

CASE REPORT

Gradenigo's Syndrome: A Case Report

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Abstract

The syndrome of constant otorrhea, headache, diplopia and rarely ipsilateral Horner's syndrome, which is attributed to inflammation of the petrous apex, is known as Gradenigo's syndrome. We report a case of Gradenigo's syndrome, which was 50 yrs old man who presented with 6 months history of left-sided headache, facial pain, diplopia and dropping of left eyelid. Examination demonstrated a left eye lateral gaze palsy, diplopia, and dropping of left eyelid, otoscopy revealed a congested left tympanic membrane. X-ray mastoid Townes view shows mastoid air cell are reduced on left side. CT scan study confirmed mastoid air cell are reduced and scleroses on left side and MRI shows T1 hypo & T2 & FLAIR hyperintense areas are on left mastoid region which consistent with Gradenigo's Syndrome.

Introduction:

The syndrome, first described by Gradenigo in 1907, consists of the clinical triad of acute otitis media, unilateral pain in regions innervated by the first and second branch of the trigeminal nerve, and ipsilateral abducens nerve paralysis¹. These cranial nerve dysfunctions are caused by osteitis of the petrous apex (petrous apicitis) and are very rare complications of otitis media, especially since the widespread use of antibiotics²⁻³. The trigeminal nerve ganglion and the abducens nerve are separated from the petrous apex only by dura mater and are therefore vulnerable to any inflammatory process occurring in this region⁴⁻⁶.

Case Report:

A 50 years old man presented with left sided headache for 6 month. It was accompanied with left sided facial pain, diplopia and partial dropping of left eyelid (Fig : 1)

On examination: This afebrile patient was noted to have left sided sixth nerve palsy (Fig-2) and congested left tympanic membrane. The patient has left partial ptosis (Fig-3). The leukocyte count was 9,500/l, differential count was Neutrophil 66%, Lymphocytes 24% and Monocytes 6% while ESR was 15 mm/1st hours.

X-ray mastoid Townes view shows mastoid air cell are reduced on left side (Fig: 4). CT scan study reveals mastoid air cell are reduced and scleroses on left mastoid antrum and petrous bone (Fig: 4) and MRI shows T1 hypo & T2 & FLAIR hyperintense areas are on left mastoid region (Fig: 5, 6). The clinical, laboratory and radiological findings helped to establish the diagnosis of Gradenigo's syndrome. The patient was managed by intervenes cefotaxime.

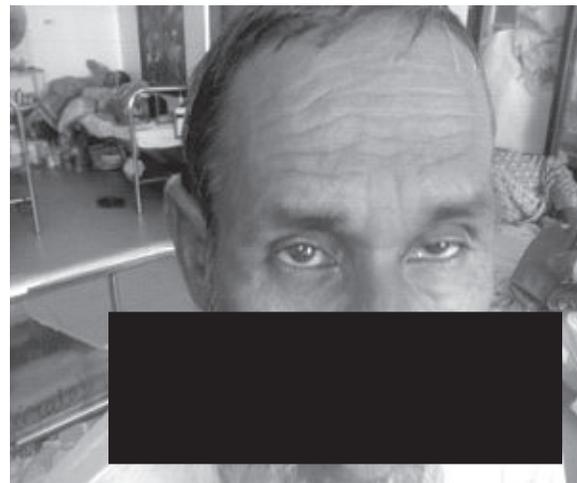


Fig.-1 : File photograph of the patient with left partial ptosis.

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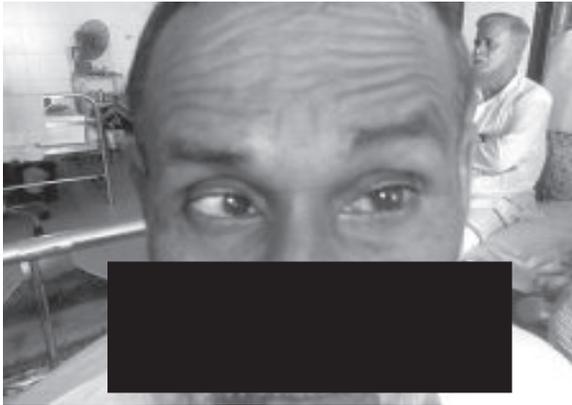


Fig.-2 : *File photograph of the patient with left lateral rectus palsy.*



Fig.-3 : *X-ray mastoid Townes view shows mastoid air cell reduced on left side.*

