Case Report

Bilateral retinoblastoma presenting as metastases to forearm bones four years after the initial treatment

Manohar Kuruva, Bhagwant Rai Mittal, Raghava Kashyap, Anish Bhattacharya, Ram Kumar Marwaha[1]

Departments of Nuclear Medicine and [1]Paediatric Haemato-oncology, Unit, Postgraduate Institute of Medical Education and Research, Chandigarh, India

ABSTRACT Osseous metastases from retinoblastoma, the most common ocular malignant neoplasm of childhood, are reported most commonly in the skull and long bones. However, metastases to forearm bones are very rare. Here we present a case of bilateral retinoblastoma with metastases to right forearm bones four years after the initial treatment.

Keywords: Bone scan, metastasis, retinoblastoma

INTRODUCTION

Retinoblastoma is the most common ocular malignant neoplasm of childhood.[1] It is bilateral in approximately 35% of the cases.[2] Metastatic disease is rare and usually occurs within the first two years after initial diagnosis, and is extremely rare after that time period.[3] Osseous metastases are reported most commonly in the skull and long bones.[2] However, metastases to forearm bones are very rare with only very few reports published till date. Here we present a case of bilateral retinoblastoma with metastases to right forearm bones four years after the initial treatment.

CASE REPORT

An 8-year-old boy treated four years back for bilateral retinoblastoma with enucleation of left eye along with adjuvant chemotherapy and radiotherapy presented with a right forearm swelling. There was no history of trauma. An X-ray revealed a mass lesion in right forearm with destruction of lower one third of right ulna. Later, patient was subjected to bone scan for skeletal metastatic work up. Bone scan was performed three hours after intravenous injection of 5 mCi of 99^{m}Tc MDP. Whole body images showed increased tracer uptake in right forearm bones [Figure 1]. Static images revealed increased tracer uptake in middle and lower one-third of right ulna consistent with X-ray findings. In addition, bone scan showed involvement of lower one-third of left radius. Later patient underwent biopsy which revealed round blue cell tumour. However, special stains excluded Ewing's sarcoma and other primitive neuroectodermal tumors (PNETs). Involvement of radius picked up by bone scan had important implication in deciding the nature of disease as Ewings tumor with multi-focal disease as second primary is very unlikely.

Osseous metastases from retinoblastoma are reported most commonly in the skull and long bones.[2] The prognosis for most children diagnosed with retinoblastoma is good, with a 5-year survival of rate of more than 90%.[4] Complications include local recurrence, metastases, and the development of a second primary tumor. Focal and diffuse involvement of the bones and

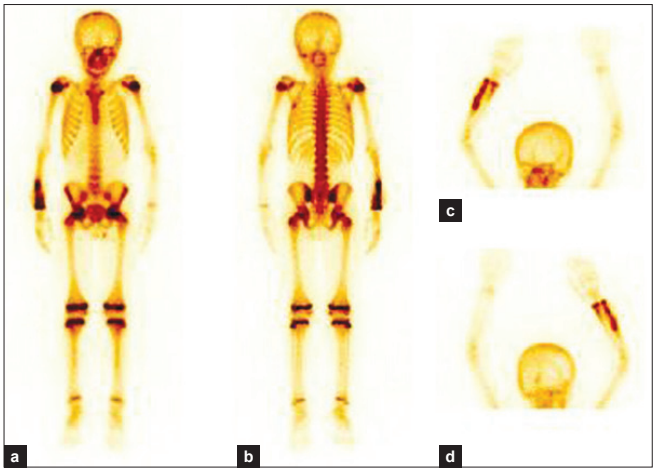

Figure 1: Tc99m-MDP bone scan; (a) whole body anterior view; (b) whole body posterior view showing increased tracer uptake in right forearm bones. Rest of the skeleton shows physiological tracer uptake. Static images of bilateral forearms; (c) anterior; (d) posterior revealing involvement of right ulna and radius

Access this article online

Quick Response Code:

Website: www.ijnm.in

DOI: 10.4103/0972-3919.90268

Address for correspondence:
Dr. Bhagwant Rai Mittal, Department of Nuclear Medicine, PGIMER, Chandigarh - 160 012, India. E-mail: brmittal@yahoo.com

bone marrow is known to occur, but metastases are usually seen within two years of initial diagnosis and later metastases are said to be extremely rare.[2,5] These patients are also at risk of increased second primaries like osteosarcoma, leiomyosarcoma, spindle cell sarcoma, malignant fibrous histiocytoma, rhabdomyosarcoma, angiosarcoma, Ewing sarcoma, and PNET. These typically develop after a latent period of 8–15 years.[6-8] Involvement of multiple bones would point the diagnosis towards metastases rather than multifocal second primary.[9] Imaging modalities available for skeletal metastatic work up include X-ray, CT, MRI and functional imaging modalities like bone scan. X-rays are in general less sensitive to pick up the metastases, whereas whole body MRI is not widely available, so conventional WB bone scan is essential in the metastatic work up of these patients. In our case, X-ray picked up ulnar involvement but radius involvement was missed. However, bone scan revealed radius involvement suggesting a metastatic disease rather than second primary. Later, histopathology revealed round blue cell tumour involving both radius and ulna and IHC was negative for CD99 excluding diagnosis of Ewings sarcoma.

CONCLUSION

Retinoblastoma can present with skeletal metastases even later than two years of initial treatment. Skeletal scintigraphy remains an essential diagnostic procedure in evaluation of these patients and can have important implications in management.

REFERENCES

1. Abramson DH, Beaverson K, Sangani P, Vora RA, Lee TC, Hochberg HM, *et al*. Screening for retinoblastoma: Presenting signs as prognosticators of patient and ocular survival. Pediatrics 2003;112:1248-55.
2. Blank JE, Dormans JP, Himelstein BP, Yamashiro D. Metastatic retinoblastoma. Clin Orthop Rel Res 1995;315:251-6.
3. Kingston J. Understanding retinoblastoma. London: The Retinoblastoma Society; 2002. p. 23.
4. Xu H. Retinoblastoma and tumorsuppressor gene therapy. Ophthalmol Clin North Am 2003;16:621-9.
5. Rodriguez-Galindo C, Wilson MW, Haik BG, Lipson MJ, Cain A, Merchant TE, *et al*. Treatment of metastatic etinoblastoma. Ophthalmol 2003;110:1237-40.
6. Dickman PS, Barmada M, Gollin SM, Blatt J. Malignancy after retinoblastoma: Secondary cancer or recurrence? Hum Pathol 1997;28:200-5.
7. Draper GJ, Sanders BM, Kingston JE. Second primary neoplasms in patients with retinoblastoma. Br J Cancer 1986;53:661-7.
8. Dunkel IJ, Gerald WL, Rosenfield NS, Strong EW, Abramson DH, Ghavimi F. Outcome of patients with a history of bilateral retinoblastoma treated for a second malignancy: The memorial Sloan-Kettering experience. Med Pediatr Oncol 1998;30:59-62.
9. Mulligan ME, Smith SE, McCarthy EF Jr. Isolated lower extremity metastases, 9 years after initial diagnosis of retinoblastoma. Skeletal Radiol 2006;35:774-7.

How to cite this article: Kuruva M, Mittal BR, Kashyap R, Bhattacharya A, Marwaha RK. Bilateral retinoblastoma presenting as metastases to forearm bones four years after the initial treatment. Indian J Nucl Med 2011;26:115-6.

Source of Support: Nil. **Conflict of Interest:** None declared.