

Epidermoid tumor of the cerebellopontine angle

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Section: Neuroradiology

Imaging Technique: MR

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Case Type: Clinical Cases

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Patient: 51 years, male

Clinical History:

proгредиant left sided hearing loss.

Imaging Findings:

A 51 year-old man presented with a proгредиant, left sided hearing loss. MRI was performed to exclude a retrocochlear lesion.

Discussion:

Epidermoid cysts develop as an inclusion of ectodermal elements during the fifth to sixth week of embryogenesis. These cystic lesions occur most often in the subarachnoid space (90%), but can also be observed within the intradiploic space. Most intracranial epidermoids develop in the basilar CSF cisterns. Clinically epidermoids behave like benign, slow-growing tumors. The epidermoids present in many cases as polycystic lesions showing extensive growth in the subarachnoid spaces and secondary invagination of the brain. Epidermoid cysts can encase vessels and cranial nerves. The differential diagnosis includes cysts and cystic tumors. Most epidermoids are hypointense on T1-weighted images, with a signal intensity between CSF and brain. In a few cases epidermoid cysts show a high signal on T1-weighted images and appear hyperdense in computed tomography, due to hemorrhage, debris of cholesterol and saponification. Epidermoids with decreased signal intensity on T1-weighted images have reduced lipid content in spectroscopy. On T2-weighted images signal intensity is similar or greater than CSF. In some cases a lobulated rim with higher signal intensity than the hypointense central portion can be observed. This rim probably represents CSF trapped around the mass. The wall of the epidermoid does not enhance following contrast administration. Small calcifications, observed by computed tomography in 20% of the cases, usually are not detected by magnetic resonance imaging. FLAIR imaging has been utilized to differentiate epidermoids from arachnoid cysts as the signal of CSF will be suppressed but the epidermoid will remain bright. But flow phenomena of CSF can also lead to a signal increase. Recently, new techniques as steady state free precession and diffusion weighted imaging have been proposed. Diffusion-weighted MRI with high b-value allows to clearly differentiate epidermoids from arachnoid cysts. Due to the restricted diffusion, epidermoids present with high signal compared to brain and cerebrospinal fluid. In case of an arachnoid cyst signal intensity is equivalent to CSF. Also small epidermoid regrowth after surgical resection can be detected by diffusion-weighted MRI. Therefore invasive techniques such as cisternography can be avoided.

Differential Diagnosis List: epidermoid tumor

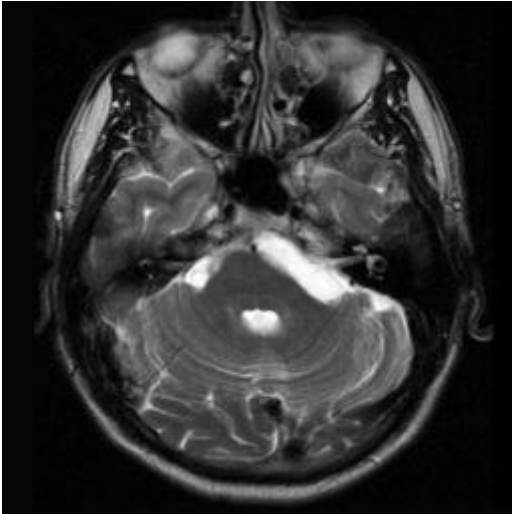
Final Diagnosis: epidermoid tumor

References:

Dechambre S, Duprez T, Lecouvet F, Raftopoulos C, Gosnard G (1999)
Diffusion-weighted MRI postoperative assessment of an epidermoid tumor in the cerebellopontine angle.
Neuroradiology 41: 829-831. (PMID: [10602856](#))
Hagen T, Kujat C, Donauer E, Piepgras U (1994)
Neuroradiological aspects of intracranial epidermoids.
Radiologe 34: 639-647. (PMID: [7846275](#))

