

Case Report - Non Ossifying Fibroma of Tibia

Rahul Salunkhe^{1*}, Sanjay Deo², Pramod Chikhalikar³, Prashant Gholap³, Hitesh Joshi³

{¹Associate Professor, ²Professor, ³Resident}

Department of Orthopedics, Pad. Dr. D. Y. Patil Medical College, Hospital and Research Centre, Pimpri, Pune – 18, Maharashtra, INDIA.

*Corresponding Address:

rohan296@yahoo.com

Case Report

Abstract: Nonossifying fibroma [NOF] is developmental defect usually found in the metaphysis of long bones in the lower extremity. Radiographically, it is well delineated multi or uniloculated lesions with sclerotic margins. It is commonly found in children and adolescents, nonossifying fibromas are the most common fibrous bony lesion. Therefore, it is important to recognize the clinical and radiographic characteristics of this benign lesion. A case of nonossifying fibroma is presented here successfully treated with curettage and bone grafting .

Keywords: Fibroma, Tibia.

Introduction

Nonossifying fibroma is a common occurrence in children and young adolescents. Moreover, 90% of all NOF occur in the lower extremity. Nonetheless, it is important for physicians specializing in the lower extremity to readily recognize NOF radiographically and understand the proper treatment course. Number of other bony lesion may have very close clinical presentation to that of NOF. Hence, making a diagnosis on radiograph alone when considering a possible osseous tumor in children carries a slight risk. Thus if the diagnosis is not clear with ancillary imaging, then wide Surgical curettage with autogenous bone grafting should be done. The curettage acts as a Biopsy and the definitive diagnosis can be made.

Case Report

19 years old college girl reported with complaints of slow growing painless swelling over her right proximal leg. Swelling was slowly progressing size for 4 years. Patient noticed mild pain over the anterior aspect of right tibia since 2 months. Personal and family history was unremarkable. Swelling was approximately 2×3cm in size over a right proximal leg; swelling was tender, with well defined margins and edges, firm in consistency. Overlying skin was normal in color and texture. No lymphadenopathy or distal neurovascular defect noted. Other orthopaedic examination was unremarkable. Radiograph of affected leg showed osteolytic lesion anterior aspect proximal 1/3 of right tibia. Lesion was eccentric and surrounded by sclerotic margin. MRI also showed benign expansile eccentric lesion with sclerotic margin s/o nonossifying fibroma. Other hematological investigation was normal. Patient was posted for surgery for curettage and bone graft. Window was made and yellowish cheesy material curetted. Bony defect was filled by autogenous cortical. Bone graft from fibula of same leg and cancellous graft from iliac crest. Sample was sent histopathological examination.



Figure 1



Figure 2



Figure 3

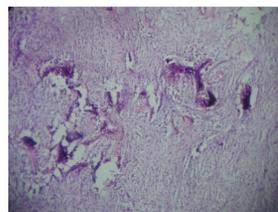


Figure 4

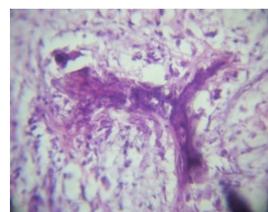


Figure 5

S/o the tissue revealed sheet and whorl of spindle shaped connective tissue cell. The cellularity varied & sparsely scattered throughout the lesion were small irregularly shaped multinucleated giant cell. Small aggregates of hemosiderin pigment were also present; it is s/o Non ossifying fibroma.



Figure 6: Post operative x-ray

Figure 7: After 1 month follow up x-ray

Figure 8: After 3 month follow up x-ray



Figure 9
After 3 months follow up

Figure 10



Figure 11: After 6 months follow up

Post operative period was uneventful. Patient was advised non weight bearing for 2 months. After 1 month follow up x-ray (Fig no 7) s/o signs of healing. Progressive follow up x rays showed signs of consolidation (Fig no 8 and 11) and patient is walking with full weight bearing after 3 months (Fig. no 9and10).

Discussion

Non ossifying fibromas (NOFs) are nonaggressive fibrous lesions of bone. NOFs are considered to be developmental defects and to be nonaggressive. They were first described by Lichtenstein and Jaffe in 1942 [2], and they typically occurred within the metaphysis of growing long tubular bones in children, most commonly around the knee. NOFs are asymptomatic, small (<3 cm), eccentrically located, metaphyseal cortical defects; most of these spontaneously disappear. While these lesions also can heal spontaneously (with reactive bone filling in the central lucent fibrous tissue component), they can also persist, with interval growth that continues into adulthood. Typically, fibromas are asymptomatic. However, the larger lesions may become symptomatic, with a risk of pathologic fracture. Steiner suggested that these lesions are secondary to cellular proliferation due to aberrations in local development.[3] NOFs are composed of spindle-shaped fibroblasts that are oriented in a cartwheel or storiform whorled pattern, with scattered giant cells

