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A meningioma case detected incidentally by bone scintigraphy

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ABSTRACT

A Tc-99m MDP bone scan was performed to in a 69-year-old female. Her history revealed neither malignency nor trauma. On the bone scintigraphy, discrete area of increased uptake was detected in the cranium. Correlative CT findings were consistent with bening meningioma at further investigation.

Key Words: **meningioma, Tc-99m MDP**

ÖZET

69 yaşında kadın hastaya Tc-99m MDP kemik sintigrafisi yapıldı. Hastanın malignite, travma öyküsü yoktu. Kemik sintigrafisinde kraniumda yuvarlak fokal bir artmış aktivite tutulum alanı saptandı. Bu bölgenin ileri tetkikinde, korelatif bilgisayarlı tomografi bulguları bening meningioma ile uyumluydu.

Anahtar Sözcükler: **meningioma, Tc-99m MDP**

Introduction

Extraosseous uptake of bone seeking radionuclides in cranium has been reported in various clinical syndromes including tumor calsinosis, cerebral infarction, calcified aneurysms (1,2). On bone scintigraphy investigations, this situation occasionally can cause diagnostic difficulties.

We present a patient with a meningioma detected incidentally by Tc 99m MDP bone scintigraphy.

Case

A 69-yer-old female patient, with normal laboratory findings, admitted to the hospital with pain and decrease in the range of motion of her shoulder. There was neither diagnosis of malignancy nor systemic illness. She had an operation of gallbladder removal ten years ago. A whole body bone scintigraphy was performed 3 hours after the intravenous injection of 20 mCi (740 MBq) Tc 99m methylene diphosphonate (MDP). Bone scan revealed increased activities in right first metatarsophalengeal joint, left knee, right lower chin, right parietal region in cranium and right shoulder. The right lower chin lesion was proved as tooth pathology and all other lesions but the one in the cranium were consistent with degenerative changes (Figure 1). Cranial CT scan was performed for further evalution of the lesion in cranium, since there was no previous trauma history. At the left side just behind the coronal suture, there was an 15 mm calcified lesion which compressed the neighbour frontal gyri (Figure 2). The lesion was consistent with a calcified meningioma. It was decided not to resect the tumor due to the fact that she was totally asymptomatic.

Discussion

Clinical conditions that extraosseous uptake of bone seeking radionuclides in cranium can be broadly classified into two major groups: 1) those with calcification that may be demonstrated histologically or radiologically; 2) those with acute tissue necrosis but without evidence of calcification. The calcified meningiomas and cerebral infarction are represantive examples of these two major categories (2).

The uptake of bone seeking radionuclides in meningiomas is caused by the three known factors affecting calcium deposition, namely, tumor calcification, calvarial erosion, and formation of reactive bone (2). Lim et al. (3) demonstrated two different intensities between reactive hyperosteosis and tumour calcification radiologically and scintigraphically in their meningioma case. Shih et al. (4) reported showed a meningioma case with no calvarial erosion and reactive bone formation. A few psammoma bodies in tumour tissue were accepted as the cause of bone tracer accumulation in meningioma. In our patient, neither calvarial erosion nor reactive hyperosteosis was found on CT scan. Probably, the uptake patern was similar to reported mechanism in the case of Shih et al. (4).

Although the presence of calcium in a tumor is the major factor promoting uptake of bone seeking radionuclides, it is not the only one. it has been reported that a patients with a histologically proved low grade, calcified, avascular

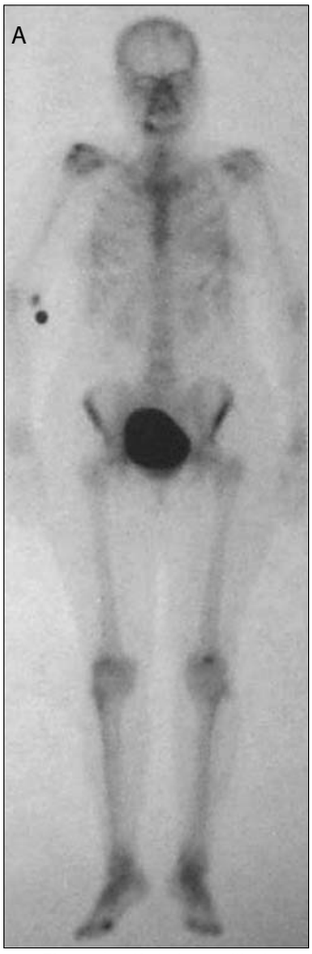


Figure 1a. (Anterior position)

