

Scintigraphic evaluation along with CT and MR images in a case of huge gravitation abscess

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The authors presented a rare case of huge gravitation abscess. ⁶⁷Ga scintigraphy was useful in the evaluation of the extent and activity of the disease. CT showed clearly the location and shape of the abscess. Enhanced MRI showed vertebral lesions as characteristic geographic and ring-like enhancement.

Key words: tuberculous spondylitis, gravitation abscess, scintigraphy, CT, MRI

INTRODUCTION

TUBERCULOSIS is still one of the most important infectious diseases, although the incidence has greatly decreased in Japan. It is estimated that 10% to 15% of tuberculosis is extrapulmonary and that 10% of extrapulmonary tuberculosis is skeletal. The spine is most frequently affected, and extension of tuberculosis to the adjacent ligaments and soft tissues is not infrequent.^{1,2}

We report a case of huge gravitation abscess in which scintigraphy, CT and MRI were useful in the evaluation of the disease.

CASE REPORT

A 43-year-old single male was seen because of painless soft tissue tumors in the right scapular, lumbar and inguinal regions. He had no history of seeking medical attention. Four months previously he first noticed a thumb's head sized tumor in the right lumbar region and the tumor gradually increased in size, and three months previously, he also noticed a right inguinal tumor. Two months previously, he suffered strong contusions and noticed a rapidly enlarging tumor in the right scapular region. On admission, soft tissue tumors in the right scapular, lumbar

and inguinal regions measured 17 × 15 cm, 10 × 10 cm and 8 × 8 cm, in diameter, respectively. Routine hematological study showed normal values. Blood chemistry values were not remarkable with the exception of a total protein of 8.3 g/dl and albumin-globulin ratio of 0.93. C-reactive protein was 1.7 mg/dl and the erythrocyte sedimentation rate was 36 mm/hr. Tuberculin reaction was 35 × 25/53 × 37 mm. A chest radiograph showed increased radiopacity of the right lung field due to soft tissue tumor (Fig. 1). But the chest radiograph and CT showed no evidence of tuberculosis. ⁶⁷Ga scintigraphy was performed 48 hours after a 111 MBq intravenous injection. Abnormal ⁶⁷Ga accumulations in the rim of the scapular and lumbar tumors and inguinal tumor were recognized and these accumulations seemed to be linked. Abnormal ⁶⁷Ga accumulation in the lower thoracic vertebra (Th) or upper lumbar vertebra (L) was also suspected, but was not clear due to overlap of ⁶⁷Ga accumulation in the tumor (Fig. 2 arrow). Enhanced CT showed that the lesions were a continuous cystic tumor. The lumbar tumor was linked to the inguinal tumor in the pelvis (Fig. 3 A–D). ^{99m}Tc-HMDP scintigraphy was performed 3 hours after a 740 MBq intravenous injection. Increased ^{99m}Tc-HMDP accumulations in Th12 and L1, and faint ^{99m}Tc-HMDP accumulation in the rim of the scapular tumor were recognized (Fig. 4 arrows). A gadolinium enhanced T1-weighted (TR = 600, TE = 20) sagittal image showed inhomogeneous increase in signal intensity in the Th11 to L2 bodies. An epidural soft tissue mass, strong rim enhancement of the Th11–12 disc and anterior aspect of the Th12 and L1

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bodies were also recognized (Fig. 5). These findings suggested tuberculous spondylitis. Surgical treatment was performed and tuberculosis was confirmed histopathologically and bacteriologically. Antituberculous therapy using isoniazid, rifampicin and streptomycin was started.

