RESEARCH ARTICLE

A RARE CASE OF PROXIMAL ULNA ANEURYSMAL BONE CYST TREATED WITH FIBULLAR STUD GRAFT.

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Abstract

An aneurysmal bone cyst (ABC) is a rare, benign, destructive, hemorrhagic and expansile lesion accounting for 1% of all bone tumors with a thin wall containing blood filled cystic cavities. The term aneurysmal is derived from the macroscopic appearance of sponge like tumor containing numerous giant cells. This type of lesion predominantly affects the metaphysis of long bone. The present study reports a rare case of ABC of the proximal ulna occurring in a 16-year-old male patient, who presented with swelling over right elbow joint and pain is the main complain. X-rays and MRI of the left elbow revealed a segmented, expansile, multiseptated lesion with fluid-fluid levels and biopsy was performed initially to confirm the diagnosis followed by enbloc excision of cyst was done and fibular stud graft from right side along with cancellous bone graft from left ASIS (anterior superior iliac spine) and fixed with intramedullary K-wire. The present study aims to describe a case of ABC of the proximal ulna, a rare site, a condition that often poses a diagnostic challenge, and to underline the importance of radiological and histological examinations for the accuracy of that diagnosis.

Introduction:

An aneurysmal bone cyst (ABC) is a benign, locally destructive lesion of the bone, occurring as a primary bone cyst in 79% of cases, or as a secondary lesion arising from other osseous conditions in 20% of cases. The peak age of onset is <20 years, and 95% of cases have been reported to occur in the first 3 decades of life. ABC accounts for 1% of all bone tumors. Any bone may be affected by ABC; however, these lesions predominantly manifest in the metaphysis of long bones (65%), the pelvis (12%) and the arch of the spine (12%). The differential diagnosis associated with this lesion includes giant cell tumor (GCT), giant cell reparative granuloma (GCRG) and Brown tumor arising from hyperparathyroidism. Treatment options for patients with ABC include autogenous bone grafting, cementation or resection of the lesion. The present study reports a case of ABC localized to proximal ulna, a considerably rare presentation.

Case Report:

This case is of 16 years old male who presented to us at DHIRAJ GENERAL HOSPITAL, PIPARIYA with complain of swelling over right elbow joint which increased over 3 months. It was followed by trauma leading to sudden increase in swelling. Swelling was tender and was increasing in size.

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X-rays showed signs of ballooning of cortex over proximal ulna. Routine blood investigations were normal. MRI was done and differential diagnosis was achieved. The lesion was addressed by posterior approach and curettage biopsy was done. After confirmation of the diagnosis, en bloc excision of cyst was done and fibular stud graft from right side along with cancellous bone graft from left ASIS (anterior superior iliac spine) and fixed with intramedullary K-wire. The elbow was immobilised for 6 weeks followed by gradual passive and active mobilisation.

The gross appearance of the removed tissue was a soft, dusty-red tissue mass. Histopathological examination was subsequently conducted. The microscopic appearance of the resected tissue was capsule-shaped, exhibiting large amounts of dilatation and congestion of the associated small blood vessels, osteoblast proliferation (as indicated by the blue particles corresponding to osteoprogenitor cells that were detected by hematoxylin-eosin staining), fibrous connective tissue and multinucleated giant cell proliferation, with reactive hyperplasia and trabecular bone tissue. A final diagnosis of ABC was established based on the collective clinical information.

The treatment was successful, as no further treatment was required during subsequent follow-ups. K-wire was removed after 4 months after signs of union on consecutive x-rays. Final follow up at the end of 6 months was quite satisfactory with almost full range of movements.
Discussion:

ABCs account for 1% of all primary bone lesions that are sampled for biopsy. While the precise pathogenesis of ABC is unclear, the most widely accepted pathogenic mechanism of ABC involves local circulatory disturbance, which results in an increase in venous pressure and the development of enlarged and dilated vascular components within the affected bone. The differentiation among ABC and other giant cell-containing tumors of the bone, such as GCT, GCRG and Brown tumor, is crucial. GCT is composed of mononuclear and osteoclast-like multinucleated giant cells, which have the potential to be locally aggressive. In GCT, the tumor is always eccentrically located in the epiphysis and metaphysis of the bone, and exhibits lytic expansion. GCRG is a rare, benign, intraosseous reactive lesion, histologically characterized by a predominance of giant and mononuclear cells in areas of hemorrhage. Brown tumors have been reported to occur in 1.5-1.7% of patients with chronic renal deficiency and to have a considerably more lobulated architectural growth pattern; at differential diagnosis, hyperparathyroidism can be ruled out on the basis of serum calcium, parathyroid and phosphorus hormone levels. ABC, on the other hand, is known to be histologically composed of blood-filled cystic spaces separated by fibrous septae.

Computed tomography and MRI scans may be helpful in the diagnosis of ABC, since T2-weighted MRI could detect a deformity in the involved metatarsal bone as a segmented, expansile, multiseptated lesion with a large quantity of fluid present.

Surgical removal is considered the optimal treatment option for ABC. The lesion is removed by intralesional curetage through a wide cortical window, and bone grafting may be used for replacement of bone defects. Embolotherapy has also been successfully used for the treatment of ABCs. However, patients must be informed that ABC has a high recurrence rate, so that any recurrence or malignant transformation can be detected as early as possible.

In summary, ABC is a destructive, hemorrhagic and tumor-like lesion occurring predominantly in teenaged patients. Radiographs and MRI scans can often confirm the diagnosis of ABC; however, accurate histological evaluation is imperative for diagnosis. Embolotherapy and replacement of bone defects with an autograft are considered safe procedures with minimal recurrence risk. The present study described a rare case of an ABC in proximal ulna and highlighted the importance of radiological and histological examinations for the accuracy of such diagnosis.

References: