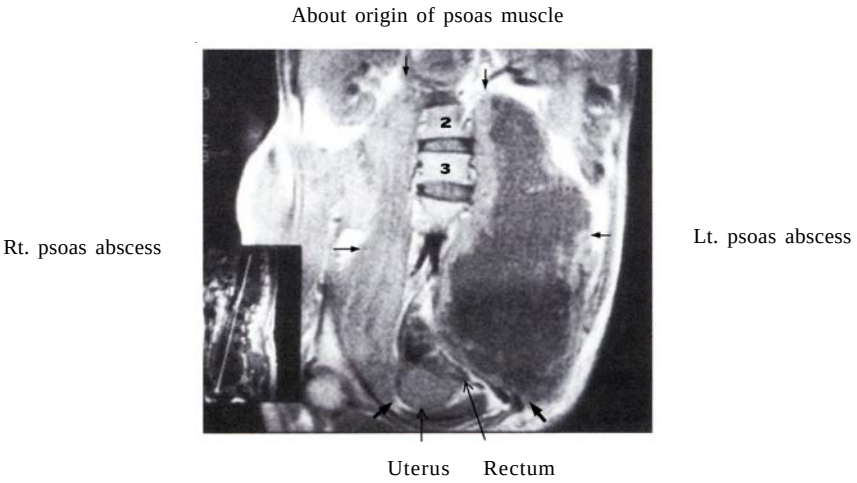

Fig. 3 T1-weighted coronal MR image shows the entire vertical extension of bilateral psoas abscesses, from origin of the psoas muscles (arrows) down to the pelvic cavity (thick arrows), causing mild pressure effect to the uterus (arrow) and rectum (arrow)

logical status were the end result of delayed management which was due to the insidious onset, mild initial symptoms and poor socioeconomic status. The patient's images demonstrate important characteristic findings [1-6], although not pathognomonic, strongly suggest the diagnosis of tuberculous spondylitis. These include subligamentous spreading (Fig. 1); bone fragments and soft tissue debris within multiple thoraco-lumbar vertebral foci as well as epidural extension with thecal sac compression (Fig. 2); bilateral paraspinal (psoas) abscesses extending down to the pelvic floor (Fig. 3); and dorsal subcutaneous soft tissue extension over the right flank area (Fig. 4). The CT images demonstrating bone fragments within the paraspinal abscesses also suggest tuberculous infection. In the present case, MR imaging revealed a large amount of fluid collection in the substance of bilateral psoas muscles, suggesting chronicity and delayed detection. The illustrated extension of the pus (Fig. 3) also supported the view that the psoas muscle (originating at the level of the 12th ribs, coursing through the retroperitoneum, and inserting into the lesser trochanter of femur) may act as a decompressing conduit to the pelvis for fluid collection within the retroperitoneal space[12,13]. Extension to the superficial dorsal soft tissue manifesting as a large fluctuant mass on the lower back is not

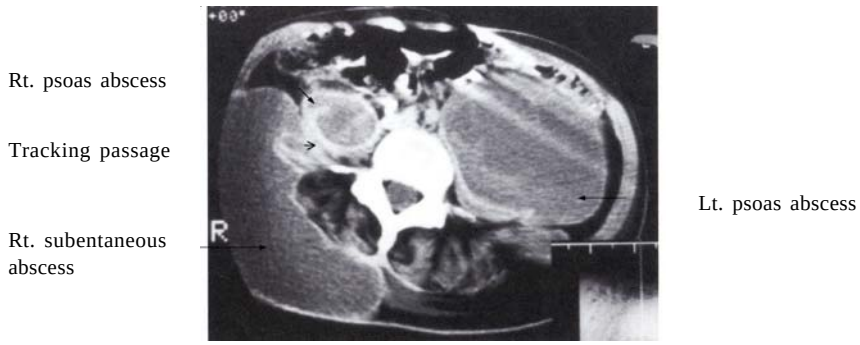

Fig. 4 Intravenous contrast enhanced axial CT scan through lower lumbar level reveals bilateral psoas abscesses. On left side, the left iliopsoas abscess is huge in size (arrow). On right side, the iliopsoas abscess (arrow) has a tracking passage (arrow head) extending posteriorly to form another huge abscess in subcutaneous tissue of right posterior & lateral abdominal wall (arrow)

uncommon[7,14]. The dorsal subcutaneous extension on the axial images in the presented patient showed a tracking passage (Fig. 4), and could be considered as a decompression of the overwhelmed right psoas abscess. With the current images, the calculated size (estimated volume) of left-side retroperitoneal abscess was 2,392 ml compared with 648 ml of the right abscess. It was observed that the capacity of the left retroperitoneal space may accommodate more fluid collection than the right (3.8:1).

In conclusion, spinal tuberculosis can be manifested aggressively as in this current illustation, and paraspinal as well as a distant extension should be kept in mind when dealing with such lesions.

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วัณโรคกระดูกสันหลังแสดงถุงหนองขนาดใหญ่

ธวัช ประสาทฤทธา, สุภนีวรรณ เชาว์วิศิษฐ์

จุดประสงค์ *: เพื่อเสนอภาพ computerized tomography (CT) และ magnetic resonance imaging (MRI) ของวัณโรคกระดูกสันหลังที่มีถุงหนองขนาดใหญ่*

วิธีการ *: รายงานอาการ, การแสดง, ภาพ CT, MRI ของผู้ป่วย 1 รายที่เป็นวัณโรค โรคกระดูกสันหลังที่มีถุงหนองขนาดใหญ่บริเวณรอบกระดูกสันหลังและลุกลามถึงบริเวณ retroperitoneal space*

ผลและสรุป *: ถุงหนองที่เกิดจากเชื้อวัณโรคสามารถคั่งรอบ ๆ กระดูกสันหลัง ลุกลามถึงกล้ามเนื้อ Psoas, refroperitoneal space และใต้ผิวหนังภาพ MRI สามารถแสดงรายละเอียดการลุกลามของถุงหนอง ซึ่งจำเป็นสำหรับการวางแผนการรักษา*