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Case Report

Pathology Section

Chondromyxoid Fibroma of Radius: A Case Report

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ABSTRACT

Chondromyxoid fibroma (CMF) is a rare benign cartilaginous tumour accounting to less than 1% of bone tumours. It is most commonly seen in lower extremity involving tibia. CMF of radius is rare. We report a rare case of CMF of proximal radius in a 37-year-old female who presented with swelling and pain over right elbow. Wide local excision of proximal radius along with radial head was done and above elbow POP slab was applied for one month. Elbow range of movement exercises started after one month.

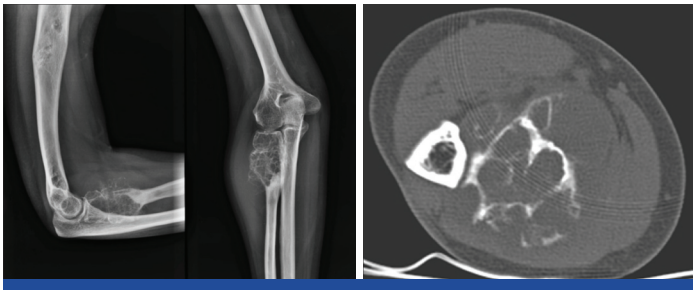
Keywords: Bone tumour, Cartilage, Tibia

CASE REPORT

A 37-year-old female presented with swelling over right elbow since 2 years, which was gradually increasing in size and was associated with pain since 8 months. There was no history of trauma. On examination, a diffuse swelling was noted over the lateral aspect of elbow extending from lateral epicondyle to proximal part of forearm. On palpation swelling was tender and firm in consistency. Supination and pronation movements were restricted.

Radiographs of right elbow revealed an expansile lytic lesion involving the radial head and proximal shaft of radius with breach in the cortex with soft tissue extension and sclerosis of distal margin suggestive of benign bone tumour [Table/Fig-1]. MRI of right elbow revealed T2W hyperintense and T1W hypointense expansile lytic lesion with multiple thick septations involving the meta-epiphyseal region of radius, extending to the articular surface with its breach and elevation of cortex and presence of Codman's triangle features suggestive of neoplastic lesion- giant cell tumour [Table/Fig-2]. Complete blood count showed HB of 13.5 gm/dl, total leucocyte count of 8400 cells/cumm and platelet count was 2.4 lacs/cumm. Routine biochemical investigations showed RBS of 110 mg/dl, serum alkaline phosphatase was 90 IU/L, HIV and HBsAg test were negative. Wide local excision of proximal radius along with radial head was done and the specimen was sent for histopathological examination.

On gross examination the specimen showed multiple firm irregular reddish white tissue bits all together weighing 50 gm along with 3 ml of mucoid gelatinous material. Also, received was radial head measuring 3x2x1 cm with glistening white external surface. A cavity was noted on radial head measuring 1.5x1.5 cm with reddish friable material inside the cavity. Multiple sections were given and slides were stained with H&E stain.



[Table/Fig-1]: Lateral & anterioposterior radiograph of elbow joint showing expansile lytic lesion involving radial head & proximal part of radius with breach in cortex. **[Table/Fig-2]:** MRI of elbow joint showing lytic lesion with septations and cortical erosion of radial head.

On microscopic examination, multiple sections were studied which showed tumour tissue arranged in varying sized lobules. Centre of the lobule was hypocellular with peripheral hypercellular areas [Table/Fig-3]. Hypocellular areas showed stellate shaped cells with round to oval nuclei and indistinct cytoplasmic borders in a myxoid matrix [Table/Fig-4]. Spindle shaped cells with hyperchromatic nuclei were noted in hypercellular areas [Table/Fig-5]. Mitotic figures or cellular atypia were absent. So, final diagnosis offered was chondromyxoid fibroma of radius. Above elbow POP slab was applied for one month. Elbow range of movement exercises were started after one month and patient was followed up for 3 months. Patient had a good range of painless functional movements and was able to carry out her day today activity without any assistance.

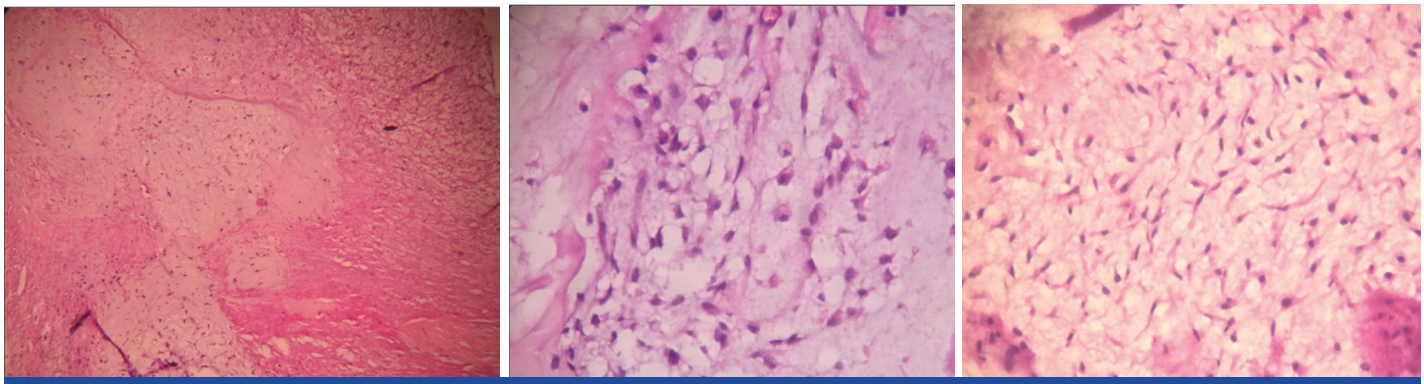
DISCUSSION

Chondromyxoid Fibroma (CMF) is a benign and extremely rare tumour accounting for less than 1% of benign and malignant bone tumours [1,2]. It is a benign cartilaginous tumour which was described in 1948 by Jaffe and Lichtenstein [3-5]. CMF predominantly affects adolescents and young adults in the second or third decade of life [1,4,6].