DISCUSSION

This case was presented for two reasons. First, such a huge gravitation abscess case seemed to be very rare in Japan now because of the development of social hygiene and effective antituberculous agents. Spinal tuberculosis is generally the result of hematogeneous spread. Pulmonary tuberculosis is the most frequent source, but at presentation the primary focus of infection may be quiescent. It is also reported that approximately 50% of extrapulmonary tuberculosis cases have normal chest X-ray films or the stigmata of old inactive disease.³⁻⁵ In the present case,

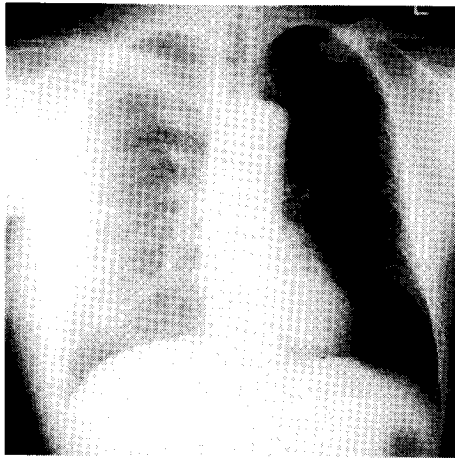


Fig. 1 Chest radiograph showed increased radio-opacity of the right lung field due to soft tissue tumor and no evidence of tuberculosis.

neither a chest radiograph nor CT could detect pulmonary disease.

Second, scintigraphy, CT and MRI were useful in the evaluation of the disease. Sarkar et al. reported that in 11 patients considered at risk for extrapulmonary tuberculosis (5 patients with proven extrapulmonary tuberculosis), ⁶⁷Ga scintigraphy correctly predicted the presence or absence of active lesions and also monitored the response to treatment.⁶ On the other hand, Lifeso et al. reported that in 10 patients with spinal tuberculosis, ⁶⁷Ga scintigraphy was negative in 70%. They also reported that in 56 patients with spinal tuberculosis, 20 patients (35%) had a completely normal ^{99m}Tc-PYP scintigram.⁷ Since tuberculous abscess may contain calcification, extraskelatal

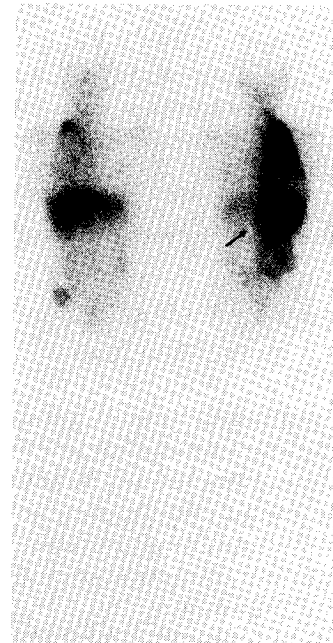
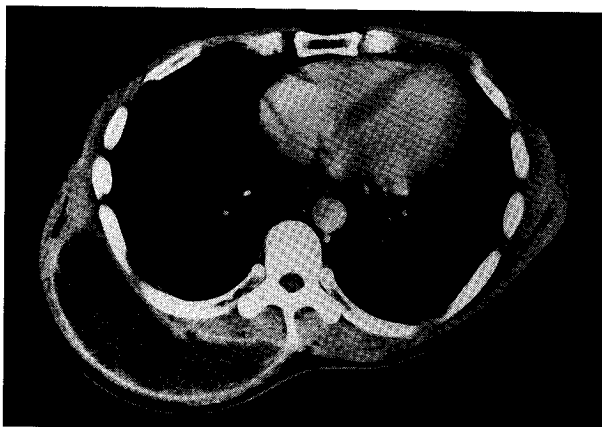
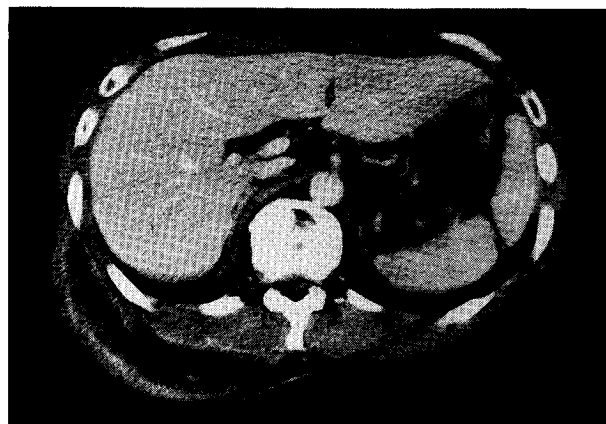


