

## **Case 14880**

### **Aneurysmal bone cyst (ABC) of the spine**

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**Section:** Musculoskeletal System

**Published:** 2017, Oct. 3

**Patient:** 15 year(s), male

## **Clinical History**

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A 15-year-old boy without medical history, presented to the emergency department with back pain, difficulty to walk, and urinary disorders. The neurological examination showed paraparesis and myoclonus of the left lower limb as well as hypoesthesia up to T10.

## **Imaging Findings**

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A contrast-enhanced MRI and CT of the dorsal spine were performed.

MRI showed a heterogeneous multi-loculated cystic lesion located in the posterior arch of T5, T6, with extension in the T5 vertebral body and mass effect on the adjacent spinal cord. This lesion had multiple cavities with fluid-fluid levels, appeared in low signal intensity on T1-weighted images (figure 3) and in mixed low and high intensity on T2 FAT SAT-weighted images (figure 1 and 2). The enhanced series of this study (T1 FAT SAT GD, figure 4) demonstrated rim enhancement of the fluid-fluid levels cavities.

CT showed an expansive multi-loculated lytic lesion of the posterior arch of T5 and T6, with peripheral calcifications (figure 5) and rim enhancement of the cavities after contrast injection (figure 6). It also revealed the subperiosteal origin of the lesion with secondary involvement of the cortical bone.

## **Discussion**

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Aneurysmal bone cyst (ABC) is a benign bone lesion of unknown origin, first described in 1942 by Jaffe and Lichtenstein. It is a relatively rare lesion that represents 1.4%-2.3% of primary bone tumors [1]. The spine is involved in 3%-20% of cases [1].

Although benign, an ABC has the potential to grow acutely, and can cause a lot of swelling and pain while disrupting the growth plates, pathological fractures, and neurological manifestations.

ABC primarily occur in the first two decades of life, but can occur at any age, with slight women predominance [2].

In 29%-35% of cases, a preexisting lesion can be identified. The most common of these is giant cell tumor, osteoblastoma, angioma, and chondroblastoma.

The cervical spine is affected in 22% of cases, the thoracic spine in 34%, the lumbar spine in 31%, and the sacrum in 13% [3]. Spinal involvement is typically in the posterior elements, although extension into the vertebral body is also common [3].

Histologically, ABC is typically characterized by blood-filled cystic spaces separated by a spindle cell stroma with osteoclast-like giant cells and osteoid or bone production. The lack of anaplasia in all the tissue components strongly argues against a malignant tumor [1].

CT and MR imaging typically show a well-defined lesion with internal septation and enhancement after injection. Hudson and all [4] show in a serie that in 35% of ABCs have fluid-fluid levels at CT. Fluid-fluid levels are indicative of hemorrhage with sedimentation, better demonstrated on MRI. They may have increased signal intensity due to methemoglobin on T1.

Different treatments have been proposed in the literature such as preoperative selective arterial embolization, intralesional excision curettage, bone grafting, intralesional drug injections (steroid and calcitonin), and radiation [1, 2].

In our case, the aneurysmal bone cyst was first treated by arterial embolization followed by sclerotherapy. Treatment was completed two months later by total surgical resection along with dorsal spondylodesis T3-T8. No residual lesion was found on the MRI performed 12 months after surgery.

Although ABC is a benign lesion, one should bear in mind it can be locally aggressive (eg, responsible of spine compression) and that recurrence rates have been reported up to 50 % after resection [2].

## Final Diagnosis

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Aneurysmal bone cyst

## Differential Diagnosis List

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Osteoblastoma, Simple cyst bone , Chondromyxoid fibroma, Giant cell tumor, Osteosarcoma telangiectatic , Fibrous dysplasia

## Figures

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**Figure 1 MRI T2 FAT SAT-weighted Sagittal**



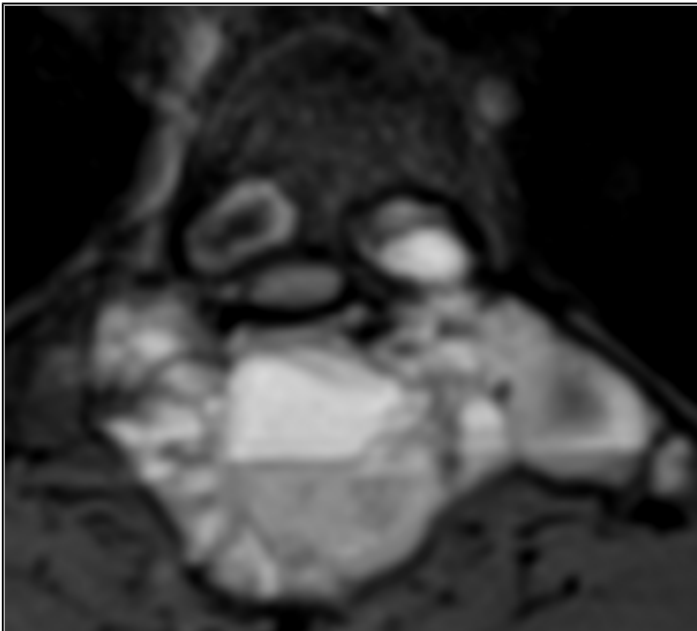


Voluminous mass of the posterior arch of T5 and T6, with fluid-fluid level, extension in the T5 vertebral body and mass effect on the adjacent spinal cord

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Area of Interest: Musculoskeletal spine;  
Imaging Technique: MR;  
Procedure: Imaging sequences;  
Special Focus: Cysts;

