ANEURYSMAL BONE CYSTS OF THE CERVICAL SPINE

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ABSTRACT

Aneurysmal bone cysts are benign and uncommon lesions of the spine. We report two cases with aneurysmal bone cysts in the cervical region. The first patient is a 12 years old girl who has a history of difficulty in moving her neck due to the pain over a period of six months. Plain radiographs revealed a severe gibbous deformity at the sixth cervical vertebra. On magnetic resonance imaging, a huge lesion, possibly originating from posterior portion of the sixth cervical vertebra and extending anteriorly was seen. The tumor was removed subtotally in two stages. Seven months later, the patient has had evidence of recurrence and she underwent a second operation. Recurrence tumor was excised and fusion was performed with costal allograft. The second patient is a 13 years old boy with pain and swelling in upper cervical region. On magnetic resonance imaging, posterior portion of the cervical second vertebra was occupied by a cystic trabecular mass. Gross total removal of tumor was accomplished at a single operation. During fourteen months follow-up there was no recurrence. Neurologic examination of both patients revealed no abnormal signs in the preoperative and postoperative period. In teenage-patients with difficulty in moving of neck and cervical pain, aneurysmal bone cyst should be considered. Goal of the treatment of this disease should include total tumor excision and/or fusion with combined stages.

Key words: Aneurysmal bone cyst, Cervical spine, Surgery.

ÖZET

SERVİKAL OMURGANIN ANEVRİZMAL KEMİK KİSTLERİ

Anevrizmal kemik kistleri, omurganın iyi huylu ve nadir lezyonlarıdır. Bu makalede servikal bölgedeki iki anevrizmal kemik kisti sunulmuştur. Birinci hasta olan 12 yaşındaki kız çocuğunda yaklaşık 6 aydır ağrıdan dolayı boyun hareketlerinde kısıtlılık şikayeti mevcuttu. Direkt grafisinde, servikal 6. vertebra seviyesinde şiddetli deformite saptandı. Manyetik resonans görüntülemede, öne doğru uzanım gösteren ve muhtemel altıncı servikal vertebranın arka elemanlarından köken alan dev kitle saptandı. Tümör, iki aşamada totale yakın çıkartıldı. Yedi ay sonra, hasta rekürrens nedeniyle ikinci operasyona alındı. Rekürrens tümör çıkartıldı ve kaburga allogrefti ile füzyon uygulandı. İkinci hasta, 13 yaşında erkek çocuk olup boynun üst kısmında şişlik ve ağrı nedeniyle başvurdu. Manyetik resonans görüntüleme yönteminde, servikal ikinci vertebranın arka kısmında kistik trabeküler kitle saptandı. Tümör, tek girişimle total olarak çıkartıldı. 14 aylık izlem sürecinde rekürrens saptanmadı. Her iki hastanın operasyon sonrası dönemde nörolojik muayenesinde, anormal bulgu saptanmadı. Servikal bölgede ağrı ve boyun hareketlerinde kısıtlılık olan ergenlik çağı çocuklarında, anevrizmal kemik kistleri akla gelmelidir. Bu hastalığın tedavisinin amacı, tümörün total çıkartılması ve/veya füzyonu olmalıdır.

Anahtar sözcükler : Anevrizmal kemik kisti, Servikal omurga, Cerrahi

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INTRODUCTION

Aneurysmal bone cysts are benign lesions .These lesions are usually aggressive and occur in long bones. If located on spine, they are characterized by painful swelling and invade the pedicle and vertebral body. Treatment options of aneurysmal bone cysts consist of complete excision, partial excision, curettage and/or radiotherapy. We report two cases of aneurysmal bone cysts treated with surgery.

CASE REPORTS

Case 1. A twelve-year-old girl was admitted to the Neurosurgery Department of Medical Faculty of Osmangazi University with pain in the cervical region. She had neck pain for six months. Physical and neurological examination revealed no abnormal signs. Plain radiographs, computerized tomography and three-dimensional computed tomography of the cervical spine demonstrated lysis of posterior elements and destruction of body of the 6th cervical vertebra. Magnetic resonance imaging revealed a tumor that enhanced with contrast medium at that site (Figure 1, 2a, 2b,3).

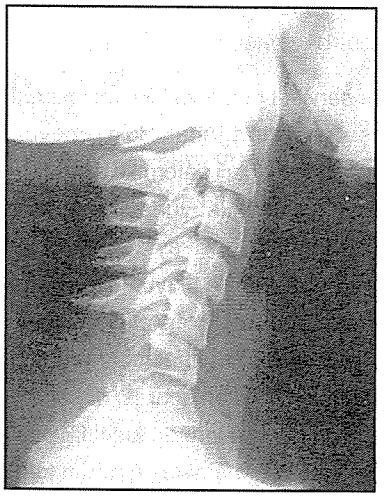
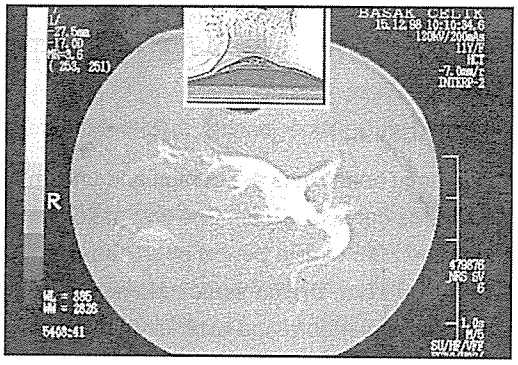


Figure 1. Lateral plain radiograph of cervical spine showing severe gibbous deformity at cervical sixth vertebra (Case 1).