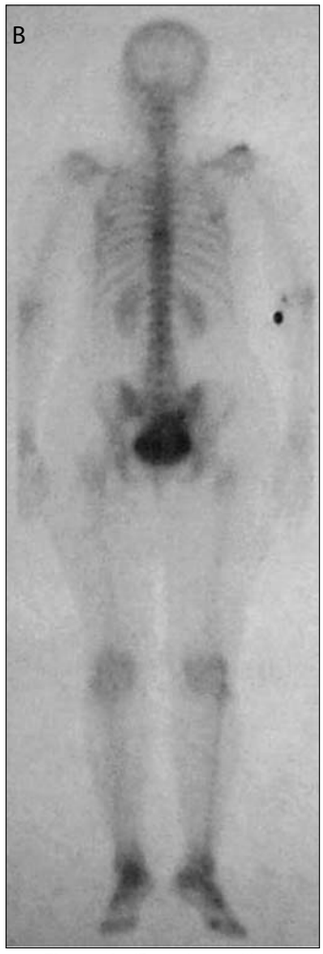


Figure 1b. (Posterior position)

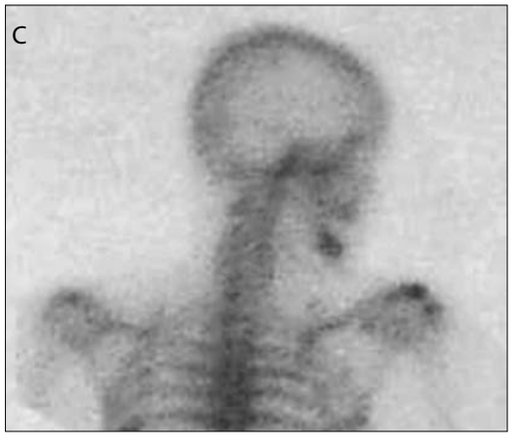
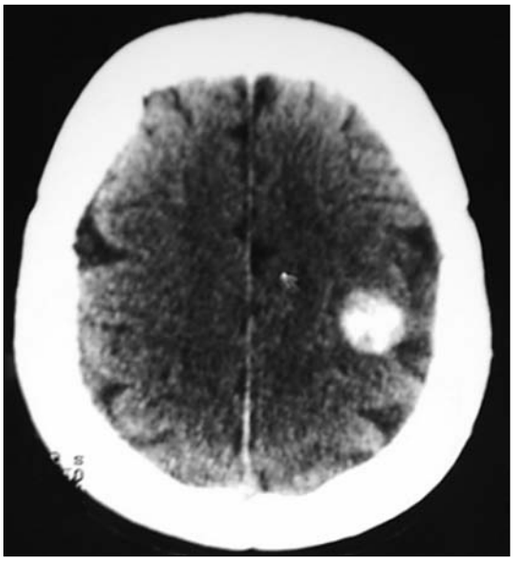


Figure 1c. (Cranium right posterior oblique position)

Figure 1d. (Cranium left anterior oblique position)

Figure 1. Tc99m MDP bone scintigraphy shows increased uptake on the left parietal region, right lower chin, right shoulder joint, left knee and right first metatarsophalengeal joint.



(Tomographic appearance of the lesion)

Figure 2. At the left side just behind the coronal suture, there is a 15 mm calcified lesion which compressed the neighbour frontal gyri on CT image.

temporal lobe astrocytoma, the uptake of bone seeking radionuclides was not as great as that in the meningiomas (2,5). It appears that the presence or absence of a vascular pool in the tumor is an another important factor.

Wakisaka et al. reviewed bone scintigraphies in 4579 cases. Intracranial accumulations were demonstrated in 8 cases (0.178 %). The lesions with intracranial accumulations were consistent with two cases of primary brain tumor, five cases of metastatic brain tumor and one case of cerebral infarction. Calcification had been detected in one of eight cases on CT scans (6).

It has been reported that the majority of incidental meningiomas show minimal growth; thus, they may be followed up without surgical intervention unless specific symptoms appear (2,7,8).

It is important to pay attention to the cranial tracer accumulations on routine bone scintigraphy, since brain tumors or infarctions may be confused with cranial bone metastasis (6,7). Therefore, more attention should be paid especially evalution of this area with bone scan.

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