Uptake of bone seeking radiotracer in the metastatic lymph node from testicular tumour

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DESCRIPTION

A 31-year-old man diagnosed with mixed germ cell tumour (GCT) of the left testis, had left para-aortic and left supraclavicular lymph node metastases (stage IIIA) at presentation. Post-left orchidectomy, he underwent a bone scintigraphy with technetium-99m methylene diphosphonate (Tc-99m MDP) for assessment of bone metastasis.

On planar whole-body Tc-99m MDP bone scan, there is a focus of increased osteoblastic activity in the L2 vertebra on the left side. Another focus of increased osteoblastic activity was seen in the left paravertebral region (arrow in figure 1). Rest of the bone scan shows physiological tracer uptake.

The single photon emission tomography integrated with computed tomography (SPECT-CT) of the lumbar region localises the uptake in the L2 vertebra to a lytic sclerotic lesion, confirming bone metastasis (arrows in A and B in figure 2 showing CT and fused SPECT-CT images, respectively). The left paravertebral focus corresponds to a large para-aortic soft tissue mass with areas of punctate calcification within, suggestive of a metastatic para-aortic lymph node (arrows in C and D in figure 2 showing CT and fused SPECT-CT images, respectively).

Testicular cancer is the most common solid malignancy in males within age group of 15–35 years and mixed GCT account for about 40%–50% of them.¹ Synchronous metastasis to bone is common in patients with lung and para-aortic node metastases, with most common site being vertebra (79%).^{2,3} Literature evidence suggests that primary

Figure 2 The single photon emission tomography integrated with computed tomography (SPECT-CT) of the lumbar region localises the uptake in the L2 vertebra to a lytic sclerotic lesion, confirming bone metastasis (arrows in A and B showing CT and fused SPECT-CT images, respectively). The left paravertebral focus corresponds to a large para-aortic soft tissue mass with areas of punctate calcification within, suggestive of a metastatic para-aortic lymph node (arrows in C and D showing CT and fused SPECT-CT images, respectively).

lymph node station for metastasis from left testicular tumour is left para-aortic and pre-aortic lymph nodes.⁴ The present case also shows lymph nodal metastatic patterns similar to as described in the literature. Mixed GCT of testis has both seminomatous and non-seminomatous component with bone metastasis having poor prognosis. Hence, bone scintigraphy is indicated for complete staging and prognostication. Extraosseous uptake of bone seeking radiotracers are seen in various benign and malignant lesions by different mechanisms. Different primary malignant as well as metastatic

Figure 1 Planar whole-body technetium-99m methylene diphosphonate (Tc-99m MDP) bone scan shows a focus of increased osteoblastic activity in the L2 vertebra on the left side. Another focus of increased osteoblastic activity is seen in the left paravertebral region (arrow). Rest of the bone scan shows physiological tracer uptake.

Learning points

- ▶ Bone metastasis has poor prognosis in mixed germ cell tumour, hence bone scintigraphy has an important role in staging and prognostication.
- ▶ Technetium-99m methylene diphosphonate uptake in the metastatic lymph nodes is rare but possible due to ionic exchange on the crystalline surface of dystrophic calcification.
- ▶ Bone seeking radiotracer uptake in soft tissues in bone scan can mimic bone metastasis, hence single photon emission tomography integrated with computed tomography helps in differentiating between these two and changes management.

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lesions have shown dystrophic calcification and increased Tc-99m MDP uptake.^{5 6} The Tc-99m MDP uptake in these lesions is due to ionic exchange at the crystalline surface.⁷ There are only few publications describing bone seeking radiotracer uptake in metastatic lymph nodes of primary tumours like ureteral cancer and osteosarcoma.^{8 9} The present case is unique as it describes Tc-99m MDP uptake in the metastatic lymph node from testicular tumour. In the index case the uptake on planar scan mimics a blob of renal activity. However, these metastatic lymph nodes showing uptake in planar bone scan can mimic bone metastasis and SPECT-CT helps in differentiating the two which is important for prognostication.⁵

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Case reports provide a valuable learning resource for the scientific community and can indicate areas of interest for future research. They should not be used in isolation to guide treatment choices or public health policy.

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