CMF is most commonly seen in the lower extremity, particularly the proximal end of tibia. 95% cases of CMF are seen in long bones involving metaphyseal region. Less common sites are the sacrum, thoracic or lumbar spine and craniofacial bones [1]. In a study of 278 cases of CMF by Chen Tu Wu et al., 46.9% of cases involved long bones, 30.3% flat bones, 17.3% involved bones of hand & feet, and 15% skull and facial bones. Out of 46.9% long bone lesions, 55.4% involved tibia, 19.2% femur, 10.8% fibula and 3.1% radius [4].

The clinical presentation varies according to the area involved and is associated with long standing history of non-specific symptoms like pain and oedema. Usually CMF is slow growing tumour and detected incidentally on routine radiography. There is a long history of chronic local pain (85%), swelling and oedema (65%) with palpable soft tissue mass and restricted movements in a symptomatic patients [2,3].

Radiologically these tumours are described as an eccentric, lobulated, expansile and lytic lesion with well defined scalloped or lobulated margins with sclerotic bone formation. Radiographic calcification is noted in 10% of cases [2]. Partial cortical erosion and septations are noted in few cases [3]. In present case MRI scan showed cortical erosion and septations in meta-epiphyseal region of proximal radius. Differential diagnosis on radiology are



[Table/Fig-3]: Photomicrograph show hypocellular area (centre) and hypercellular area (periphery) of tumour tissue. (H&E 100X). **[Table/Fig-4]:** Photomicrograph show hypocellular area containing stellate shaped cells embedded in myxoid matrix. (H&E 400X). **[Table/Fig-5]:** Photomicrograph show hypercellular area comprised of spindle shaped cells. (H&E 400X).

giant cell tumour, aneurysmal bone cyst, chondroblastoma and fibrous dysplasia [2]. In our case, based on MRI, the radiological diagnosis was giant cell tumour of bone.

Classic microscopic appearance of CMF is mixture of fibrous, myxoid and cartilaginous elements with several nodules composed of rounded areas of myxoid or chondroid tissue. Stellate to spindle shaped cells are noted in the centre of lobule with characteristic high cell density towards the periphery of lobules. Sometimes multinucleated giant cells are noted in the periphery [5]. On microscopy indexed case showed tumour tissue arranged in varying sized lobules with hypocellular area in the centre of the lobule and hypercellular areas in the periphery. Hypocellular areas showed stellate shaped cells with round to oval nuclei and indistinct cytoplasmic borders in a myxoid matrix. Spindle shaped cells with hyperchromatic nuclei were noted in hypercellular areas. Mitotic figures or cellular atypia were absent.

Histopathological differential diagnosis of CMF is myxoid chondrosarcoma and chondroblastoma. Chondrosarcoma show lobules which are more distinct with presence of plump, bizarre cells with multiple nuclei [2]. Presence of bubbly appearance of stroma with degenerative and liquefactive changes favours the diagnosis of myxoid chondrosarcoma over CMF [2]. Chondroblastoma occur in skeletally immature and histologically show classic "chicken-wire" calcification [1].

Accepted treatment for CMF is surgical curettage with bone grafting but recurrence rate is more [1]. Preferable treatment for CMF of long bones is enbloc resection with allograft and artificial bone grafts [6]. In 1975 Taylor and colleagues first described vascular fibular bone grafting. Advantage of vascularised grafting over non-vascularised grafting is faster union and preservation of circulation [1]. Radiation therapy is indicated in surgically inaccessible tumours [2]. In present case wide local excision of proximal radius along with radial head was done to minimize risk of recurrence.

CONCLUSION

CMF is a rare benign aggressive cartilaginous tumour usually involving metaphysis of long bones. Radiological findings often mislead clinicians, as in our case it was reported as giant cell tumour of bone. As recurrence rate of CMF is high, correct diagnosis and wide surgical excision is required with regular follow up.

REFERENCES

[1] Bush JB, Sweeney JP, Robison JE, DeMoss B, Meyer MS. Chondromyxoid fibroma of the radial shaft treated with nonvascularized fibular autograft. *Am J Orthop*. 2010;39:30-34.

[2] Castle JT, Kernig ML. Chondromyxoid fibroma of the ethmoid sinus. *Head and Neck Pathol*. 2011;5:261-64.

[3] Fomete B, Adeosun OO, Awelimboor DI, Olayemi L. Chondromyxoid fibroma of the mandible: Case report and review of literature. *Ann Maxillofac Surg*. 2014;4:78-80.

[4] Wu CT, Inwards CY, O'Laughlin S, Rock MG, Beabout JW, Unni KK. Chondromyxoid fibroma of bone: a clinicopathologic review of 278 cases. *Human Pathology*. 1998;29: 438-46.

[5] Park HR, Lee I, Lee C, Park Y. Chondromyxoid fibroma of the femur: a case report with intra-cortical location. *Journal of Korean Medical Science*. 1995;10: 51-56.

[6] Nagaraj S. Chondromyxoid fibroma of calcaneum. *Int J Bio Med Res*. 2014;5: 3926-28.

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