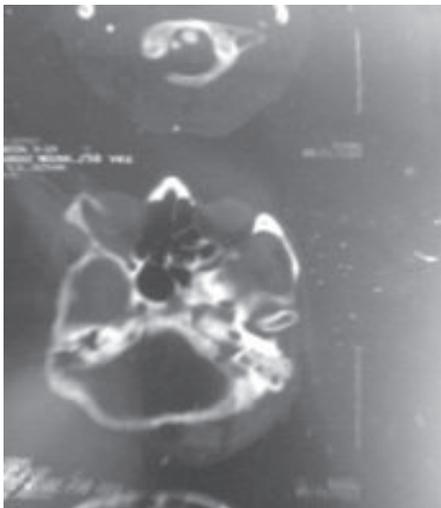


Fig.-4 : *CT showing obliterated left mastoid air cell and sclerosis.*



Fig.-5 : *T2 weighted MRI Image with hyperintense area are noted in the left middle ear and mastoid region.*

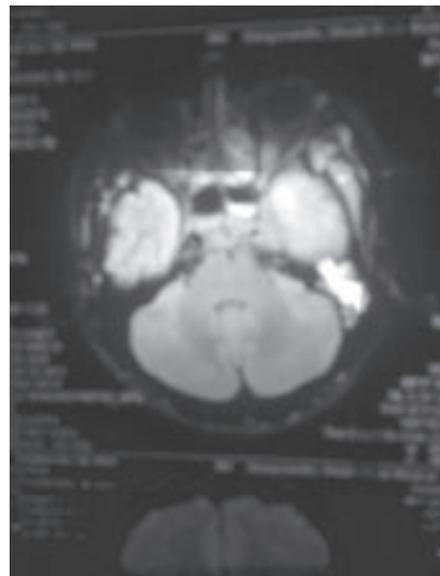


Fig.-6 : *FLAIR MRI Image with hyperintense area are noted in the left middle ear and mastoid region*

Discussion:

Gradenigo's syndrome, characterised by persistent otorrhoea, pain in the region innervated by the first and second divisions of the trigeminal nerve and ipsilateral abducens nerve palsy, is one of the complications of middle ear infection. CT and MRI

scans provide evidence of this complication. However, there are only a few reports²⁻⁶ in the literature describing these findings. Gradenigo's syndrome consists of abducens nerve paralysis, retro-orbital pain and middle ear infection. Although classically attributed to petrositis, the syndrome has also been described in association with extradural abscess, pachymeningitis overlying the petrous apex and lateral sinus phlebitis⁷. It is thought that the manifestations of the syndrome result from the extension of the inflammatory process that begins in the middle ear to the top of the petrous part of the temporal bone⁸. The raised intracranial pressure itself is, probably due to, a combination of lateral sinus thrombosis and superior sagittal sinus obstruction. The former impedes the cranial venous outflow while the latter impedes the CSF absorption by pacchionian bodies⁹. The main isolated agents are *Streptococcus pneumoniae* and *Pseudomonas aeruginosa*. There is also *Proteus mirabilis* and *Staphylococcus aureus*, as well as mycobacterias.

The CT scans demonstrate obliteration of mastoid air cells and sclerosis of the bones and one can assess the degree of periosteal reaction and status of the middle ear structures based on CT scan findings². The MRI scans are best for assessing the soft tissue lesions. These lesions appear hypointense on T1-weighted images and hyperintense on T2 weighted images.

The main differential diagnosis includes cholesteatoma and mastoiditis. Other diseases include chondroma, clival chordoma, epidural abscess, cholesterol cyst and rarely metastases. When consider of 6th cranial nerve palsy, remember the possibility of a false localising sign of raised intracranial pressure.

Management consists of administration of appropriate antimicrobial agents and surgical intervention. However, improvement without the administration of anti-microbial agents has also been described.

Complications like brain abscess have been described⁵. Homer et al⁷. reported three cases with middle ear infection and sixth nerve palsy without petrositis and raised intracranial pressure.

As otitic hydrocephalus, another complication of the middle ear infection is also associated with abducens nerve palsy, neuroimaging should be

employed to differentiate between these two conditions. Surgical treatment is restricted to refractory cases, with intense mastoiditis, intracranial complications and osteomyelitis¹⁰.

Conclusion:

Gradenigo syndrome is a very rare but serious complication of acute otitis media and should be suspected in the presence of unilateral headache and abducens nerve palsy. The management varies from conservative therapy to radical surgery depending on the clinical presentation.

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