DOI: 10.7860/JCDR/2015/16555.6938

Case Report

Orthopaedics Section

A Rare Occurrence of Enchondroma in Neck of Femur in an Adult Female: A Case Report

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ABSTRACT

Enchondroma is a solitary, benign, intramedullary cartilaginous tumour occurring most commonly in small bones of hands and feet. Distal femur and proximal humerus are other less common locations. Enchondroma consists of 3-10% of all bone tumours, while they constitute 12-24% of benign bone tumours. They originate from the growth plate cartilage which later on proliferates to form enchondroma. Radiographs reveal a localized, radiolucent lytic bone defect usually with punctuate calcifications. Lesions are central or eccentric and metaphyseal involvement most commonly for long bones. MRI and histopathological examination can be used to confirm the diagnosis. Asymptomatic cases can be managed conservatively with serial radiological follow ups. Cases with symptoms are managed operatively. Recurrence rate is very low (<5%), it suggests malignancy. We here present a case of a 30-year-old female patient who presented with a history of pain in right hip since 7 months. Radiological examination showed the lesion to be enchondroma. The patient was managed by curettage with autogenous iliac bone graft & prophylactic 6.5 mm cannulated screws fixation. Histopathology confirmed the lesion to be enchondroma. At the latest follow up after 6 months, the patient was symptom free and there was no evidence of any recurrence. The current case report of enchondroma located in the neck of femur signifies the importance of early diagnosis, timely intervention and treatment. Also, this case report represents one of the very rare cases reported in literature.

Keywords: Bone graft, Cannulated screw fixation, Curettage, Excision biopsy, Lytic bone lesion

CASE REPORT

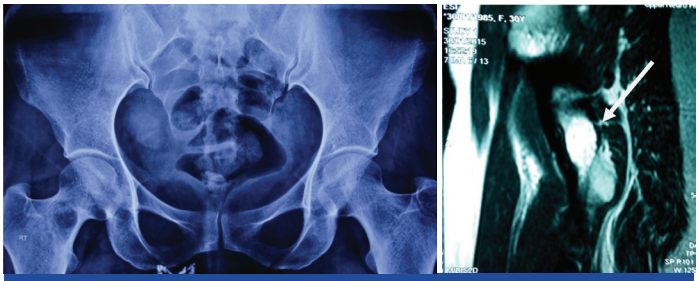
A 30-year-old healthy female housewife presented in the orthopaedic department of a tertiary care facility with a 7 months history of gradually progressive pain in right hip region. Pain was dull aching in nature and aggravated on standing from a sitting posture. There was no radiation of pain, no history of trauma, fever or night pains. But since 15 days, pain had aggravated to the extent of causing inability to bear weight. Any other similar lesions were not found in the radiographical examination.

On examination, patient had no evidence of any systemic illness. Local examination revealed painful hip movements. There was no wound, sinus, swelling, discharge found. There was no raised local temperature, lymphadenopathy, distal neurovascular deficit and distal swelling. The blood work up showed normal haemogram, renal and liver functions. Erythrocyte Sedimentation Rate, C-reactive protein and Parathyroid hormone levels were within normal limits.

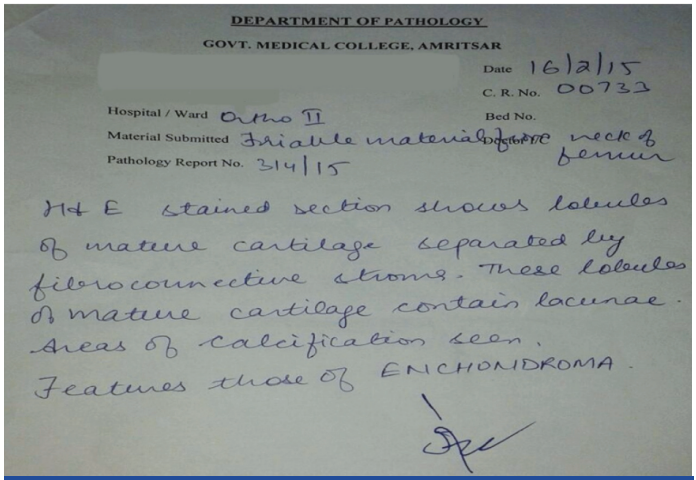
Anteroposterior radiograph of pelvis with both hips showed a well defined geographic, predominantly lytic lesion in the right neck of femur, central in location, with small amount of calcified matrix, with narrow zone of transition. It revealed no periosteal reaction, cortical destruction and soft tissue involvement [Table/Fig-1].