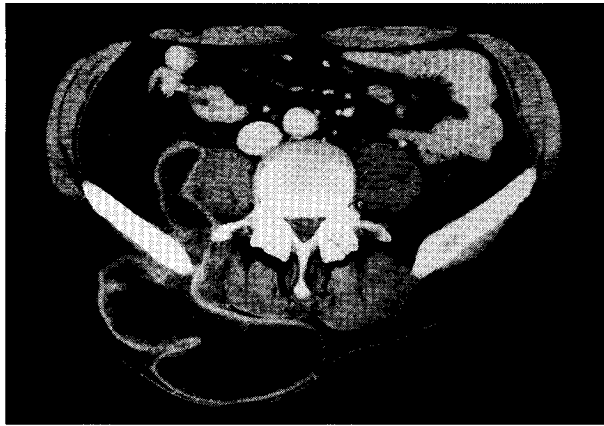
Fig. 2 ⁶⁷Ga scintigraphy showed abnormal accumulations in the tumors. These accumulations seemed to be linked. Abnormal accumulation in the vertebra was also suspected (arrow).



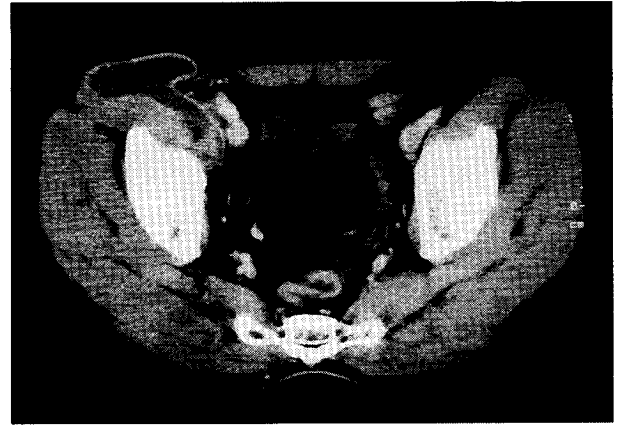
3A



3B



3C



3D

Fig. 3 Enhanced CT showed the lesions were a continuous cystic tumor {at the level of Th9 (A), Th12-L1 (B), L5 (C), S3 (D)}.

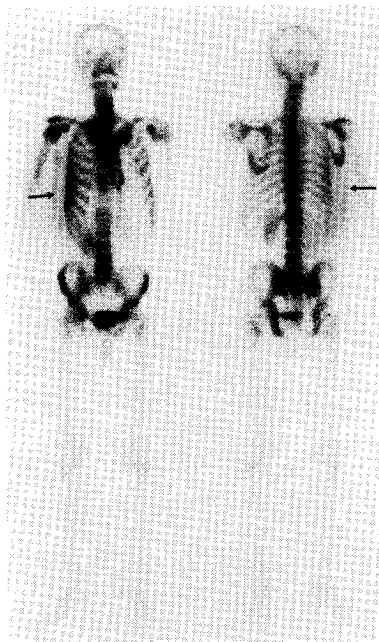


Fig. 4 ^{99m}Tc -HMDP scintigraphy showed increased accumulations in the spine (Th12, L1) and faint accumulation in the rim of the scapular tumor (arrows).



Fig. 5 Gadolinium enhanced T1-weighted image of the spine suggested tuberculous spondylitis.

^{99m}Tc -HMDP accumulation in it has also been reported.⁸ In the present case, ^{67}Ga scintigraphy was useful in considering the extent and activity of the disease. Faint ^{99m}Tc -HMDP accumulation in the tumor was recognized, although CT showed no calcification, suggesting superiority of bone scintigraphy in the evaluation of metabolic change. In addition, MRI of the spine was performed because of the ^{99m}Tc -HMDP accumulations in the spine. Although non specific, bone scintigraphy offered a simple means of whole bone screening. CT was useful in delineating soft tissue changes and in proving

that the lesions were one cystic tumor. MRI demonstrates both bony and soft tissue involvement.³ Mochizuki et al. reported that geographic and/or ring-like enhancement of the vertebra body on contrast MR images seemed to be characteristic of spondylitis tuberculosa.⁹ In the present case, MRI clearly showed bony lesions better than bone scintigraphy and epidural lesion.

In conclusion, a very rare case of huge gravitation abscess was presented with scintigraphic, CT and MR images.

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