The tumor was in contact with both the vertebral artery and the dura. An angiogram demonstrated minimal compression to the right vertebral artery, but revealed no vascularization of the tumor. Biochemistry analysis of both blood and urine was normal. Bone scintigraphy demonstrated an early fixation of isotope at the site of the tumor. On September, 11th,1998, the anterior and posterior approach were performed in one surgical sitting. In first step (anterior approach), hemicorpectomy of the sixth cervical vertebra and fusion was



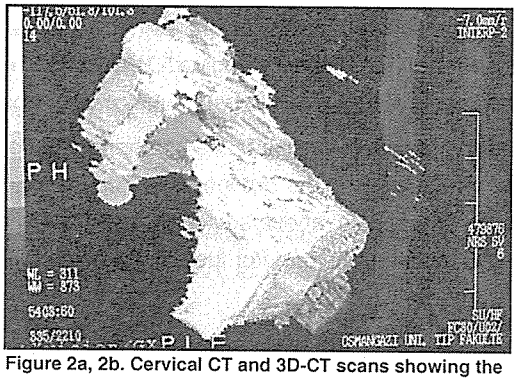


Figure 2a, 2b. Cervical CT and 3D-CT scans showing the destruction of the sixth cervical vertebra

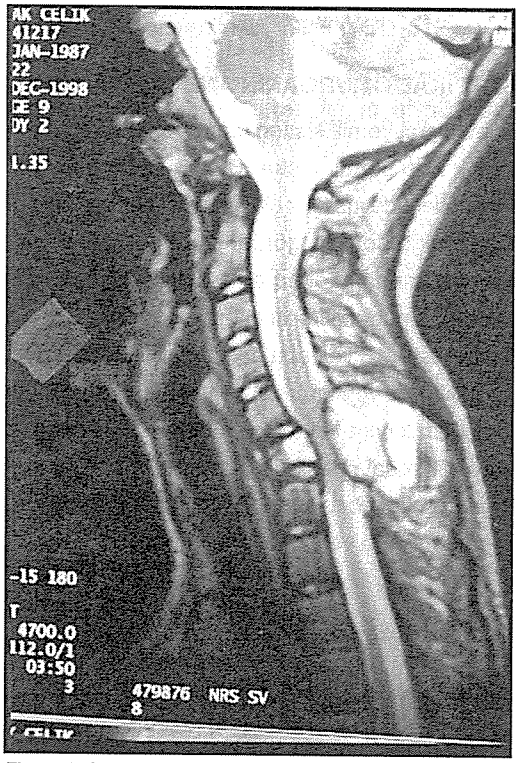


Figure 3. Sagittal MRI demonstrating the cystic trabecular nature of the aneurysmal bone cyst with compression the spinal cord.

performed with allogeneic bone graft and titanium plate and screws. In second step (posterior approach), after midline skin incision, a red-brown tumor was found to have replaced all posterior elements of C5 and C7 and this tumor was removed. Operation time was 6 hours and blood loss was 1000 ml. Final pathologic diagnosis was aneurysmal bone cyst. Seven months later, the patient has had evidence of recurrence. The patient underwent a second operation. Recurrence tumor was excised and fusion was performed with costal allograft (Figure 4). Operation time was 3 hours and blood loss was 400 ml. Twenty-two months after surgery, the patient is working full time. Radiographs and MRI demonstrate no evidence of local tumor recurrence.

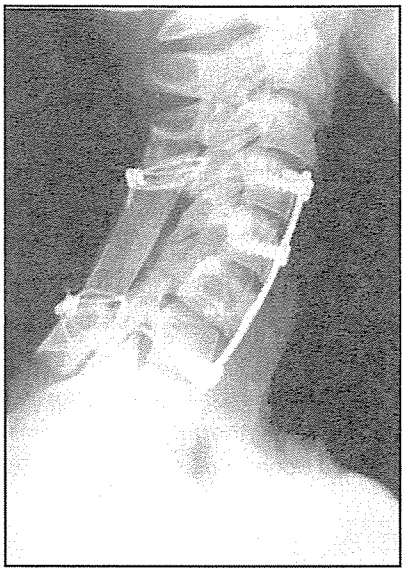


Figure 4. Postoperative lateral cervical graphy.

