

Aneurysmal Bone Cysts of the Spine: Two Case Reports

Seymen Ozdemir¹, Can Yaldiz², Ferhat Ozden⁴, Ozlem Kitiki Kacira³, Tibet Kacira²

¹Department of Neurosurgery, Van Training and Research Hospital Van, ²Department of Neurosurgery, Sakarya Training and Research Hospital, Sakarya, ³Department of Radiology, Sakarya Training and Research Hospital, Sakarya, ⁴Department of Pathology, Van Training and Research Hospital Van, Turkey

Aneurysmal bone cysts are rare entities which causes expansile and destructive bone lesions characterized by reactive proliferation of connective tissue. They usually grow rapidly with hypervascularity. In clinical practice they can be easily misdiagnosed due to the rare occurrence and having no such typical findings as radiologically. Most cases have uncommon pain symptoms, but rarely, if fractures occur, neurological findings can be seen and the surgical treatment, if needed, could be difficult. We will discuss our evaluations to two cases that we experienced in our clinic in this report.

Key Words: Aneurysmal bone cysts · Spine · Sacrum

INTRODUCTION

Aneurysmal bone cysts (ABCs) are rare entities which cause expansile and destructive bone lesions characterized by reactive proliferation of connective tissue^{1,5}. They usually grow rapidly with hypervascularity. They are benign lesions and can occur in any part of the skeleton and the spine can be affected up to 30% of the cases. ABCs can cause symptoms such as back and/or dorsal pain, neurological deficitis, and pathological fractures. Local traumas usually start the clinical aspects. They usually affect young adolescents. Although ABCs mostly occur in the distal part of femur and/or proximal part of the tibia, some cases have been reported in pelvis and posterior elements^{2,4,5}. ABCs can occur rarely in the sacrum and this location has some difficulties in treatment because of the relations with the sacral nerves. Togetherness of ABC and fibrous dysplasia, giant cell tumors and/or osteoblastomas are defined as secondary ABC by some authors and this association was seen approximately in 20-30% of cases. Diagnosis can be verified by CT scans and MRI. In this paper, authors reported two rare cases with thoracic and sacral aneurysmal bone cysts.

CASE REPORT

Case 1

A 14-year-old male admitted to neurosurgery department with suffering of being unable to walk for 15 days. His neurological examination revealed paraplegia. Thoracic MRI images and CT scans demonstrated a mass which causes mass effect on spinal cord (Fig. 1). He underwent surgery and total laminectomy was performed. Intraoperatively, we determined a huge hemorrhagic mass. Once the cavity was opened severe bleeding

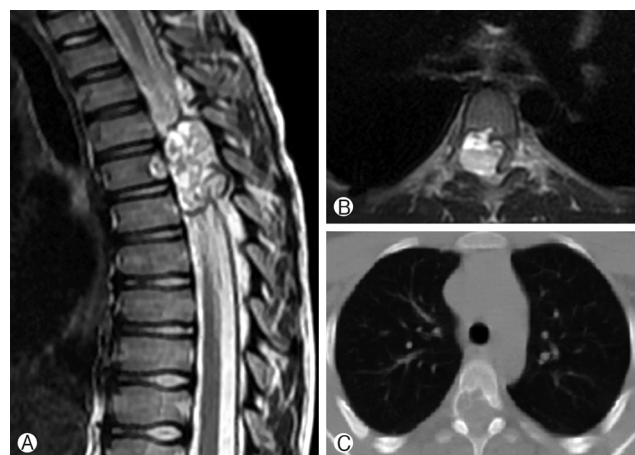


Fig. 1. (A, B) Cyst extending to spinal canal with a press on medulla is observed on T2 images with non contrast MRI. The cyst is hyperechoic and prominent soft tissue extending is not seen. (C) On non contrast CT images, lytic-destructive expansile mass is observed on T corpus.

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Corresponding Author: **Can Yaldiz**, MD

Department of Neurosurgery, Sakarya Training and Research Hospital, Sakarya, Turkey 54010

Tel: +900503572222, Fax: +902643460101

E-mail: drcanyaldiz@yahoo.com

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occured. The cyst removed totally. The bone tissue of the removed cyst area is covered by bonewax. The histopathological examination revealed as ABC (Fig. 2). On postoperative 2nd day he was mobilised and his neurological examination was enough for walking with arm holder on postoperative 7th day. On the 5th months control of the patient there were no suffering and no instable images on X-ray and MR images (Fig. 3).

Case 2

An 8-year-old male pateint admitted to us with right hip and back pain. In his history, he had fallen down from 2 meters. Neurological examination was normal. Spinal MRI revealed ABC on the right side of the 3rd sacral vertebra with an enlargement of 24×19 mm (Fig. 4). The second case is under control and no surgical treatment is suggested because of the patient’s age and observing no neurological deficits at the patient.

DISCUSSION

Known as a non-neoplastic expansile bone lesion, ABC has a consistence of blood-filled spaces separated by connective tissue septa containing bone and osteoclastic giant cells. Most cases are under 20 years. The incidence of thoracic and sacral ABCs are not known clearly. In literature, discussions about thoracic and sacral aneurysmal bone cysts are limited and only a few cases have been reported^{3,7}. Papagelapoulos et al described 44 pelvis ABCs and 12 of them were in the sacrum⁶.