MRI impression was a 2.1*2.8 cm lesion hypointense onT1 sequence and hyperintense on T2 sequence in the right femoral neck, with mild expansion. There was no obvious adjacent cortical breach to suggest pathological fracture. Findings were suggestive of benign bone lesion: enchondroma [Table/Fig-2].

Hence patient was then posted for surgery. After careful preanaesthetic evaluation, patient was taken up for "curettage and excision biopsy with autogenous iliac crest bone graft with prophylactic 6.5 mm cannulated screw fixation". Biopsy specimen was collected intraoperatively and sent later for histopathological examination, which revealed lobules of mature cartilage, containing lacunae separated by fibro connective stroma. Features were suggestive of enchondroma [Table/Fig-3].

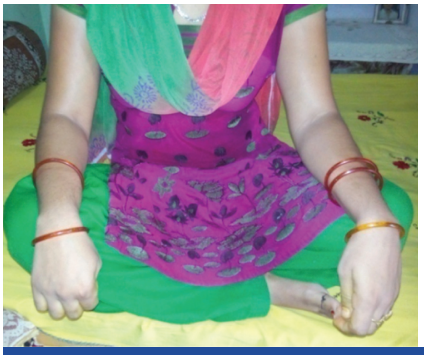


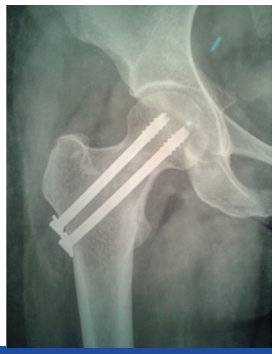
[Table/Fig-1]: Radiograph showing lytic lesion in right neck Femur
[Table/Fig-2]:T2 sequence of MRI revealing Hyperintense lesion in neck femur


DEPARTMENT OF PATHOLOGY
GOVT. MEDICAL COLLEGE, AMRITSAR
Date 16/2/15
C. R. No. 00733
Hospital / Ward Ortho II
Bed No.
Material Submitted Friable material from neck of femur
Pathology Report No. 314/15
H & E stained section shows lobules of mature cartilage separated by fibrocollective stroma. These lobules of mature cartilage contain lacunae. Areas of calcification seen. Features those of ENCHONDROMA.

[Table/Fig-3]: Histopathology report suggesting the specimen to be Enchondroma

Postoperatively the patient was advised bed rest with skin traction & restricted weight bearing. Static exercises were started on 2nd day. Patient was discharged on 10th day and bed rest with skin traction was advised. On follow up, patient was subjected to partial weight bearing after 6 weeks. At 6 months follow up, patient was able to bear complete weight, was symptom free and was able to perform





[Table/Fig-4]: Patient able to sit cross legged at 6 month follow up
[Table/Fig-5]: Follow up Radiograph at 6 months

activities of daily living [Table/Fig-4]. No any local recurrence was noted on repeat radiological examinations [Table/Fig-5]. No further treatment was required.

DISCUSSION

Enchondroma is the 2nd most common benign tumour of bone (after osteochondroma) having hyaline cartilaginous origin. The tumour arises inside the medullary cavity of bone, hence called enchondroma. This is the most common benign tumour of small bones of hands and feet; other locations such as long tubular bones (proximal humerus, distal femur, proximal tibia) are rare. Occurrence of enchondroma in the neck of femur is one of the rarest locations for enchondroma to occur. Presence of pathology in neck of femur arouses suspicion of various other differential diagnoses. Hence enchondroma should be kept in mind in such cases [1,2].

Enchondroma is usually observed in 10-30 years of age group with equal gender distribution, being discovered incidentally in almost all cases. Mostly they are asymptomatic. Pain may be the presenting symptom in some cases. Bone scan shows increased uptake when there is associated pathological fractures or cortical expansion in small bone [3]. Enchondroma may present as multiple enchondroma called Ollier's disease. It may also have associated soft tissue haemangiomas called Maffucci syndrome [4].

Enchondroma arise from the cartilaginous rests of the physeal plate. The lesion of enchondromas are closely related to physeal plate as 71 % of enchondromas are within 1.5 cm of physeal plate of which 43% abutt the physeal plate and only 29% are more than 1.5 cm away from the physeal plate [5].