Case 2. A thirteen-year-old boy was admitted with history of pain and swelling in cephalad portion of cervical region. There was no history of cervical trauma. In physical examination, swelling on the cervical region was observed. The neurologic examination was normal. Three-dimensional computed tomography of cervical vertebra revealed a calcified ellipsoid tumor in posterior region of axis (Figure 5a). Computerized tomography of cervical spine demonstrated cystic cavitation of posterior elements of the cervical second vertebra (Figure 5b). On magnetic resonance imaging in posterior portion of cervical second vertebra, cystic trabecular mass was seen (Figure 6). A vertebral digital substraction angiographia was normal. Biochemistry analysis was normal. On May, 3rd, 1999, the tumor was removed through a posterior approach,

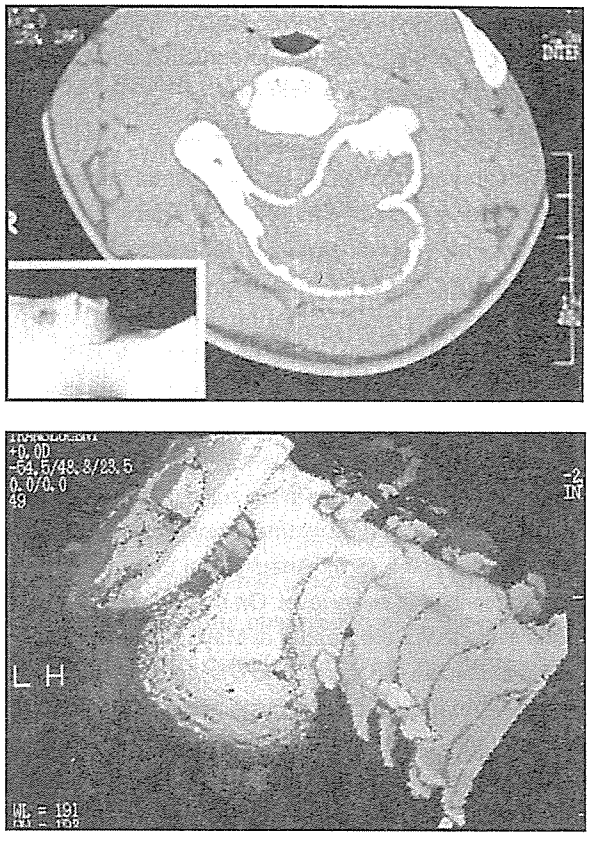


Figure 5a, 5b. CT and 3D-CT of cervical spine demonstrating cystic cavitation of posterior elements of the cervical second vertebra (Case 2).

with the patient in the sitting position. After midline skin incision, tumor that was originated from laminae of second cervical vertebra was excised. Operation time was 2 hours and blood loss was 350 ml. Histo-pathological examination of

Figure 6. Sagittal MRI of the cervical spine illustrating the cystic mass.

these tumors revealed trabeculated, dilated vascular beds and final diagnosis was aneurysmal bone cyst. To date, no recurrence was observed.

DISCUSSION

The first description of an aneurysmal bone cyst is credited to Van Arsdale in 1893. He referred to lesion as" ossifying haematomas" (1). Jaffe and Lichtenstein described two cases of a solitary, benign bone lesion and termed an aneurysmal bone cyst in 1942 (2). Aneurysmal bone cysts are uncommon lesions and constitutes 1.4 % of all primary bone tumors (3). Although aneurysmal bone cyst most often occurs in the metaphyses of long bones, it may involve almost every bone, with a high incidence in the spine (4). Approximately 3 to 20 percent of aneurysmal bone cysts have been found in the spine (5,6). Aneurysmal bone cysts have been described at every level. On ninety-five aneurysmal bone cysts that were treated at Mayo Clinic, 16 % were found to involve the spine, and 6% were at the cervical level (6). Aneurysmal bone cysts occur in the vertebral bodies (40%) and in the posterior elements such as pedicles, transverse processes, laminae and spinous process (60%) (4). Aneurysmal bone cysts occur frequently in teenage patients. 80 % of patients with aneurysmal bone cyst are under 20 years old (6). Pathogenesis of aneurysmal bone cyst is not yet clearly known. Histologically, these tumors consist of honeycombed, dilated vascular beds with frequent hemosiderin deposits (7). Although a few cases of spontaneous healing of aneurysmal bone cysts have been reported (8), surgical excision is the primary treatment choice of aneurysmal bone cysts. Total excision should be performed whenever possible (9,10,11). If total excision is not possible, radiation therapy (2000-3000 rads) and embolotherapy are advised (12). Hay has reported no recurrence in eight cases of total excision, 25% recurrence in twenty eight cases of partial excision, 6% recurrence in thirty four cases of partial excision followed by radiation therapy, and 11% recurrence in nine cases treated with radiation alone (4). In teenage-patients with difficulty in moving of neck and cervical pain, aneurysmal bone cyst should be considered. Goal of the treatment of this disease should include total tumor excision and/or fusion with combined stages.

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