

## Symptoms and Treatment of Aneurysmal Bone Cyst

Dr. Ajeet Yadav\*

Department of I.T. Medical and Orthopaedics, SRM University, (Chennai) India

### Abstract

Aneurysmal bone cysts are benign tumors with potential for aggressive behaviour and capacity to metastasize. Although rarely lethal, benign bone tumors may be associated with a substantial disturbance of the local bony architecture that can be particularly troublesome in peri-articular locations. Its histogenesis remains unclear. It is characterized by a proliferation of mononuclear stromal cells and the presence of many multi-nucleated giant cells with homogenous distribution.

Aneurysmal bone cysts of bone is generally a benign tumor composed of mononuclear stromal cells and characteristic multinucleated giant cells that exhibit osteoclastic activity. It usually develops in long bones but can occur in unusual locations. The typical appearance is a lytic lesion with a well-defined but nonsclerotic margin that is eccentric in location, extends near the articular surface, and occurs in patients with closed physes. However, GCT may have aggressive features, including cortical expansion or destruction with a soft-tissue component. Fluid-fluid levels, consistent with secondary formation of aneurysmal bone cysts, are seen in 14% of cases. GCT can mimic or be mimicked by other benign or malignant lesions at both radiologic evaluation and histologic analysis.

There are advocates of varying surgical techniques ranging from intra-lesional curettage to wide resection. As most aneurysmal bone cysts are benign and are located near a joint in young adults, several authors favor an intralesional approach that preserves anatomy of bone in lieu of resection. Although GCT is classified as a benign lesion, few patients develop progressive lung metastases with poor outcomes. Treatment is mainly surgical. Options of chemotherapy and radiotherapy are reserved for selected cases.

### Introduction

Aneurysmal bone cyst of bone is a rare, aggressive non-cancerous tumor. It generally happens in adults between ages 20 and 40 when skeletal bone growth is complete. It usually develops near a joint at the end of the bone. The location of an aneurysmal bone cyst is often in the knee, but can also involve the bones of the arms and the legs [1]. It can also affect the flat bones, such as the breastbone or pelvis.

While the exact cause of aneurysmal bone cysts remains unknown. In some cases, they have been linked to Paget disease of bone. This is a chronic bone disorder in which bones become enlarged and misshapen.

Treatments such as bisphosphonates, interferon alpha (IFN- $\alpha$ ), and denosumab have been reported, with variable results regarding the outcome, function, and complications for the patients. To enhance the literature, this article discusses the clinicopathological features, diagnosis, and treatments for the GCT of bone [2].

### Symptoms and Treatment of an Aneurysmal bone cyst

The most common symptom of a aneurysmal bone cyst is pain in the area of the tumor. The patient may also have pain with movement of the nearby joint. This pain usually increases with activity and decreases with rest.

The pain is usually mild at first, but gets worse over time as the tumor increases in size. Occasionally, the bone weakened by the tumor breaks and causes the sudden onset of severe pain [3].

The following are the most common symptoms:

1. A visible mass
2. Bone fracture
3. Fluid buildup in the joint nearest the affected bone
4. Limited movement in the nearest joint
5. Swelling

6. Pain at the nearest joint
7. joint pain, swelling, and limited movement

Tumors that can't be removed surgically can often be controlled and sometimes destroyed with radiation therapy. Without treatment, an aneurysmal bone cyst will continue to grow and destroy the surrounding bone, so treatment is always necessary [4].

Specific treatment for aneurysmal bone cysts:

1. Remove the tumor
2. Prevent damage to the bone
3. Avoid recurrence of the tumor
4. Specific medications, procedures, or therapies
5. Physical therapy to regain strength and mobility
6. Bone grafting
7. Surgery to remove the tumor and any damaged bone
8. The goal for treatment of a aneurysmal bone cyst is to remove the tumor and prevent damage to the affected bone.

Having described that, recent studies have questioned the role of

\*Corresponding author: Ajeet Yadav, Department of I.T. Medical and Orthopaedics, SRM University, (Chennai) India, E-mail: ay9533@srmist.edu.in

Received: 26-Oct-2022, Manuscript No: joo-22-81679; Editor assigned: 29-Oct-2022, Pre-QC No: joo-22-81679 (PQ); Reviewed: 12-Nov-2022, QC No: joo-22-81679; Revised: 17-Nov-2022, Manuscript No joo-22-81679 (R); Published: 23-Nov-2022, DOI: 10.4172/2472-016X.100185

Citation: Yadav A (2022) Symptoms and Treatment of Aneurysmal Bone Cyst. J Orthop Oncol 8: 185.

Copyright: © 2022 Yadav A. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

adjuvants and filling agents in reducing the recurrence rate of GCT, they seem to infer that adequate removal of the tumor seems to be a more important predictive factor for the outcome of surgery than the use of adjuvants. Trieb demonstrated that local recurrence rate of GCT located in long bones treated with or without phenol is similar. Prosser recommended primary curettage for intraosseous GCT without adjuvant treatment or filling agents. Reconstructing the defect after curettage can be quite a challenge. If the gap left behind after the curettage is small and does not jeopardize the structural integrity of bone it can be left alone and the cavities fill up with blood clot, which then gets ossified to form bone. For larger defects the traditional methods of reconstruction have been cementation or use of bone graft with each method having its advantages and disadvantages [5].

### Surgical Treatment

Surgery has proven to be the most effective treatment for aneurysmal bone cysts.

Curettage, Bone graft

**Curettage:** Curettage is the surgical procedure most commonly used to treat aneurysmal bone cysts. In curettage, special instruments are used to scrape the tumor out of the bone.

