

Tuberculosis of the Clivus

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Abstract

The rarity of the tubercular involvement of the clivus makes the preoperative diagnosis difficult. We report a case of a 40-year-old man who presented with right-sided trigeminal neuralgia without any other neurological symptoms or deficits. Postcontrast images showed a dural-based lesion in the region of the clivus which was isointense on T1 images and hypointense on T2 images and the lesion was enhancing after contrast administration suggestive of a tumor. The patient underwent surgical excision of the lesion and the histopathological examination was suggestive of tuberculosis. The patient completed the course of antitubercular therapy and recovered well. Tuberculosis of the clivus region runs an indolent course and following appropriate treatment these patient do well.

Keywords

- ▶ tuberculous osteitis
- ▶ tuberculosis
- ▶ clivus
- ▶ skull base

Introduction

Tuberculosis of the skull base particularly involving the clivus is uncommon with only few case reports in the literature (–**Table 1**).^{1–7} The rarity of the tubercular involvement of the clivus makes the preoperative diagnosis difficult. We report a case of clival tuberculosis that was treated successfully.

Case Report

A 40-year-old man presented with right-sided trigeminal neuralgia for 6 months' duration. The patient was taking medication from a local physician without relief. His general and systemic examination was normal. He was conscious, alert, and oriented. His cranial nerves were normal and there were no focal neurological deficits. In view of persistent pain in the region of trigeminal distribution which was not responding to medication, he was

investigated with magnetic resonance imaging (MRI) of the brain. MRI of the brain, T1-weighted, T2-weighted, and postcontrast images showed a dural-based lesion in the region of the clivus which was isointense on T1 images and hypointense on T2 images (–**Figs. 1** and **2**). The lesion was enhancing after contrast administration (–**Figs. 1** and **2**). A diagnosis of clival tumor was suspected. The patient underwent right retrosigmoid craniotomy and near-total resection of the lesion was achieved; only some part of the lesion which was densely adherent to the basilar artery was left behind. Intraoperatively, the lesion was firm in consistency was having blood supply from the petrous dura and was moderately vascular, it had pushed the trigeminal nerve anterosuperiorly. Post excision all the neurovascular complexes were clearly demonstrated and the fifth nerve became lax. Histopathological examination showed inflammatory granulation tissue comprising numerous scattered and partially confluent epithelioid

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Table 1 Summary of reported cases of clival tuberculosis in English literature

| Author | Year | Age | Gender | Clinical features | Management | Outcome |
|---------------------------|------|-----|--------|---|---|---------------------|
| Selvapandian ³ | 1993 | 53 | Male | Vomiting Headache Multiple cranial nerve dysfunction | Biopsy and limited excision Followed by ATT | Complete recovery |
| Indira Devi ⁵ | 2003 | 28 | Female | Diffuse neck pain Headache Multiple cranial nerves involvement Lower limb weakness | Transoral transpharyngeal biopsy Followed by ATT | Incomplete recovery |
| Shenoy ⁴ | 2004 | 24 | Female | Progressive diplopia Bilateral lateral rectus palsy | Trans-ethmoidal decompression ATT for 18 months | Complete recovery |
| Mancusi ¹ | 2005 | 28 | Female | Headache Diplopia Right VIth cranial nerve palsy | Endoscopic trans nasal biopsy Followed by ATT | Complete recovery |
| Richardus ² | 2011 | 35 | Male | Neck pain Sore throat Difficulty in swallowing Torticollis Multiple cranial palsies | Nasoendoscopic biopsy Followed by ATT | Complete recovery |

Abbreviation: ATT, antituberculous treatment.

histolytic granulomas with few showing central minimal caseation necrosis. The granulomas are flanked with Langhans type of giant cells. The interstitial space shows residual dense lymphoplasmacytic inflammatory infiltrate (► **Fig. 3**). Postoperatively, the patient was treated with antituberculous treatment (ATT). The patient progressively improved and his abducens nerve function recovered completely. ATT was continued for 18 months. Repeat cranial computed tomography (CT) scan showed complete disappearance of the lesion.

Discussion

Tuberculosis usually involves large and weight-bearing bones (e.g., vertebrae and large joints) and the involvement of the

skull bones is rare; the skull bones are non-weight bearing bones with limited articulations and mobility.² Like other disease conditions of the skull base, depending on the extent of the lesion, the patients with skull base tuberculosis presents with headache and cranial nerve dysfunctions.^{1,2,5,8} Ring enhancement which is a characteristic of the cerebral parenchymal tuberculoma was not seen in skull base tuberculosis, rather the lesions show a diffuse enhancement mimicking the appearance of a malignant tumor, further making the diagnosis of tubercular osteitis difficult.⁹

CT scan of the brain with bone window can help to show the extent of lesion, details of bone destruction, and any involvement of adjacent structures.^{10,11} However, the contrast-enhanced MRI images better delineate the lesion in greater detail which can give a clue to the diagnosis and further help in

