

False Negative Result of Ga-67 Scintigraphy in Tuberculous Spondylitis: Report of a Case

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Tuberculous spondylitis is a difficult condition to diagnose clinically. However, Ga-67 scintigraphy can play a useful role in its detection. A false negative result of Ga-67 scintigraphy was demonstrated in a case of tuberculous spondylitis in this report. A 79-year-old female had fever of unknown origin (FUO) and severe low back pain for several months. Abnormally increased radioactivity was noted in the L3/4 levels on Tc-99m MDP bone scan; however, normal uptake of radioactivity was noted on Ga-67 scintigraphy. Finally, tuberculous mycobacterial infection involving the vertebral bones of L3/4 levels was diagnosed by histologic evaluation. We emphasize that tuberculous spondylitis has to be considered in the condition of a positive Tc-99m MDP bone scan while negative on Ga-67 scintigraphy. (**Mid Taiwan J Med 2002;7:189-92**)

Key words

false negative, Ga-67 scintigraphy, tuberculous spondylitis

INTRODUCTION

Infectious spondylitis is a rare condition, accounting for as little as 2% to 4% of all cases of osteomyelitis in adults [1]. It most often arises as a result of the hematogenous spread of infection from distant sites. Risk factors include genitourinary tract infections, dental infections, abdominopelvic surgery, spinal surgery, diabetes mellitus, and intravenous drug use. The lumbar spine is most commonly involved, followed by thoracic spine [2]. *Staphylococcus aureus* is the most common organism in pyogenic vertebral osteomyelitis [3]. Tuberculous spondylitis remains common worldwide and is increasing in prevalence because of the resurgence of tuberculosis

during the past decade in patients with AIDS, the spread of tuberculosis among homeless, and the expanding immigrant populations [4]. The diagnosis of tuberculous spondylitis often remains elusive because of the indolent nature of tuberculous infection. It is important to recognize tuberculous spondylitis early to effectively eliminate long-term complications. Ga-67 scintigraphy can play a useful role in the detection of tuberculous spondylitis [5,6]. Furthermore, there have been very few reports of false negative results from Ga-67 scintigraphy in the detection of tuberculous spondylitis.

CASE REPORT

A 79-year-old female had fever of unknown origin (FUO) and severe low back pain for several months. Tc-99m MDP bone scan and Ga-67 scintigraphy were performed to rule out bone infection. Abnormally

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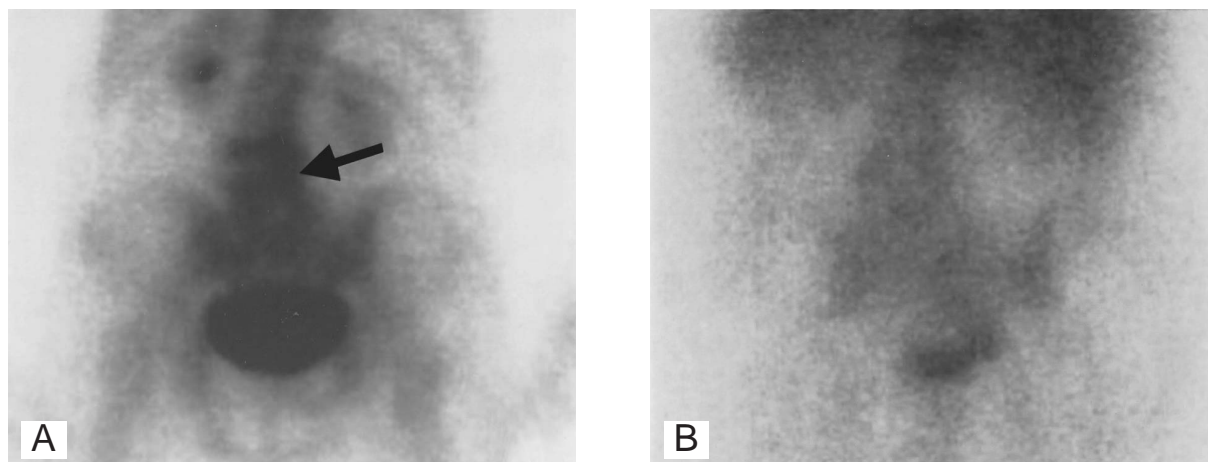