**Figure 2 MRI T2 FAT SAT-weighted axial**



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**Figure 3 MRI T1-weighted Sagittal**

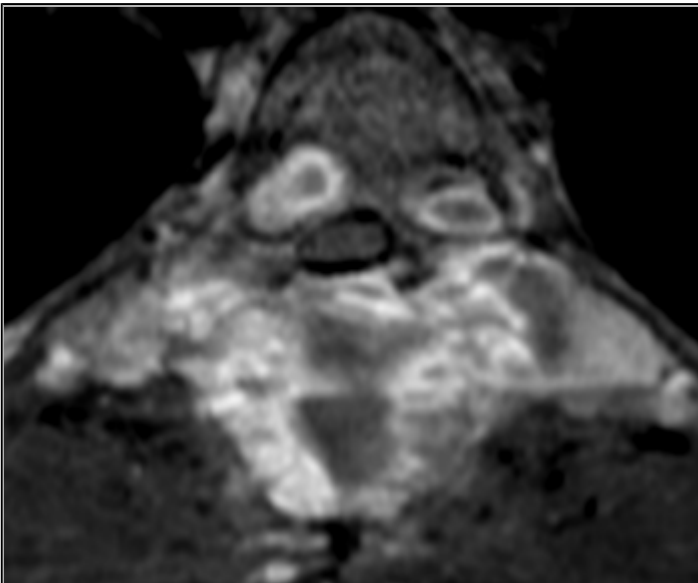


Voluminous mass of the posterior arch of T5 and T6, hypointense on T1-weighted images, with mass effect on the adjacent spinal cord.

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**Figure 4 MRI T1 FAT SAT with Gadolinium-weighted axial**

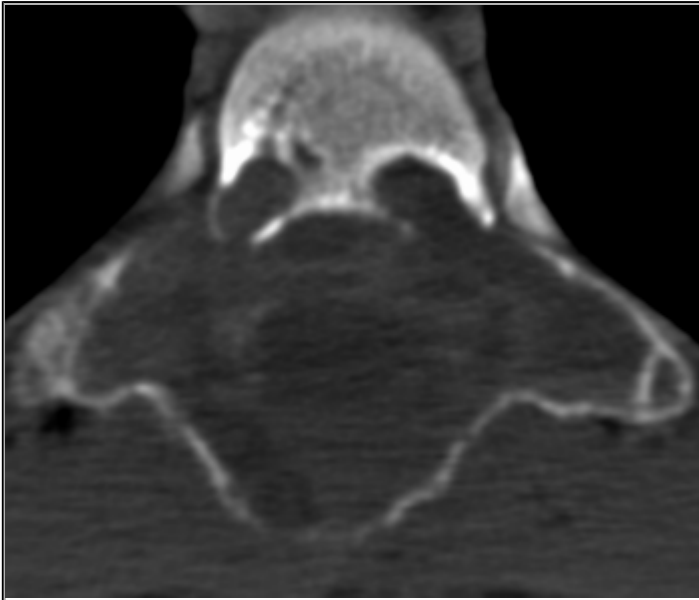


Voluminous mass of the posterior arch of T5, with fluid-fluid level and septa enhancement.

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**Figure 5 CT scan axial reconstruction without contrast injection**

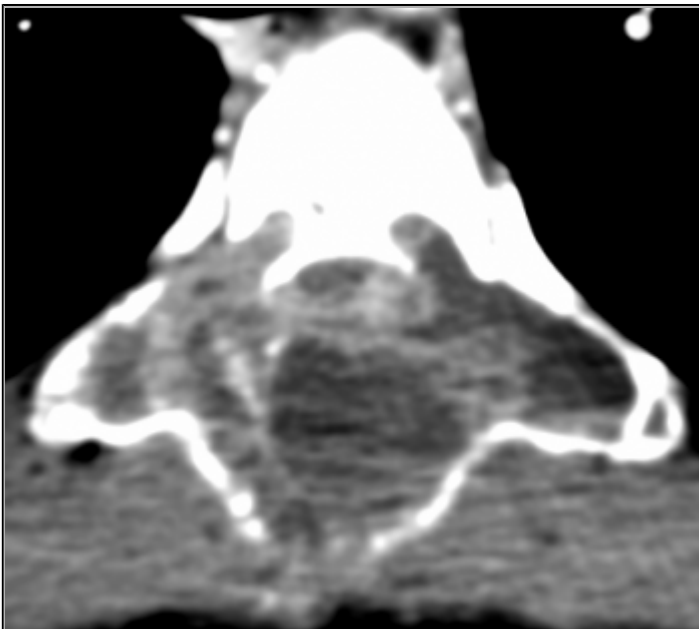


Heterogeneous expansive and lytic hypodense mass of the posterior arch of T5.

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**Figure 6 Contrast-enhanced CT scan axial reconstruction**



Expansive multi-loculated lytic lesion of the posterior arch of T5 and T6, with peripheral calcifications and rim enhancement of the cavities after contrast injection.

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Area of Interest: Musculoskeletal spine;  
Imaging Technique: MR;

## References

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- [2] Mehmet Zileli (2013) Aneurysmal bone cysts of the spine Eur Spine J Mar;22(3):593-601
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- [4] T. M. Hudson (1984) Fluid Levels in Aneurysmal Bone Cysts: A CT Feature AJR May;142(5):1001-4

## Citation

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**Aneurysmal bone cyst (ABC) of the spine {Online}**

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