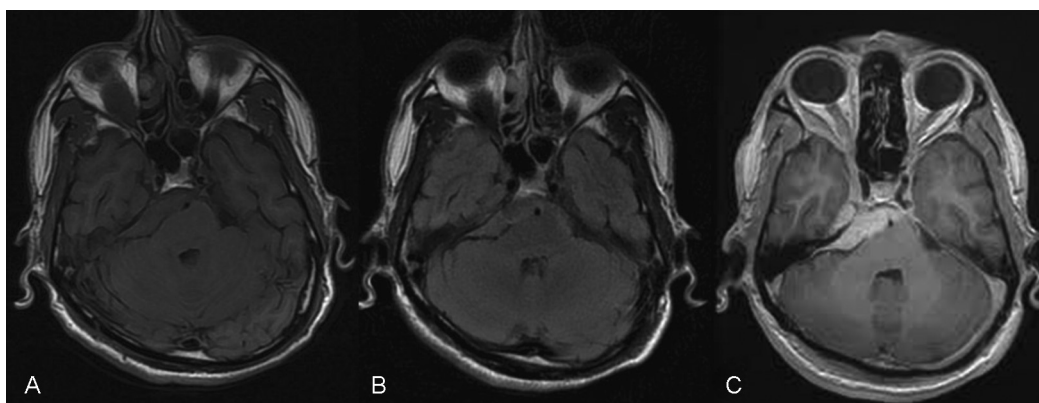


Fig. 1 (A) T1-weighted axial image shows isointense dural-based lesion displacing the pons to left side. (B) T1-weighted axial image, here the lesion is seen to be encasing the basilar artery, and minimally extending to opposite side. Trigeminal nerve on the left side is stretched by the lesion. (C) T1-weighted contrast-enhanced image shows densely enhancing dural-based lesion extending into left sided Meckle cave and also minimally into the cavernous sinus.

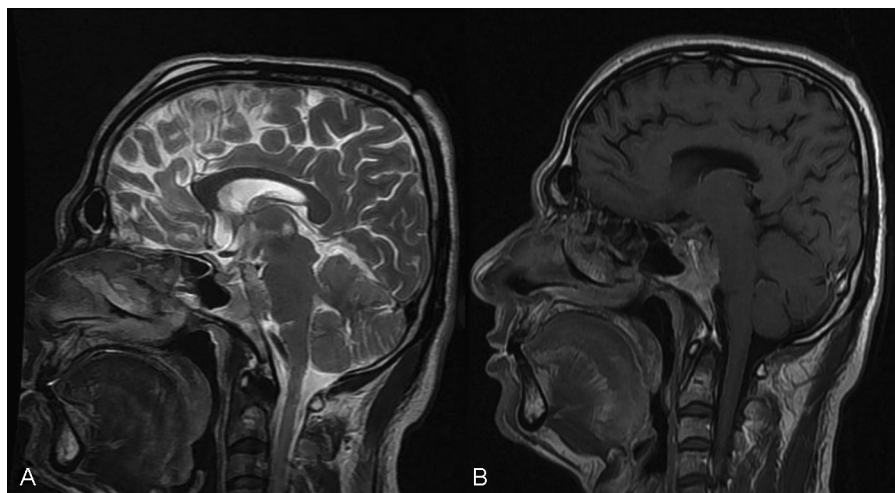


Fig. 2 (A) T2-weighted sagittal image showing isohyperintense lesion just anterior to the pons causing mass effect on the pons. The Basilar artery continuity is disrupted due to shift caused by the lesion. (B) T1-weighted sagittal contrast-enhanced image, showing densely enhancing lesion, just posterior to clivus, there are no marrow changes seen in the clivus.

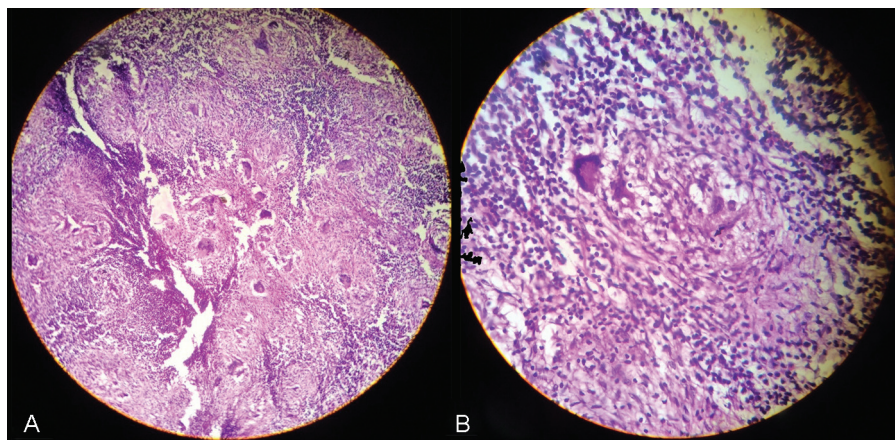


Fig. 3 (A, B) The images are of 10 \times and 40 \times magnification and the stain is hematoxylin and eosin. The brain intraparenchymal lesion shows minimally necrotizing granulomatous inflammation comprising partially confluent epithelioid histiocytic granulomas with interspersed Langhans type of giant cells and mixed inflammatory cells with overall dominance of mononuclear cells.

planning the surgical approach.^{3,12} The differential diagnosis for clival region involves primary and secondary benign and malignant tumors of this region (e.g., chordoma), fungal lesions and sarcoidosis, and primary and metastatic neoplastic disease. The diagnosis of tuberculosis requires high index of preoperative suspicion and histopathological confirmation.^{2,4,5,13,14} The role of surgery for the lesions of the clival region is in confirming the diagnosis which is followed by appropriate therapy.^{4,5} In the present case, we did not suspected the diagnosis of tuberculosis before the surgery because of the rarity of this entity and absence of other signs and symptoms of tuberculosis. However, once the diagnosis of tuberculosis is made further treatment with antitubercular drugs is recommended.^{5,12,15} Tuberculosis of the clivus region runs an indolent course and following appropriate treatment these patient do well, however, a high index of suspicion is required to make the diagnosis of tuberculosis of the clivus region.¹

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