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Brown tumor of the cervical spine in a patient with secondary hyperparathyroidism: A case report

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ABSTRACT

INTRODUCTION: Brown tumors are non-neoplastic, expansive bone lesions that occur only in the setting of hyperparathyroidism. The most usual localization of brown tumors is in mandible, ribs and large bones. In cervical spine, to date, there are only 11 cases reported. The aim of this work is to report the case of a patient with Wegenerś granulomatosis with secondary end stage renal failure who developed a brown tumor in C4 vertebra.

PRESENTATION OF CASE: A 25-year-old woman with an history of 2 months of worsening cervicalgia without history of trauma. She complained about progressive neck pain with irradiation to both shoulders and right arm paresthesias, spontaneous fracture or brown spinal cord tumor were suspected. She presented cervical spine instability, was managed with corpectomy of C4 and biopsy.

DISCUSSION: The initial suspicion of this disease must be since the first clinician contact of the patient and with the past medical history of end stage renal failure plus recent neurologic manifestations. The aim of neurosurgical management of these patients is to promote spinal stability and release spinal cord and nerve roots to eliminate risk of neurological deficits.

CONCLUSION: The importance of the prompt diagnosis of the brown tumor is to establish a multidisciplinary management to prevent progression, neurologic complications and sequelae despite its benign behavior.

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1. Introduction

Brown tumors (BT) are non-neoplastic, expansive bone lesions that occur only in the setting of hyperparathyroidism. It has been reported in 4.5% of the patients with primary hyperparathyroidism (PHPT) and in 1.5–1.7% of those with secondary hyperparathyroidism (SHPT) [1]. The most usual localization of BT is in mandible, ribs and large bones, are very rare in the spine, and in cervical spine there are few cases reported in literature [2–4]. To date there are only 11 cases of cervical BT reported globally [2,5].

The aim of this work is to report a 25 year old female with end stage renal failure (ESRF) who developed neck pain without trauma history, finally was determinate the presence of BT in C4 vertebra. This work was reported in line with the SCARE criteria [6].

2. Case report

A 25-year-old woman presented with an history of 2 months of worsening cervicalgia without history of trauma. She complained about progressive neck pain with irradiation to both shoulders and right arm paresthesias. She denied gait alterations or other symptoms. Medical history of ESRF secondary to Wegenerś granulomatosis diagnosed 7 years ago. Current treatment with hemodialysis since the last 3 years. Secondary hyperparathyroidism was documented one year ago.

Physical examination was normal.

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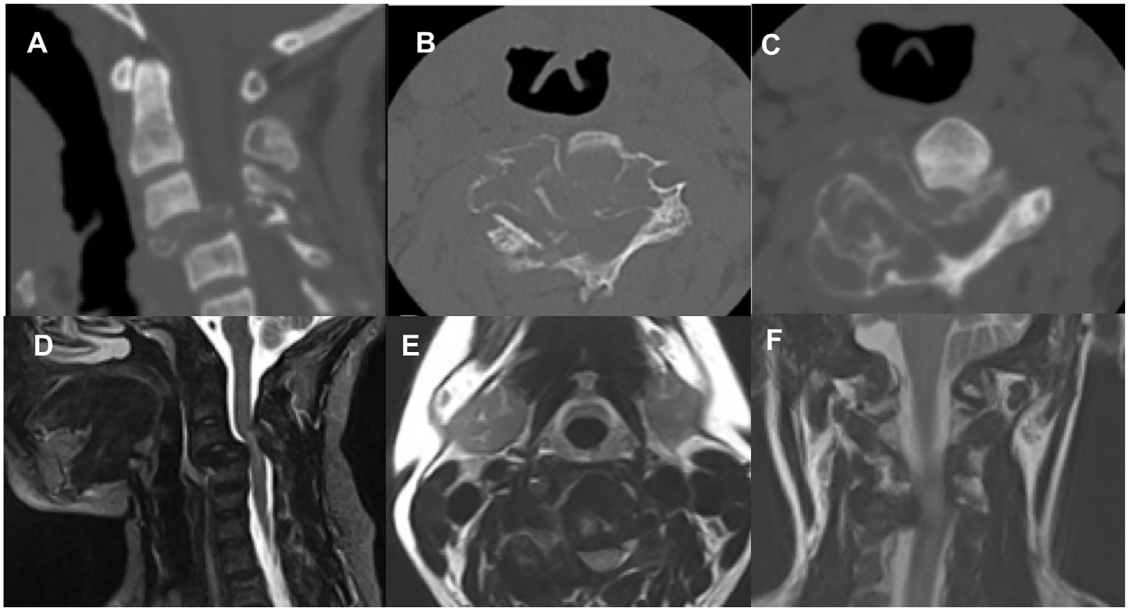

Fig. 1. Sagittal (A) and axial (B,C) computerized tomography scan demonstrating C4 vertebrae erosion in anterior and posterior components and subluxation of the underlying segments compromising the cervical canal. Sagittal (STIR) (D), axial (E) and coronal (F) T2 weighted MRI images showing the displacement of vertebrae and compression of the spinal cord.