Figure 1

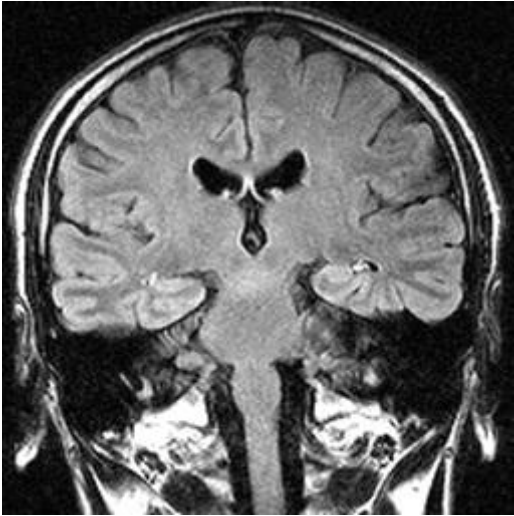
a



Description: Cystic mass in the left cerebellopontine angle with compression of the pons. **Origin:**

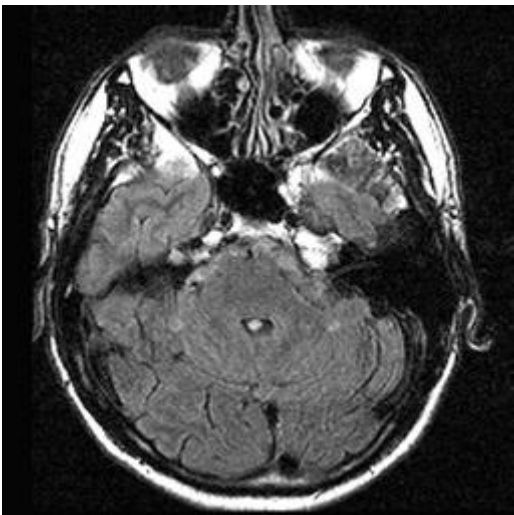
Figure 2

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Description: Flow artifacts in the cerebellopontine angle. The mass cannot be distinguished from cerebrospinal fluid. **Origin:**

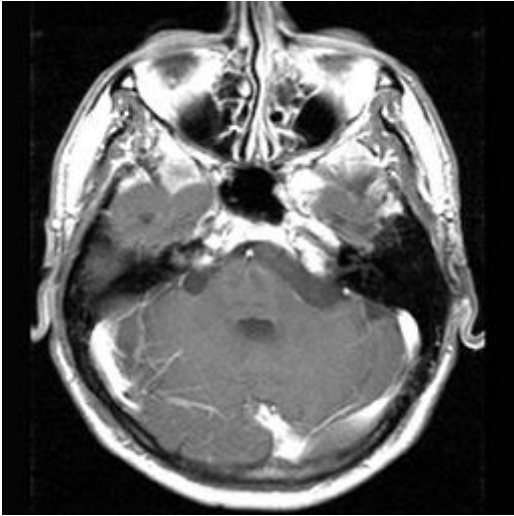
b



Description: **Origin:**

Figure 3

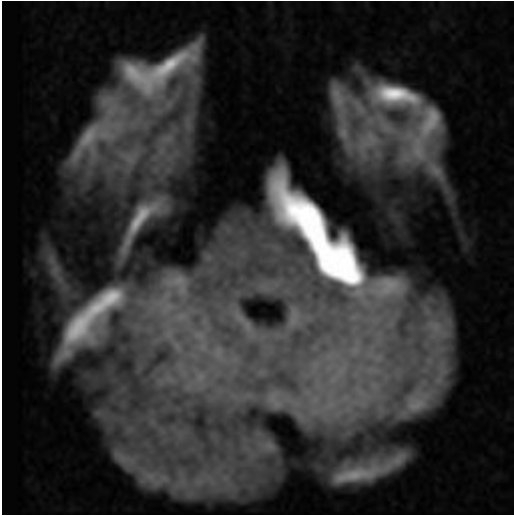
a



Description: The mass shows no enhancement. **Origin:**

Figure 4

a



Description: The mass presents with high signal due to restricted diffusion, compared to brain and cerebrospinal fluid. In case of an arachnoid cyst signal intensity would be equivalent to cerebrospinal fluid. **Origin:**