It is well known that total extirpation of SABC is so difficult

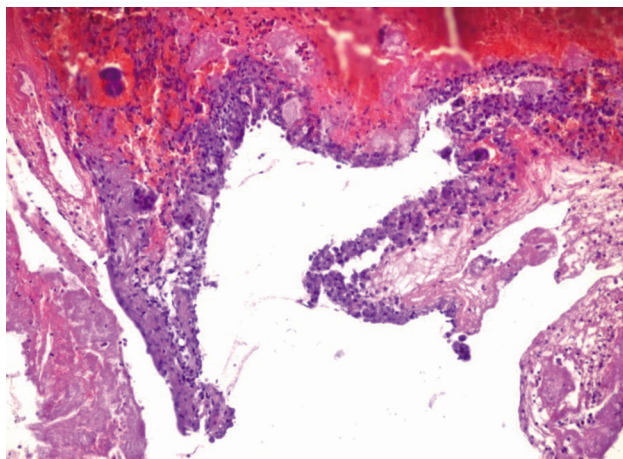


Fig. 2. Histopathology reveals blood filled cystic cavities covered by stroma including proliferating fibroblast and scattered multinucleated giant cells rather than endothelium (H&E ×40-100).

and surgical results in treatment of SABC are excellent. Surgery for thoracic region is easier than sacral region. Neurological manifestings of sacral neoplasms are common. These clinical findings include leg weakness and numbness, bowl or bladder dysfunctions. In our cases there was only pain on hip and back that occured by mobilisation¹⁻⁵.

Up to 60-70% of ABC cases that occured in spine present with neurological deficits. The clinical aspects are pain due to the destruction and neurological deficits due to the fractures and compression. In our case the patient had severe findings

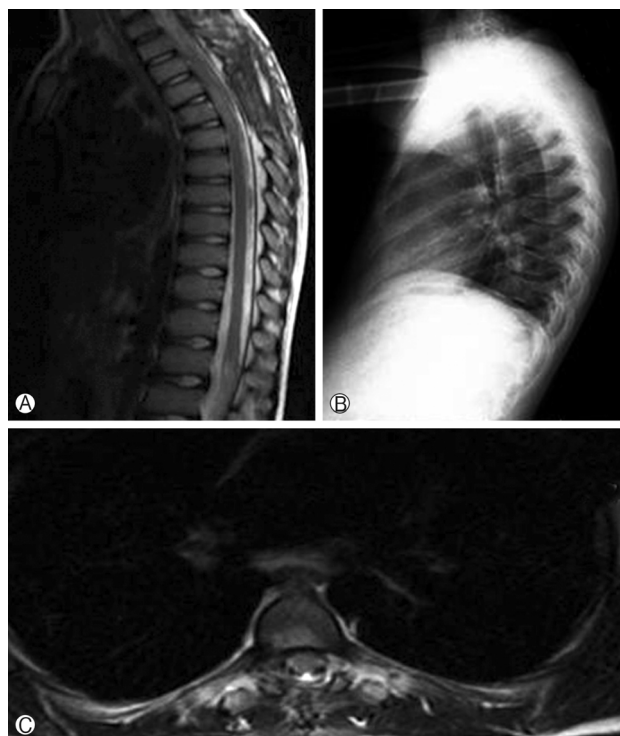


Fig. 3. T2 sagittal, axial T2, T1 sagittal images show that the mass is totally removed and no mass effect is seen on medulla. Post operative changings can be seen in Posterior spine tissue. On X-ray images no significant finding is observed.

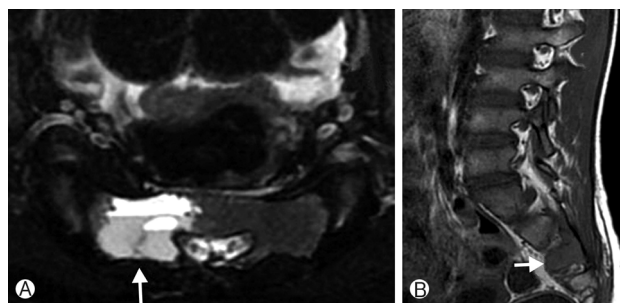


Fig. 4. (A) On axial T2 images, hyperechoic mass with liquid levels is seen on the half right of sacrum. (B) on T1 sagittal images, hypointens mass is observed in sacral region.

including paraplegia²⁻⁷⁾.

The diagnostic problems are because of the expeditious growth of ABC and its expansive destruction of bone. The diagnosis becomes more complicated if there is an extra-osseous and soft-tissue tumour mass. MRI is the most useful modality for preoperative planning. It also helps to evaluate the fluid-fluid level, which is characteristic for ABC on MR images¹⁾.

Our first case was evaluated as a pathological fracture, and the patient underwent urgent surgery because of the compression on spinal canal. After pathological examination, a diagnosis of ABC was given. But the second case was so typical for ABC on the radiological examinations as if in the literature.

The primary option for treatment is surgery. Enneking classified 3 surgical types: 1-intralesional (curettage and bone grafting), 2-marginal (en bloc) resection, 3-wide resection (segmental resection)³⁻⁷⁾. The most important factors in preoperative planning are the location and the growing pattern of the ABC. If ABC is growing superficially and besides if it is not involving the one-third of the bone, in this case it will be more advantageous. Intra-lesional excision can be performed in those cases. And this is really a good intervention for ABC and local recurrences occur less commonly. Besides this, if the ABC is so large and located in pelvis or spine extraperitoneal excision and bone grafting could be more difficult and risky. In similar cases like this, curettage and bone grafting remain a choiceable surgical technique.

Low-dose radiotherapy can be performed after curettage and bone grafting as an other option for treatment⁵⁾. Another option is preoperative embolisation, if the lesion is highly vascular.

CONCLUSION

Age, location, size and number of mitotic figures have been suggested for recurrence Treatment of ABC is difficult and histological examination should be done to prevent overlooked of an underlying more aggressive neoplasm.

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