Laboratory tests at admission: leucocytes 5.50/mcl; hemoglobin 7.4 mg/dL; platelets 190 000/mcl; creatinine 8.57 mg/dL; ureic nitrogen 61 mg/dL; calcium 8.4 mg/dL; phosphorus 5.6 mg/dL; sodium 138 mmol/L; potassium 5.72 mmol/L; chlorine 91 mmol/L.

The CT scan (Fig. 1A–C). showed a lytic lesion on the fourth vertebral body of cervical spine (C4) and a displacement of underlying vertebrae and the posterior elements compromising the cervical canal and displacing the spine. In the magnetic resonance imaging (MRI) we could observe bone erosion of C4 and subluxation of underlying vertebrae with hyperintense images in spinal cord. (Fig. 1D–F).

It was managed with corpectomy of C4, decompression of cervical canal and the insertion of fixation system and four screws (Fig. 2). After surgery the patient only developed transitory radicular type pain in C4,C5 territory of the right arm without another symptom.

Microscopic examination showed giant multinucleated cells with bone fragments and intertrabecular fibrosis and cartilage. Giant multinucleated osteoclast type cells mixed with fusiform cells and stroma hemosiderin deposits (Pearls). Ki-67 was positive in less than 1% of cells. (Fig. 3)

3. Discussion

The BT also known as osteoclastoma [3] is one of the multiple musculoskeletal complications of hyperparathyroidism secondary to ESRF and specially in patients who are in hemodyalisis. The most frequent localization is in the mandible, the ribs and finally in the large bones. The BT is due to a disorder in the bone resorption and a disorder in the metabolism of PTH and D-vitamin [2]. Cervical BT is extremely rare, with few reported cases globally, the first report was in 1993 [7] and there are only 12 cases reported including this to the date. The importance of the prompt diagnosis of the BT is to establish a multidisciplinary management to prevent progression, neurologic complications and sequelae (radiculopathy, myelopathy) despite its slow progression and a certainly benign behavior. The initial suspicion of this disease must be since the first clinician contact of the patient and with the past medical history of ESRF plus recent neurologic manifestations. The aim of neurosurgical management of these patients is to promote spinal stability and release spinal cord and nerve roots to eliminate risk of neurological deficits [8]. The mainstay in the treatment or prevention of occurrence of a BT is the elimination of the underlying metabolic disorder with

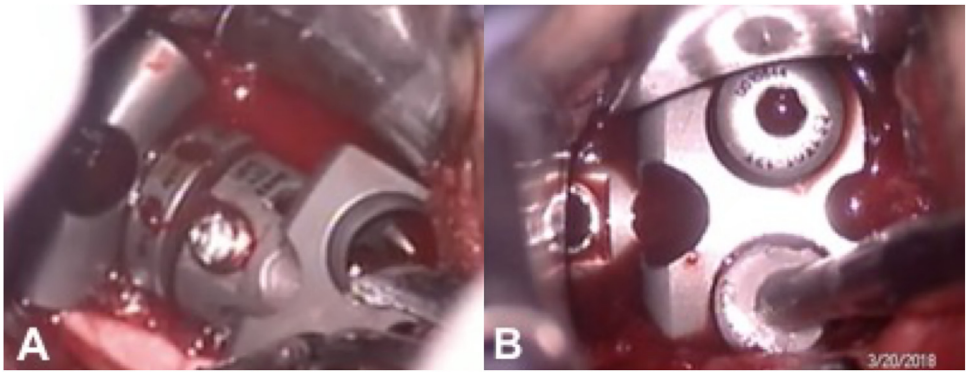

Fig. 2. Transoperative images showing the titanium fixation system at site of C4 corpectomy.