Figure. A: the Tc-99m MDP bone scan showed abnormally increased radioactivity in the L3/4 levels. B: No abnormal uptake was noted on Ga-67 scintigraphy.

increased radioactivity was noted in the L3/4 on Tc-99m MDP bone scan (A) (arrow); however, normal uptake of radioactivity was noted on Ga-67 scintigraphy (B). Finally, tuberculous mycobacterial infection involving the vertebral bones of L3/4 was proven by histologic evaluation.

DISCUSSION

Skeletal tuberculosis is an increasingly common manifestation of extrapulmonary tuberculosis [7]. Bone and joint involvement in tuberculosis accounts for approximately 3% to 5% of all tuberculosis cases [8]. La Fond [9] found that 84% of skeletal tuberculosis affected the joints, while only 16% affected the bone directly. Lin et al [5] found that 69.3% of skeletal tuberculosis involved the joints and 30.7% involved the spine. Clinically, there is usually a nonspecific history of back pain with local tenderness and limitation of movement. Other symptoms, such as low-grade fever, night sweats, and weight loss, may be present. Symptoms are common for several months prior to the diagnosis [10]. The tuberculous lesion on plain radiographs is nonspecific and radiographic changes usually do not occur until 2 to 5 months after the infection begins [11]. CT may provide valuable information on the extent of the destructive process and the location of adjacent vital structures, but CT alone may not permit a

specific diagnosis [12,13]. MRI can provide a correct diagnosis [14], but the expense is high and unsuitable for a whole-body survey.

Ga-67 scintigraphy is widely used to detect neoplasms and inflammatory disease, and previous experience with Ga-67 scintigraphy has indicated that it can play a valuable role in the detection of osteomyelitis [15,16]. Ga-67 scintigraphy has also been reported to be valuable in the detection of pulmonary tuberculosis [17,18] and in the detection of tuberculous spondylitis [5,6]. Ga-67 binds to plasma proteins, after intravenous injection. The exact mechanism of Ga-67 entry into various tissues is still unknown, however, it is theorized to be by endocytosis, diffusion, or exchange of transferrin-bound Ga-67 with lactoferrin [19,20]. The mechanism of Ga-67 localization in infection and tumors is also not well understood. In this case report, we present an interesting case of false negative results with Ga-67 scintigraphy in a case of tuberculous spondylitis. The reasons for the false negative result are unknown, but it is possible for Ga-67 scintigraphy to be negative in low-grade, indolent, or severe destructive osteomyelitis [5]. In conclusion, we emphasize that tuberculous spondylitis has to be considered when Tc-99m MDP bone scan results are positive, yet negative on Ga-67 scintigraphy.

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結核性脊椎炎在鎂-67 閃爍造影檢查呈現偽陰性結果： 一病例報告

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臨床上結核性脊椎炎是很難被診斷出來的一種疾病，而鎂-67 閃爍造影檢查在偵測結核性脊椎炎上是一個有用的檢查。本篇要報告一個結核性脊椎炎在鎂-67 核醫掃描檢查中出現偽陰性結果的病例。一位79歲的女性患有不明熱及嚴重的下背痛長達好幾個月，在骨骼閃爍造影顯示出在第三及第四腰椎有不正常增加的放射活性，然而在鎂-67 閃爍造影檢查中卻是正常的。最後經由組織學上的證明發現病人在第三及第四腰椎有結核菌的感染。我們要強調的是當骨骼閃爍造影的結果異常而鎂-67 閃爍造影檢查正常時結核性脊椎炎的可能性必須被考慮進去。(中台灣醫誌 2002;7:189-92)

關鍵詞

偽陰性，鎂-67 閃爍造影，結核性脊椎炎

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