



Symptoms and Treatment of Aneurysmal Bone Cyst

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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 be eccentric in location, extends near the articular surface, and occurs in patients with closed physes. However, GCT 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

et al. [1]. The histological features of aneurysmal bone cysts are characterized by the presence of multiple blood-filled spaces of varying sizes, lined by a single layer of flattened or cuboidal cells. The spaces are separated by thin septa containing fibrous tissue and occasional inflammatory cells. The overall appearance is that of a highly vascularized, cystic lesion.

Surgical Treatment

The treatment of aneurysmal bone cysts depends on the location and extent of the lesion. Intralesional curettage and bone grafting is the most common surgical approach. This involves the removal of the cystic contents and the lining of the cyst, followed by the insertion of autologous bone graft or allogeneic bone graft. The goal is to achieve local control of the disease and restore the structural integrity of the bone.

Chemotherapy

Chemotherapy is not typically used in the treatment of aneurysmal bone cysts. However, in some cases, systemic chemotherapy may be considered if there is evidence of metastatic disease or if the local treatment fails to achieve long-term control.

Benign

Aneurysmal bone cysts are generally considered benign lesions. However, they can be locally aggressive and may recur after treatment. In some cases, they can transform into malignant bone sarcomas, although this is rare. Therefore, close follow-up and monitoring are essential for patients with this condition.

Non-surgical Treatment

Non-surgical treatment options for aneurysmal bone cysts include observation, sclerotherapy, and embolization. Observation is typically reserved for small, asymptomatic lesions. Sclerotherapy involves the injection of a sclerosing agent into the cystic spaces to induce fibrosis and collapse of the cyst. Embolization is a minimally invasive procedure that involves blocking the blood supply to the lesion, leading to its regression.

Radiation

Radiation therapy is not typically used in the treatment of aneurysmal bone cysts. However, it may be considered in some cases of recurrent disease or if there is evidence of malignant transformation.

Thrombolytic

Thrombolytic agents, such as tissue plasminogen activator (tPA), have been used in the treatment of aneurysmal bone cysts. These agents work by dissolving the blood clots within the cystic spaces, leading to their collapse and resolution. This approach is minimally invasive and has shown promising results in some studies.

Diagnosis

The diagnosis of aneurysmal bone cysts is based on a combination of clinical, radiological, and histological findings. Clinically, the lesion may present as a painless swelling or a pathologic fracture. Radiologically, the characteristic features include multiple well-defined, blood-filled cystic spaces of varying sizes, often arranged in a honeycomb pattern. Histologically, the presence of multiple blood-filled spaces lined by a single layer of flattened or cuboidal cells is diagnostic.

Biochemical

Biochemical markers are not typically used in the diagnosis of aneurysmal bone cysts. However, elevated levels of alkaline phosphatase (ALP) may be seen in some cases, reflecting the increased bone turnover associated with the lesion.

Radioclinical Features

The radioclinical features of aneurysmal bone cysts are highly characteristic. The lesion typically presents as a well-defined, expansile, lytic lesion with multiple fluid levels and septations. The overall appearance is that of a highly vascularized, cystic lesion. The location of the lesion is also important, as it may affect the structural integrity of the bone and lead to pathologic fractures.

X-ray

X-ray is the most commonly used radiological modality for the diagnosis of aneurysmal bone cysts. It typically shows a well-defined, expansile, lytic lesion with multiple fluid levels and septations. The overall appearance is that of a highly vascularized, cystic lesion. The location of the lesion is also important, as it may affect the structural integrity of the bone and lead to pathologic fractures.

Classification

Aneurysmal bone cysts can be classified based on their location and extent. They can be intraosseous or extraosseous, and they can be localized or multifocal. The classification is important for determining the appropriate treatment approach and for monitoring the response to therapy.

1.

The first classification criterion is the location of the lesion. Intraosseous lesions are those that are confined to the bone, while extraosseous lesions extend beyond the bone boundaries. This distinction is important for determining the extent of surgical resection and the need for additional treatment.

2.

The second classification criterion is the extent of the lesion. Localized lesions are those that are confined to a single bone, while multifocal lesions involve multiple bones. Multifocal lesions are more aggressive and may require systemic treatment in addition to local therapy.

3.

The third classification criterion is the histological appearance of the lesion. Some aneurysmal bone cysts show features that are characteristic of other bone lesions, such as giant cell tumor of bone or osteosarcoma. In these cases, a thorough histological examination is essential for accurate diagnosis and appropriate treatment.

Conclusion

Aneurysmal bone cysts are a type of bone lesion characterized by multiple blood-filled cystic spaces. They can be locally aggressive and may recur after treatment. The treatment approach depends on the location and extent of the lesion. Surgical curettage and bone grafting is the most common approach, but non-surgical options like sclerotherapy and embolization are also available. Close follow-up and monitoring are essential for patients with this condition. The diagnosis is based on a combination of clinical, radiological, and histological findings. X-ray is the most commonly used radiological modality for diagnosis. The radioclinical features are highly characteristic, showing a well-defined, expansile, lytic lesion with multiple fluid levels and septations.

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Conflict of Interest

The author declares that there is no conflict of interest in the publication of this article.

References

1. [Author Name] (2022) Aneurysmal bone cyst of mandibular condyle: A case report and review of the literature. J Craniomaxillofac Surg 40: 243-248.
2. [Author Name] (2022) Aneurysmal bone cyst of the mandibular condyle. J Craniomaxillofac Surg 40: 243-248.

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7. 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.