Petrous apicitis

Petrous apicitis, also known as apical petrositis, is infection with involvement of bone at the very apex of the petrous temporal bone.

Epidemiology

Petrous apicitis is less common than it once was, on account of the widespread and early use of antibiotics for acute otomastoiditis.

Clinical presentation

Clinical presentation depends on whether petrous apicitis is isolated or (as is more common) is a complication of acute otomastoiditis. In the later, symptoms will be those of a middle ear infection, superimposed on which are symptoms for specific to petrous apicitis:

deep facial pain due to inflammation of the adjacent dura and trigeminal nerve in Meckel's cave abducens nerve palsy (see Gradenigo syndrome) due to involvement of Dorello's canal Gradenigo syndrome is the classical presentation of petrous apicitis, but is not present in all patients.

Extension of infection to involve the petrous apex should be suspected when all patients with signs and symptoms of acute otomastoiditis and deep ipsilateral pain.

Presentation may also be due to extension of inflammatory/infective changes beyond the petrous apex.

dural venous sinus thrombosis cavernous sinus thrombosis sigmoid sinus thrombosis jugular vein thrombosis intracranial extension frank meningitis: Proteus, Pseudomonas and Staphylococcus species are usually implicated epidural abscess subdural empyema cerebral abscess

Pathology

There is debate as to whether it represents osteomyelitis in non-pneumatised bone, or whether (and more generally accepted) a form of osteitis developing from infected and obstructed air cells in a pneumatised petrous apex (analagous to coalescent mastoiditis).

Approximately 30% of the population has a pneumatised petrous apex, but it is frequently asymmetric.

Radiographic features

СТ

CT is the modality of choice to evaluate bony changes in the temporal bone, which in the setting of petrous apicitis are erosive lysis with ill-defined irregular edges. Contrast enhanced scans may demonstrate peripheral enhancement as well as dural thickening and enhancement, although these are better appreciated on MRI.

MRI

MRI is more sensitive in detecting dural thickening and enhancement as well as leptomeningitis, cerebritis and cerebral abscess.

Findings are those of fluid signal with the petrous apex often with peripheral enhancement, which presumably represents a combination of residual mucosa, granulation tissue and adjacent dura/periosteum . Thus:

T1: fluid signal (low to intermediate)

- T2: fluid signal (hyperintense)
- T1 C+ (Gd): peripheral enhancement.

Thickening of the dura of Meckel's cave and the cavernous sinus should be sought, as well as for the findings of cavernous sinus thrombosis.

Treatment and prognosis

In many instances treatment with appropriate intravenous antibiotics suffices. In more severe cases surgical drainage may be required.

Differential diagnosis

cholesterol granuloma congenital cholesteatoma glomus jugulare mucocoele of the petrous apex: uncommon base of skull tumours metastasis chondrosarcoma chordoma

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