The patient in the present study was a 30-year-old female with complaint of pain in the hip since 7 months. Careful clinical and radiological evaluation of the patient revealed a lytic cavity in the neck of femur with no cortical breach and MRI finding of hyperintense lesion on T2 in the neck of femur. A provisional diagnosis of enchondroma was made which was later confirmed on histopathology.

The differential diagnosis of lytic bone lesion in proximal femur includes chondroblastoma, giant cell tumour, simple bone cyst, aneurysmal bone cyst, fibrous dysplasia, chondrosarcoma, chondromyxoid fibroma and osteoblastoma [6].

Chondroblastoma is an epiphyseal lesion which presents in young age group (<20 years) with pain and swelling, have a thin sclerotic rim and internal calcification on radiograph, MRI shows surrounding oedema with typical chicken wire fence appearance on histology.

Giant cell tumour is an epiphyseal tumour occurring commonly around the knee, having typical osteoclastic giant cells and areas of haemorrhage on microscopic view and the lesions abuts the articular surface.

Simple bone cyst occurs in children, contains clear serosanguinous fluid surrounded by a lining membrane. X-ray shows a lucent lesion with sclerotic margins in a skeletally immature patient.

Aneurysmal bone cyst consist of blood filled, lytic, septate lesions. Fibrous dysplasia is usually detected in young individuals having ground glass opacities and homogenously cystic or sclerotic lesions with MRI appearance of heterogeneous signal on T1 & T2 sequences.

Chondrosarcomas are malignant cartilaginous tumours which occur in 5th decade of life. On radiography they show a lytic pattern with typical matrix mineralization, cortical breech, deep endosteal scalloping and soft tissue extension. Bone scan shows increased uptake. Differentiation of low grade chondrosarcoma from enchondroma is very difficult as both have are histologically and radiographically very similar. This needs a careful evaluation of such cases.

Chondromyxoid fibromas are extremely rare benign neoplasm presenting with progressive pain and long standing swelling. Grossly, they are solid glistening intraosseus mass. On radiograph they show a lobulated, eccentric radiolucent lesion with well defined sclerotic margins.

Osteoblastomas are rare occurring most commonly in spinal column having radiographic appearance on expansile lytic lesion with a rim of reactive sclerosis and internal calcification. MRI shows isointense or hypointense signal on T2 sequence.

As far as the treatment is concerned, asymptomatic cases are managed conservatively with serial radiographic follow ups. Symptomatic cases require surgical intervention. Extended curettage with hydrogen peroxide lavage of the lytic cavity is done and filled with bone graft. Bone grafting can be autogenous iliac bone grafting or sartorius based muscle pedicle bone grafting. If grafting is not feasible, bone substitutes such as bone cement may be used. Internal fixation can be done prophylactically or in cases with pathological fractures. Various options are available for fixation like cannulated screws, autologous nonvascularized fibular strut graft, with or without kirschner wire. Treatment is more aggressive in cases with malignant transformation [7].

Recent advancement permits the treatment of femoral neck enchondroma using arthroscopic curettage and fixation which is a less invasive procedure with better clinical outcome [8].

In the present study, the treatment done was curettage and excision biopsy with autogenous iliac crest bone graft with prophylactic 6.5 mm cannulated screw fixation.

On extensive review of literature, very few reports of such cases were found. In 1925, Robert et al., reported a case of enchondroma of neck of femur with repeated recurrences which lead to mortality [9]. Another case of solitary enchondroma in neck of femur was reported in 1986 by Mori et al., in a seven-year-old girl [10].

Hence we emphasize the fact that although enchondroma in neck of femur is extremely rare, but timely diagnosis and treatment can lead to good prognosis.

CONCLUSION

Lytic lesions in neck femur can have a good prognosis provided timely diagnosis and interventions are done. The present case of Enchondroma in Neck of Femur represents a very rare differential diagnosis for the same and these must be kept in mind. So far only two such cases have been reported in the literature. MRI and Histopathology are of essence to confirm this entity.

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FINANCIAL OR OTHER COMPETING INTERESTS: None.

Date of Submission: **Aug 30, 2015**
Date of Peer Review: **Sep 24, 2015**
Date of Acceptance: **Oct 24, 2015**
Date of Publishing: **Dec 01, 2015**