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Extraosseous Osteosarcoma: Unusual Presentation as a Medial Malleolar Mass- a Cytological Diagnosis

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Abstract: Osteosarcoma is a rare but important non-haematopoietic, intramedullary tumour of the bone. It is the most common primary tumour of the bone, exclusive of myeloma and lymphoma & accounts for 20% of the primary bone cancers. High-grade osteosarcoma occurs only in less than 1% individuals in 2nd decade of life. Here, we present a case of 55 years old female patient who presented with a medial malleolus region soft tissue swelling. Cytomorphological features were those of a malignant mesenchymal lesion and the possibility of osteosarcoma was suggested. The diagnosis was confirmed on histopathological examination and immunohistochemistry.

Keywords: Osteosarcoma, tumour, Medial Malleolar Mass.

INTRODUCTION

Osteosarcoma is a malignant tumour derived from osteoprogenitor cells [1]. The cancerous cells produce osteoid matrix or mineralized bone. They have a peak incidence around the time of adolescent growth spurt and occur most frequently in the region of growth plate in bones with the fastest growth. It has male predominance and is commonly located around the knee joint [2]. Several subtypes of osteosarcomas have been recognized and are grouped according to the site of origin, histological grade, primary or secondary neoplasms and the histological features [3].

High grade osteosarcoma is a rare variant of osteosarcoma which occurs predominantly on the surface of bone [4]. It has a male predominance and is commonly located in the distal femur, proximal fibula and proximal humerus. A 55 years old female came with the chief complaint of medial malleolus region swelling. Fine Needle Aspiration Cytology (FNAC) was used as a diagnostic tool here. Smears prepared showed cytomorphological features of a malignant mesenchymal lesion with the possibility of osteosarcoma. The diagnosis was confirmed on histopathological examination and immunohistochemistry.

CASE REPORT

A 55 year old female patient presented with a painless soft tissue swelling in the medial malleolus region for a period of 2 years. On examination, a 4x3 cm soft tissue swelling was seen in the medial malleolus region of the left leg. Fine Needle Aspiration (FNA) yielded blood mixed aspirate. Smears prepared were moderately cellular showing clusters and singly scattered atypical cells admixed with blood. Cells varied from spindle to plump, exhibited high nuclear: cytoplasmic ratio, moderate pleomorphic, irregular nuclear outline, prominent nucleoli along with moderate amount of cytoplasm. [Fig- 1a and 1b] Few scattered multinucleate giant cells and atypical mitotic figures were seen. [Fig 2a, 2b, 2c and 2d] Extracellular finely granular, hyaline material resembling osteoid was seen in the background. [Fig 3a and 3b] Cytological features were those of a malignant mesenchymal lesion. The possibility of osteosarcoma was suggested.

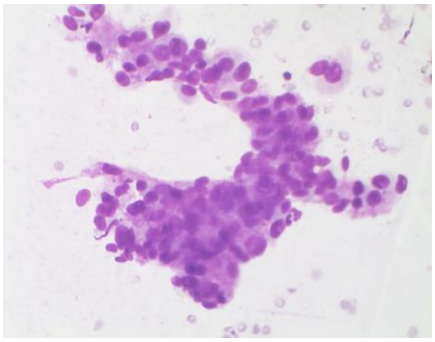

Fig-1a: Smear showing cells spindle to plump cells exhibiting moderate nuclear pleomorphism

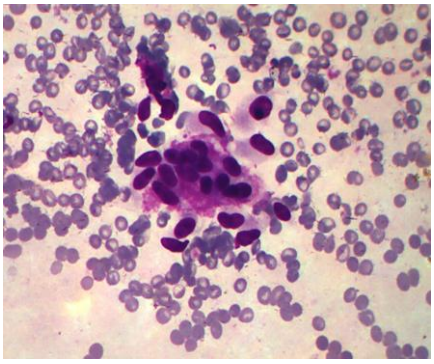

Fig-1b: Smear showing cells spindle to plump cells exhibiting moderate nuclear pleomorphism