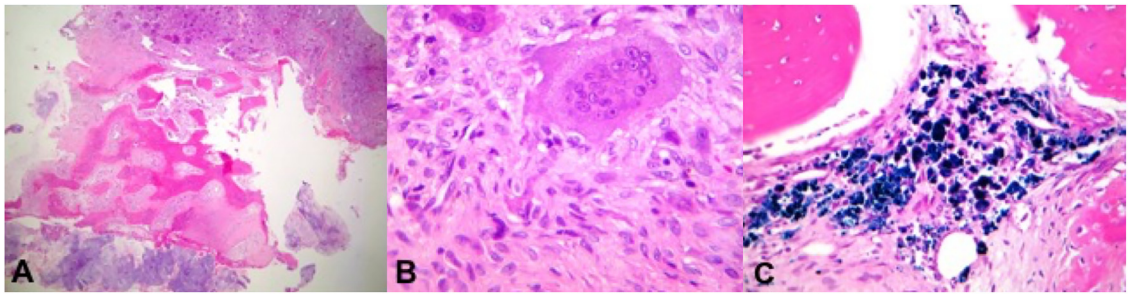

Fig. 3. Optic microscopy of fragments of C4 brown tumor. Hematoxylin and eosin. (A) Multinucleated giant cells with intertrabecular fibrosis and cartilage. (B) Giant multinucleated osteoclast type cell mixed with fusiform cells and fibrocollagenous tissue. (C) Pearls. Hemosiderin deposits in the lesion stroma.

parathyroidectomy [8]. We report the case number 12 of cervical BT in the literature. The knowledge about this rare disease is essential to an adequate diagnostic approach and treatment.

Conflict of interest

We disclose about any financial and personal relationships with other people or organisations that could inappropriately influence (bias) their work.

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Ethical approval

We do not require ethical approval to write a case report paper.

Consent

Written informed consent was obtained from the patient for publication of this case report and accompanying images.

Author contribution

1. Mauricio Daniel Sánchez-Calderón. Responsibilities: the conception and design, data acquisition, analysis of data, drafting of the manuscript, critical revision.
2. Diego Ochoa-Cacique. Responsibilities: data acquisition, analysis of data, critical revision.
3. Oscar Medina Carrillo. Responsibilities: data acquisition, analysis of data, critical revision.
4. Ulises García González. Neurosurgeon. Responsibilities: the conception and design, critical revision.
5. Rosa María Vicuña González. Responsibilities: data acquisition, analysis of data, critical revision.
6. Carlos Cesar Bravo Reyna. Responsibilities: data acquisition, analysis of data, critical revision.
7. José Raúl Guerra-Mora. Responsibilities: the conception and design, (data acquisition, (analysis of data, drafting of the manuscript, critical revision.

Registration of research studies

Case reports not need to be registered.
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References

[1] B. Solmaz, N. Tatarli, F. Gunver, T. Emre, A thoracic vertebral brown tumor presenting with paraparesis in a patient with end-stage renal disease, Br. J. Neurosurg. 31 (6) (2017) 635–637.
[2] M.D. Alfawareh, M.M. Halawani, W.I. Attia, K.N. Almusrea, Brown tumor of the cervical spines: a case report with literature review, Asian Spine J. 9 (1) (2015) 110–120.
[3] I. Fineman, J.P. Johnson, P.L. Di-Patre, H. Sandhu, Chronic renal failure causing brown tumors and myelopathy. Case report and review of pathophysiology and treatment, J. Neurosurg. 90 (2 Suppl) (1999) 242–246.
[4] H. Resic, F. Masnic, N. Kukavica, G. Spasovski, Unusual clinical presentation of brown tumor in hemodialysis patients: two case reports, Int. Urol. Nephrol. 43 (2) (2011) 575–580.
[5] S.M. Toescu, M. Ibrahim, D.G. O'Donovan, G. Balasubramaniam, K.M. David, Complex spinal fixation of a cervical vertebra Brown tumour: report of an unusual case, Br. J. Neurosurg. (2017) 1–3.
[6] R.A. Agha, A.J. Fowler, A. Saeta, I. Barai, S. Rajmohan, D.P. Orgill, et al., The SCARE statement: consensus-based surgical case report guidelines, Int. J. Surg. 34 (2016) 180–186.
[7] I.W. Barlow, I.A. Archer, Brown tumor of the cervical spine, Spine (Phila Pa 1976) 18 (7) (1993) 936–937.
[8] F. Aydemir, O. Kardes, M. Cekinmez, K. Tufan, N.E. Kocer, Cervical burst fracture caused by brown tumor, Neurol. India 63 (1) (2015) 110–112.

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