Case Report

Sixth nerve palsy: a rare presentation of parapharyngeal abscess caused by *Mycobacterium abscessus*

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**Abstract**

We report a case of a 31-year-old female who came with complaints of sudden onset binocular horizontal diplopia, with the inability to move right eye laterally since 1 week. She had no history of (h/o) trauma or any other systemic features, but she had a past h/o pulmonary tuberculosis (TB) 20 years ago, for which she had received treatment for 1 year. A thorough clinical examination revealed the clinical features of right lateral rectus palsy. Magnetic resonance imaging findings were suggestive of abscess in right prevertebral soft tissue and pachymeningeal involvement along the clivus. She underwent intraoral aspiration of abscess, which was culture positive for *Mycobacterium abscessus*. The patient was treated with a combination of specific antitubercular antibiotics and short course of oral steroids.

**Introduction**

Sixth nerve palsy is the most common ocular motor nerve palsy. Most common causes are viral illness in children and microvascular diseases in older adults, with good rate of recovery in these cases. It is comparatively uncommon in young adults and causes can be idiopathic, vasculopathy, tumors and multiple sclerosis. CNS space-occupying lesions are the most common etiology, followed by multiple sclerosis, in young adults. Whatever be the cause, the recovery of sixth nerve palsy in young adults is poor. Abducens nerve palsy secondary to clivus involvement is very rare and clival metastasis in various cancers has been reported as a cause in the literature, but infective pathology has not been reported yet. We report a case of abducens nerve palsy secondary to parapharyngeal abscess involving the clivus.

**Case report**

A 31-year-old female presented to the strabismus clinic of tertiary eye care center in eastern India with complaints of sudden onset binocular constant horizontal diplopia associated with the inability to move right eye outward. She had no history of (h/o) trauma, headache or any other systemic illness. She had past history of pulmonary tuberculosis (TB) 20 years back for which she had received anti-tubercular treatment for 1 year.

On ophthalmological examination, the best-corrected visual acuity in each eye was 20/20 for distance and N6 for near. Bilaterally, pupils were round, regular and equally reacting to light. Anterior segment examination was normal in both eyes. Intraocular pressure by Goldman applanation tonometry was 14 mmHg in both eyes. Squint examination revealed right esotropia with 25 prism dioptre primary deviation and 50 prism dioptre secondary deviation in primary gaze. Extra-ocular movement examination revealed right eye limitation of abduction (−3), rest extraocular movements were normal (Figure 1). Forced duction test did not reveal any restriction. Dilated fundus examination in both eyes revealed no abnormality. Examination of other cranial nerves was essentially normal. General physical examination did not reveal any other abnormality.

Provisional diagnosis of right-sided abducens nerve palsy was made and in view of young age and no other systemic illness, magnetic resonance imaging (MRI) of brain with orbit with contrast enhancement was advised.

MRI revealed narrow edema with diffuse enhancement in basiocciput as well as anterior arch and lateral masses of atlas vertebra. A hyperintense lesion (of size 1.3 cm × 1.9 cm × 4.1 cm) with rim enhancement was noted in the right prevertebral soft tissue, in STIR (short tau inversion recovery) and T2 images, which was bulging into nasopharyngeal airway. Thick pachymeningeal involvement with enhancement was seen along the clivus. Based on MRI images, a parapharyngeal abscess was suspected and the patient was referred to ENT surgeon and neurology department for abscess aspiration and culture. Patient underwent right parapharyngeal abscess aspiration. Gram stain of the abscess material revealed pus cells with no organism, fungal culture after 14 days of incubation revealed no growth. Automated Fluorescent rapid Acid-Fast Bacillus culture testing revealed the growth of *M. abscessus*, which is a rapid grower Mycobacterium other than tuberculosis (MOTT). Also *Mycobacterium tuberculosis* interferon gamma release assay came out to be positive. Patient was started on antitubercular treatment along with short course of oral steroids by the ENT surgeon.

**Discussion**

The parapharyngeal space lies in the posterior pharyngeal wall, between the middle and deep layers of the deep cervical fascia, extending from...
the base of the skull to the mediastinum. Parapharyngeal abscess in adults is mostly pyogenic and usually secondary to pharyngeal or esophageal perforation or sepsis in the throat or sinuses. However, chronic retropharyngeal abscesses are rare in immune-competent adults. It occurs mostly in immune-compromised patients and retropharyngeal abscesses caused by MOTT in immune-competent patient are very rare. *Mycobacterium abscessus* complex comprises a group of rapidly growing, multidrug-resistant, non-tuberculous mycobacteria that are responsible for a wide spectrum of skin and soft tissue diseases, central nervous system infections, bacteremia and other ocular infections. Sixth nerve has a long course in the brain, so it is vulnerable to trauma and metastasis. George et al. studied the causes and prognosis of nontraumatic sixth nerve palsies in young adults, and reported that CNS mass lesions is the most common cause followed by multiple sclerosis and only 13% of the patients had complete resolution of the palsy. They did not report any case of infective pathology. Bhaswati et al. reported a case of bilateral cavernous sinus thrombosis with left eye third cranial nerve palsy-associated retropharyngeal abscess, culture of which grew Staphylococcus aureus sensitive to vancomycin. Patient improved dramatically with vancomycin and short course of steroids. Complete recovery in ocular movements was recorded after 3 months in that case.

We reported a case of young immune-competent 31-year-old female with no h/o other symptoms in relation with parapharyngeal abscess, presented with sixth nerve palsy as first sign. Abscess aspiration revealed a very rare organism from Mycobacteria other than tuberculosis group of organisms, *M. abscessus*. Very few drugs are available for this subgroup of mycobacteria. Our case was treated with anti-tuberculosis medicines and also short course of oral steroids. After a follow-up of 2 months, patient did not improve with her symptoms of diplopia, and was given the option of occluder or Fresnel prism. Our case was unique, because the patient was a young immune-competent female, with no h/o other symptoms in relation with parapharyngeal abscess, and presented with sixth nerve palsy as the first and only sign. Abscess aspiration revealed a very rare organism from Mycobacteria other than tuberculosis group of organisms, *M. abscessus*.

**Figure 1.** Clinical photographs of patient showing right esotropia in primary position with abduction limitation of right eye.

**Figure 2.** MRI STIR- and T2-weighted sequence hyperintense lesion in right prevertebral soft tissue bulging into nasopharyngeal airway with rim enhancement after contrast along with thick pachymeningeal enhancement along clivus and basiocciput.
abscessus, for which only very few drugs are available. Also this case emphasizes the significance of neuro-imaging in young adults with abducens cranial nerve palsy.

References


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