Interesting image

Intradiploic epidermoid cyst mimicking skull metastasis in a patient with primitive neuroectodermal tumor: Correct diagnosis with $^{99m}$Tc-MDP hybrid SPECT-CT

Quiste epidermoide intradiploico imitando metástasis craneal en un paciente con tumor neuroectodérmico primario: diagnóstico correcto con $^{99m}$Tc-MDP SPECT-TC

V.S. Dhull, P. Sharma, B.C. Khangembam, C. Bal, R. Kumar *

Department of Nuclear Medicine, All India Institute of Medical Sciences, New Delhi, India

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A 14-year-old child was diagnosed with primitive neuroectodermal tumor (PNET) of pelvis. Baseline $^{99m}$Tc-methylene diphosphonate (MDP) bone scintigraphy done to know the extent of the disease, although of suboptimal quality, revealed involvement of right hemipelvis (A, arrowhead) (Fig. 1). Also, there was a focus of increased radiotracer uptake in the occipital bone (B, arrow). Since the patient had no history of trauma, in the clinical context the lesion was thought to be metastasis. The patient underwent chemotherapy and was again sent for bone scintigraphy, for response monitoring. The follow up planar bone scintigraphy done 6 weeks after completion of chemotherapy showed significant reduction in radiotracer uptake in the right hemipelvis (C, arrowhead), but the skull lesion still showed intense radiotracer uptake (D, arrow). To characterize the skull lesion, the patient underwent hybrid single photon emission tomography-computed tomography (SPECT-CT). CT (E and F, arrow), SPECT (G and H, arrow) and SPECT-CT (I and J, arrow) images revealed a well demarcated lytic lesion in the diploic space of the occipital bone causing expansion of the inner table. Based on these features a provisional diagnosis of intradiploic epidermoid cyst was made. No treatment was given and the patient was doing fine at 12 month follow up. A bone scintigraphy repeated at 12 month follow up showed no interval change in the skull lesion (L, arrow), further confirming benign nature of the lesion. The pelvic lesion disappeared completely (K, arrowhead). Because of benign nature of the skull lesion based on scintigraphy, biopsy or surgical excision was deemed unnecessary by the treating oncologist.

Skull epidermoid cysts are rare tumors, representing less than 1% of all primary intracranial tumors. They are benign lesions and often detected incidentally. They are formed as a result of the

Figure 1. Baseline $^{99m}$Tc-methylene diphosphonate (MDP) bone scintigraphy showing involvement of right hemipelvis (A, arrowhead) along with a focus of increased radiotracer uptake in the occipital bone (B, arrow), suspicious for metastasis. Post chemotherapy planar bone scintigraphy showed significant reduction in radiotracer uptake in the right hemipelvis (C, arrowhead), but the skull lesion still showed intense radiotracer uptake (D, arrow). CT (E and F, arrow), SPECT (G and H, arrow) and SPECT-CT (I and J, arrow) images revealed a well demarcated lytic lesion in the diploic space of the occipital bone causing expansion of the inner table, suggesting a provisional diagnosis of intradiploic epidermoid cyst. A bone scintigraphy repeated at 12 month follow up showed no interval change in the skull lesion (L, arrow), confirming benign nature of the lesion. The pelvic lesion disappeared completely (K, arrowhead).

* Corresponding author.
E-mail address: rkpillula@yahoo.com (R. Kumar).

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entrapment of epithelial remnants within the bony suture lines during embryologic development. About one-fourth of the cranial epidermoids are formed in the diploic space of the membranous bones of the skull, hence they are also referred as intradiploic epidermoid cyst. It can occur from first to seventh decade of life, although the most common age of presentation is 20–40 years. The frontal and parietal bones are the most common location. It is a slow growing tumor, and may remain asymptomatic for years. But rarely these can attain large sizes and extend intracranially to produce brain compression, bone destruction or undergo malignant transformation. Treatment is complete surgical removal along with the capsule to avoid recurrence and for good long term prognosis. PNETs are malignant small round cell tumor of neuroectodermal origin. They are locally aggressive tumors with a low incidence of bone involvement. However the long term survival is poor, especially if the patient has distant skeletal metastases or develops recurrence. Improved chemotherapeutic agents combined with surgery of the primary tumor and radiotherapy in some cases may improve the long term survival. Still, to achieve remissions in PNET, metastasis to bone and bone marrow remains a therapeutic challenge. The present case again highlights the point that benign lesions such as an intradiploic epidermoid cyst can mimic metastasis on bone scintigraphy. By providing anatomical details, SPECT-CT can help in characterizing such lesions.

**Conflict of interest**

The authors have no conflicts of interest to declare.

**References**