(osteoclastlike multinucleated cells), foam (xanthoma) cells, and small amounts of collagen. Foam cells occur in 30-50% of cases and are more common in older lesions. Abundant hemosiderin in the cytoplasm of the fibroblast cells has been noted; cholesterol crystals also have been identified. At histologic analysis, no mitosis or pleomorphism is present to suggest malignancy. Approximately 90% of cases lesions involve the tubular long bones [4,5]. Common sites include the femur (most commonly the distal femoral metaphysis [38%]), the proximal and distal tibia (43%), and the knee (55%); most lesions occur around the knee [6]. The tibial diaphysis is involved in only 10% of cases. The fibula is affected in 8-10% of cases, as noted in one series at the Armed Forces Institute of Pathology (AFIP). Non ossifying fibromas are uncommon in the upper extremity; however, of those reported in the literature, 8% were in the humerus, and both radial and ulnar lesions were rare. Less common sites include the innominate bone, clavicle, skull, scapula, mandible, and small bones of the hands and feet. Typically, lesions are metaphyseal and arise close to the physal plate. The nof arises within the cortex. Lesions usually arise from the posterior wall of the tubular bone, and involvement of the medial rather than lateral osseous surface is characteristic. With healthy growth of the osseous skeleton, the lesions extend toward the shaft, and if they do not involutes and disappear, they may extend

into the diaphysis. An epiphyseal location is distinctly uncommon and has been reported only in unusual cases of multifocal lesions. Typically, non ossifying fibromas (NOFs) are asymptomatic and are detected only incidentally on radiographs obtained for reasons other than the evaluation of NOFs[7]. Although these are most commonly solitary lesions, multiple lesions have been described. The presence of extra skeletal congenital anomalies (eg, café-au-lait spots, mental retardation, hypogonadism or cryptorchidism, ocular abnormality, cardiovascular malformations) in association with multiple nonossifying fibromas constitute the clinical and radiologic spectrum known as Jaffe-Campanacci syndrome, which was first reported in 1983[8,9]. In one series, Moser *et al* also noted that the coexistent osteochondromas can be present[10]. Plain radiographic findings are virtually diagnostic of nonossifying fibromas; most of these lesions have a characteristic location and appearance. If a discrepancy in appearance or age or an atypical associated symptom is present, advanced imaging (usually computed tomography [CT] or magnetic resonance imaging [MRI]) can be performed[11,12,13]. Treatment is usually unnecessary because healing occurs spontaneously over a period of several years. If a pathological fracture occurs across an exceptionally large lesion then curettage and bone grafting is done. This kind of tumor is neither malignant, nor aggressive, so the primary reason to treat it is to avoid a fracture, especially in athletic children. In some cases, a non-ossifying fibroma may require no treatment at all, because this condition resolves on its own over time. However, an orthopaedic surgeon may decide that an operation is warranted if a fracture has occurred or the tumor is weakening the bone, putting it at significant risk of a fracture. This may be a very difficult decision for the parents and the surgeon. The risks of surgery and the healing and rehabilitation time must be balanced against the desire to play sports and avoid fracture. There is no right or wrong answer and the decision needs to be individualized to the child. If an operation is recommended, the procedure of choice is usually curettage and bone grafting. For this procedure, surgeons make an incision in the bone to create a window. The tumor is completely curetted and the remaining cavity is then packed with donor bone tissue, bone chips taken

from another bone (autograft), or other materials depending on the preference of the surgeon. The patient is usually placed in a cast or brace for six weeks and then can undergo protected weight bearing for another six weeks. It usually takes 3-6 months before a child can return to contact.

References

1. Greenspan A: "benign tumours and tumour like lesion iii ;fibrous fibroosseous, and fibrohistocytic lesion", in orthopaedic radiology, 3rd edition, Greenspan A ,599, Lippincott, Williams and wilkins , Philadelphia, 2000.
2. Jaffe HL, Lichtenstein L. Solitary unicameral bone cyst with emphasis on the roentgen picture, the pathologic appearance and the pathogenesis. *Arch Surg.* 1942;44:1004-25.
3. Steiner GC. Fibrous cortical defect and nonossifying fibroma of bone. A study of the ultrastructure. *Arch Pathol.* Apr 1974;97(4):205-10.
4. Fechner RE, Mills SE. Fibrous lesions. In: Atlas of Tumor Pathology: Tumors of Bones and Joints. 1993;145-71.
5. Smith SE, Kransdorf MJ. Primary Musculoskeletal Neoplasms of Fibrous Origin. *Semin Musculoskel Radiol.* 2000;4 (1):73-88.
6. Mandell GA, Dalinka MK, Coleman BG. Fibrous lesions in the lower extremities in neurofibromatosis. *AJR Am J Roentgenol.* Dec 1979;133(6):1135-8.
7. Arata MA, Peterson HA, Dahlin DC. Pathological fractures through non-ossifying fibromas. Review of the Mayo Clinic experience. *J Bone Joint Surg Am.* Jul 1981;63(6):980-8.
8. Campanacci M, Laus M, Boriani S. Multiple non-ossifying fibromata with extraskelatal anomalies: a new syndrome?. *J Bone Joint Surg Br.* Nov 1983;65(5):627-32.
9. Mirra JM, Gold RH, Rand F. Disseminated nonossifying fibromas in association with cafe-au-lait spots (Jaffe-Campanacci syndrome). *Clin Orthop.* Aug 1982; (168): 192-205.
10. Moser RP Jr, Sweet DE, Haseman DB. Multiple skeletal fibroxanthomas: radiologic-pathologic correlation of 72 cases. *Skeletal Radiol.* 1987;16(5):353-9.
11. Jee WH, Choe BY, Kang HS. Nonossifying fibroma: characteristics at MR imaging with pathologic correlation. *Radiology.* Oct 1998;209(1):197-202.
12. Kransdorf MJ, Utz JA, Gilkey FW. MR appearance of fibroxanthoma. *J Comput Assist Tomogr.* Jul-Aug 1988;12(4):612-5.
13. Resnick D, Greenway G. Distal femoral cortical defects, irregularities, and excavations. *Radiology.* May 1982; 143 (2) :345-54.