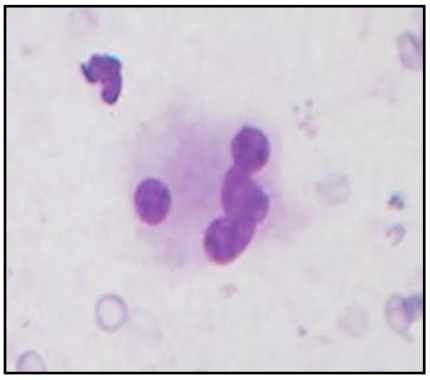

Fig-2a: Few multinucleated giant cell forms were noticed in the smears examined

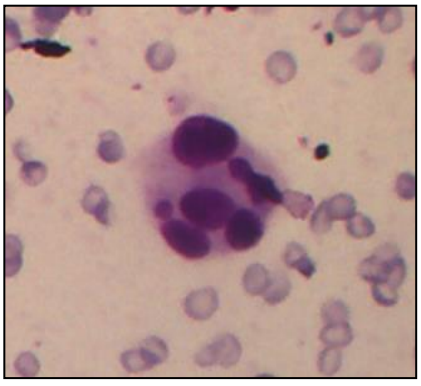

Fig-2b: Few multinucleated giant cell forms were noticed in the smears examined

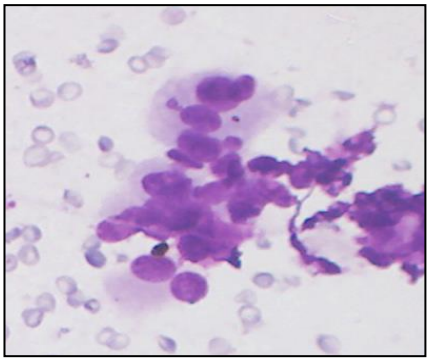

Fig-2c: Few multinucleated giant cell forms were noticed in the smears examined

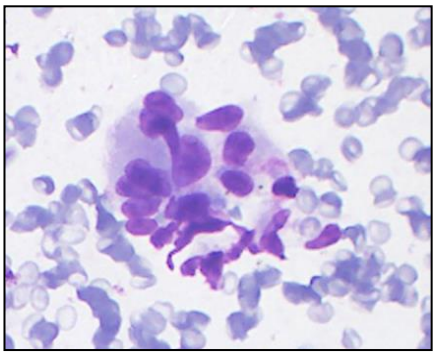

Fig-2d: Few multinucleated giant cell forms were noticed in the smears examined

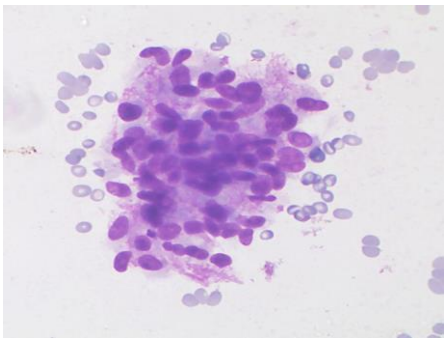

Fig-3a: Extracellular finely granular, hyaline material resembling osteoid was seen within the cell clusters

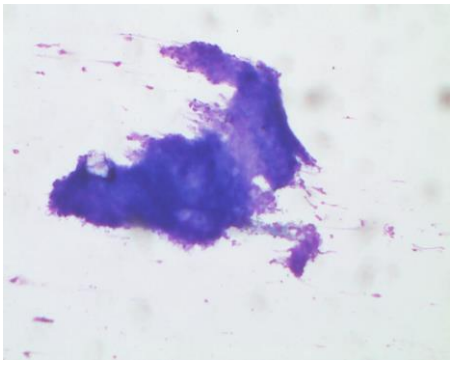

Fig-3b: Extracellular finely granular, hyaline material resembling osteoid was seen within the cell clusters

DISCUSSION

Osteosarcomas most often occur de novo whereas others arise within the context of a pre-existing condition like Paget's disease, radiation exposure or post chemotherapy [5]. Approximately 70% of the osteosarcomas are associated with acquired genetic abnormalities and usually have mutations of tumour suppressor genes and oncogenes including RB gene, TP53 gene, INK4a, MDM2 and CDK4 [3]. High grade osteosarcoma is a rare variant of osteosarcoma which has worst prognosis [6]. Pain and swelling are its most common symptoms with duration of less than a year to many years [6]. Radiologically, it exhibits as a surface mass with features similar to those of periosteal osteosarcoma, except the mineralization pattern that is similar to that of conventional osteosarcoma, revealing a fluffy cumulus cloud appearance. There may be cortical destruction and periosteal reaction. Grossly, it appears as a large lobulated bulky surface mass with variable consistency ranging from soft to firm. Areas of haemorrhage may be present. However, it does not or only focally involves the medullary cavity significantly [6]. Histologically, high grade osteosarcomas are similar to conventional intramedullary osteosarcomas with markedly pleomorphic tumour cells [4]. The key to the diagnosis is production of osteoid by the tumour cells [5]. Differential diagnosis of high grade osteosarcoma includes dedifferentiated parosteal osteosarcoma, parosteal osteosarcoma and conventional intramedullary osteosarcoma [7]. Dedifferentiated osteosarcoma usually has residual low grade malignant fibroblastic stromal component. Parosteal osteosarcoma lacks high grade anaplastic appearance. Conventional intramedullary osteosarcoma unlike high grade osteosarcoma has a significant medullary component.

FNAC forms one of the first diagnostic tools in the evaluation of soft tissue and bone tumours [8]. A combination of cytological diagnosis and careful evaluation of clinico-radiological data can be the basis of definite treatment in a substantial number of primary benign and malignant bone tumours [9].

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