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A. Khelifa,
L. Berchiche,
W. Bennabi,
M. Al-Zekri,
A. Morsli



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Neurosurgical Department of BEO University Hospital, Algiers, ALGERIA

ABSTRACT

Tuberculosis is an infection caused by *Mycobacterium tuberculosis*; mainly affects the lungs; spinal tuberculosis presents 6 % of the extrapulmonary locations; Upper cervical spine tuberculosis is a rare condition and counts only 0.3 to 1 % of all spinal tuberculosis; that makes it a rare condition studied by few case reports. We report a case of upper cervical spine tuberculosis of the atlantoaxial facet joint.

INTRODUCTION

Upper cervical spine tuberculosis is a rare pathology (1,2), although medical treatment is uniformly indicated, surgical management is still debated whether to operate or not patients with poor clinical presentation.

CASE PRESENTATION

The patient is a 19 years old young man without past medical history who was presenting during 3 months a neck pain with a limitation of the neck movement, there was no neurologic deficit at the admission, the cervical spine CT showed a bone lytic lesion interesting the left hemi body of axis, its pedicle and the left atlantoaxial joint; the lesion was hypo intense T1 WI hyper intense T2 on spinal MRI (Figure 1); those images were not specific although an infectious origin was suspected, so first the patient was operated by an anterior approach where we performed total removal of the lesion. Histological examination was in favor of caseo-follicular tuberculosis; immediately anti tuberculosis chemotherapy was started under the protocol 5 RHZE/4 RH (5 months of *Rifampicin*, *Isoniazid*, *Pyrazinamide*, *Ethambutol* and 4 months of *Rifampicin* and *Isoniazid*). In a second time, the patient was operated and via a posterior approach we performed an occipito- C3-C4 fixation. In post-operative there was a pain relief and images showed a progressive reossification of the lytic lesion (Figure 2).

DISCUSSION

Upper cervical spine tuberculosis is a rare condition and counts only 0.3 to 1 % of all spinal tuberculosis (1,2); it starts frequently unilaterally by involving the cancellous part of the facet of atlas but less frequently

Keywords
tuberculosis,
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atlantoaxial dislocation



Corresponding author:
Adel Khelifa

Neurosurgical Department of
BEO University Hospital, Algiers,
Algeria

drkhelifaadel@gmail.com

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as in our case, the cancellous portion of the facet of axis and of the odontoid process (3). The upper level is considered to be the highest mobile region of the cervical spine (1,2) and protects a part of the spinal cord that the aggression could jeopardize major functions and even could be fatal. Although progressive, the infectious lesions including tuberculosis cause the same amount of instability as the traumatic lesions (4), and in the most times the lesion itself couldn't be as dangerous on the neurological structures as the spinal instability caused by the destructions of the main bony and ligamentous stability structures; despite that, the presence of a contralateral healthy joint could limit

the clinical presentation to neck pain and torticollis and delays the appearance of neurologic deficit (3). On the other side the ligamentous system appears to be unilaterally incompetent even more the obliquity of the inclination of the facet of atlas in the atlantoaxial joint probably resulted in its lateral subluxation over the facet of axis (3); for that the surgical indication is still debated. Other authors proposed classifications based on the presence or not of atlantoaxial dislocation (figure 3) (1), and they propose conservative management in case of minor deficit in absence of atlantoaxial dislocation or an anterior compression due to a large retropharyngeal abscess or granulation destroyed bone (1).