**Bone graft:** It is important part of surgical treatment. After curettage after curettage, the cavity is filled with a bone graft to help stabilize the bone. A bone graft is bone that is taken from a donor or from another bone in your own body (autograft)-most often the hip [6].

### Nonsurgical Treatment

There are three types of Nonsurgical Treatment

Radiation, Tumor embolization, Medication

**Radiation:** Radiation therapy may sometimes be used to shrink aneurysmal bone cysts in areas where surgery may be difficult to perform without damaging sensitive tissues such as the spine.

**Tumor embolization:** During this procedure, specific arteries that supply blood to the tumor are blocked off. Without their supply of oxygen and nutrients, the tumor cells begin to die. Embolization is performed prior to surgery but it may also be used on its own in cases where surgery cannot be performed [7].

### Diagnosis

X-rays provide images of dense structures, such as bone. Your doctor will order an X-ray to help confirm the diagnosis. On X-ray, an aneurysmal bone cyst appears as a destructive (lytic) lesion next to a joint. Occasionally, the involved area of bone will be surrounded by a thin rim of white bone, which may be either complete or incomplete. There may also be expansion of the involved area of bone [8].

**Biopsy:** A test in which tissue samples are removed from the body and examined under a microscope to determine if cancer or other abnormal cells are present.

**Radionuclide bone scans:** A nuclear imaging test used to detect bone diseases and tumors, and to determine the cause of bone pain or inflammation [9].

**X-rays:** A diagnostic test that uses invisible electromagnetic energy beams to make images of internal tissues, bones, and organs on film.

### Classification

GCT were classified by Enneking and later by Campanacci based on radiographic appearance. They described three stages that correlate with tumor local aggressiveness and risk of local recurrence [10].

1. Tumor has a well-margined border of a thin rim of mature bone, and the cortex is intact or slightly thinned but not deformed.

2. Tumor has relatively well defined margins but no radiopaque rim; the combined cortex and rim of reactive bone is rather thin and moderately expanded but still present. Grade-II lesions with a fracture are graded separately.

3. Designates a tumor with fuzzy borders, suggesting a rapid and possibly permeative growth; the tumor bulges into the soft tissues, but the soft-tissue mass does not follow the contour of the bone and is not limited by an apparent shell of reactive bone.

### Conclusion

We report here the case of a aneurysmal bone cyst of the proximal tibia of a 29 year old man treated with aggressive curettage that recurred 4 years later with malignant transformation and "benign" metastases to the lung. Recurrence, malignant transformation, and metastasis with "benign" morphology all occur in aneurysmal bone cyst of bone. This is the first report of all three occurring in a single patient. The influence of local recurrence on malignant transformation and pulmonary metastases is largely unknown. Malignant transformation has been reported most frequently with radiation even in nonrecurrent tumors. Trieb demonstrated that local recurrence rate of GCT located in long bones treated with or without phenol is similar. Prosser recommended primary curettage for intraosseous GCT without adjuvant treatment or filling agents. Reconstructing the defect after curettage can be quite a challenge. If the gap left behind after the curettage is small and does not jeopardize the structural integrity of bone it can be left alone and the cavities fill up with blood clot, which then gets ossified to form bone. For larger defects the traditional methods of reconstruction have been cementation or use of bone graft with each method having its advantages and disadvantages. Similarly, benign pulmonary metastases have been reported to occur in recurrent and nonrecurrent tumors.

### Acknowledgement

None

### Conflict of Interest

None

### References

1. Zadik, Yehuda, Aktaş Alper, Drucker Scott, Nitzan W Dorrit (2012) Aneurysmal bone cyst of mandibular condyle: A case report and review of the literature. J Craniomaxillofac Surg 40: 243-248.
2. Ye Y, Pringle LM, Lau AW (2010) TRE17/USP6 oncogene translocated in aneurysmal bone cyst induce matrix metalloproteinase production via activation of NF-kappaB. Oncogene 29: 3619-3629.
3. Mankin HJ, Hornicek FJ, Ortiz-Cruz E, Villafuerte J, Gebhardt MC, et al. (2005) Aneurysmal bone cyst: a review of 150 patients. J Clin Oncol 23: 6756-6762.
4. Amanatullah DF, Clark TR, Lopez MJ, Borys Dariusz, Tamurian Robert M, et al. (2014) Giant Cell Tumor of Bone. Orthopedics 37: 112-120.
5. Baig R, Eady J (2006) unicameral (simple) bone cysts. Southern Medical Journal 99: 966-976.
6. Milbrandt, Todd; Hopkins, Jeffrey (2007) unicameral bone cysts: etiology and treatment. Curr Opin Orthop 18: 555-560.

- 
7. Rapp Timothy B, Ward James P, Alaia Michael J (2012) Aneurysmal Bone Cyst. J Am Acad Orthop Surg 20: 233-241.
  8. Ozyurek Selahattin, Rodop Osman, Kose Ozkan, Cilli Feridun, Mahirogullari Mahir, et al. (2009) Aneurysmal Bone Cyst of the Fifth Metacarpal. Orthopedics 32: 606-609.
  9. Rodrigues CD, Estrela Carlos (2008) Traumatic Bone Cyst Suggestive of Large Apical Periodontitis. Journal of Endodontics 34: 484-489.
  10. Bloodgood, Joseph C (1910) Benign Bone Cysts, Ostitis Fibrosa, Giant-Cell Sarcoma and Bone Aneurism of the Long Pipe Bones. Annals of Surgery 52: 145-185.