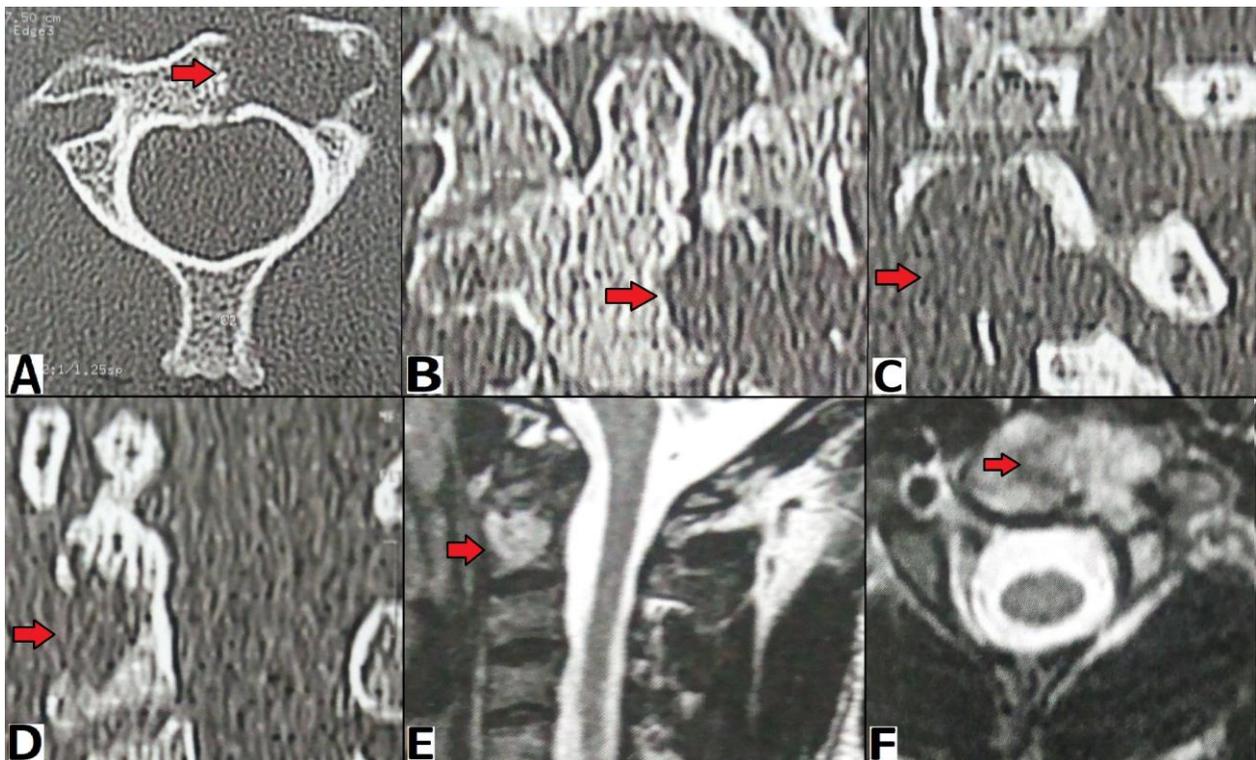


Figure 1. Preoperative images; A: axial CT, B: Coronal CT, C: left parasagittal CT passing through the left C2 pedicle, D: sagittal CT, E: sagittal T2 WI MRI, and F: axial T2 WI MRI; those images show the bone lytic lesion interesting the left hemibody of axis, its pedicle and the left atlanto axial joint; the lesion was hypo intense T1 WI hyper intense T2 on spinal MRI.

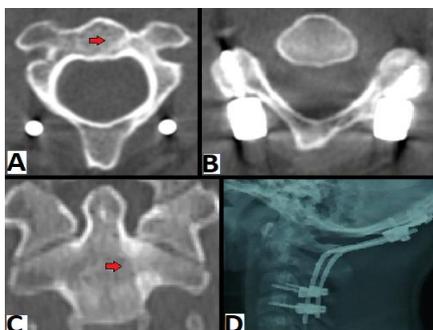


Figure 2. 6 years post operative images; A and C : spiare CT, axial and coronal slides passing through C2 showing a total reossification of the lesion (the arrow); B: axial CT showing the screws placement on C3; D: X-rays of the occipito cervical fixation

| Lifeso classification | |
|--------------------------------|--|
| Stage 1 | Minimal bony or ligamentous destruction; no AAD. |
| Stage 2 | Minimal bony or ligamentous destruction; reducible or irreducible AAD present. |
| Stage 3 | Significant bony or ligamentous destruction evident. |
| Bhagwati et al. grading system | |
| Grade I | Merely inflammatory involvement of bony structures of the CVJ with formation of granulation tissue and destruction of bone. |
| Grade II | Formation of a large retropharyngeal abscess with bony changes. |
| Grade III | Associated subluxation of the atlantoaxial joint, by bony destruction and/or laxity of apical and transverse ligaments. |
| Grade IV | Formation of epidural abscess and compression of the cervicomedullary junction and the upper cervical cord, with neurological deficits that may be mild or severe. |

Figure 3. Grading systems for the tuberculosis of the cranio vertebral junction. AAD: atlantoaxial dislocation, CVJ: craniovertebral junction (1).

CONCLUSION

Upper cervical spine is a rare location of tuberculosis; it is a serious affection that could lead to neurologic deficit or even fatal. In association with medical treatment, surgery is indicated especially if there is a risk of instability.

DECLARATIONS OF INTEREST

None.

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REFERENCES

1. Sanjay Behari, Namit Singhal, Suresh Nayak, and Vijendra K. Jain. Craniovertebral Junction Tuberculosis. The craniovertebral junction: diagnosis, pathology, surgical techniques / [edited by] Atul Goel, Francesco Cacciola. ISBN 978-3-13-149071-1. © 2011 Georg Thieme Verlag.
2. Singkat Dohar Apul Lumban Tobinga, Rendra Irawanb, Mohammad Triadi Wijayab,Aji Antorob, Eko Setiawanb, Rian Septian. Instability treatment due to upper cervical tuberculous spondylitis. International Journal of Surgery Case Reports 61 (2019) 267–270. <https://doi.org/10.1016/j.ijscr.2019.07.044>.
3. Atul Goel & Abhidha Shah. Lateral atlantoaxial facet dislocation in craniovertebral region tuberculosis: report of a case and analysis of an alternative treatment. Acta Neurochir (2010) 152:709–712. DOI 10.1007/s00701-009-0467-2.
4. R. ROY-CAMILLE. SPINAL INSTABILITY. Rachis, 1994, vol.6, nO 2 pp 107-112.