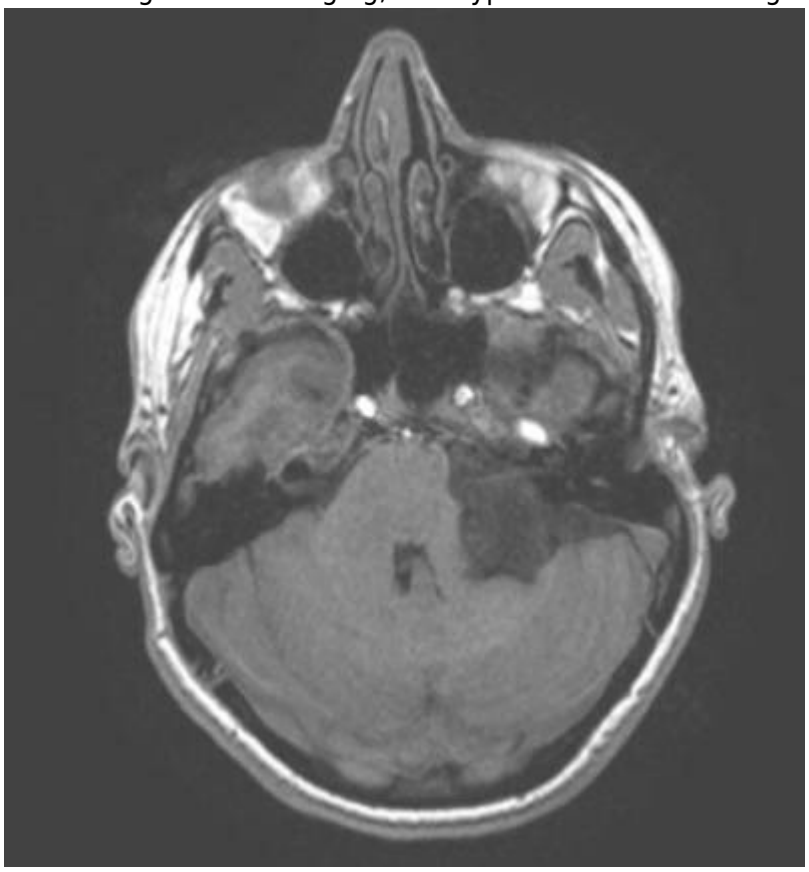
Intracranial epidermoid cyst MRI

Appearances on MRI are similar to those on CT, with epidermoids often being indistinguishable from arachnoid cysts or dilated CSF spaces on many sequences.

T1

Hypointense on T1-weighted MR imaging, and hyperintense on T2-weighted and diffusion-weighted imaging [1) 2)].



Cerebellopontine angle epidermoid cyst on T1-weighted MR imaging.

These findings could be attributed to the lipid components and cholesterol. MR signals depend on the relative composition of cholesterol and keratin of the cystic contents. Generally, cholesterol in an epidermoid is in a solid state and appears hypointense on T1-weighted images. However, it occasionally presents as hyperdense lesions on CT, making the diagnosis more difficult. Atypical intracranial epidermoid cysts show a hyperdense signal on CT and hyperintense signal on T1-weighted imaging as has been reported [3) 4) 5)].

The suggested causes of the hyper-intensity on T1-weighted images include high protein concentration, mild calcification, and paramagnetic effects [6) 7)].

According to Ahmadi et al., a protein level of 9.0 g or greater per 100 mL can increase the signal intensity of the cystic fluid on T1-weighted MR images [8)].

Nagashima et al. also examined the total protein concentration of cystic fluid (15 g/dl) and suggested that the highly proteinaceous contents of the cyst contributed to the hyper-density [9].

The hyper-density could be attributed to the calcification of the keratinized debris and saponification of debris to calcium and also can be attributable to traumatic or spontaneous intracystic microbleeding, abundance of polymorphonuclear leukocytes, and deposition of ferrocalcium complex or iron-containing pigment [10] [11] [12] [13].

Hemorrhage of epidermoid cyst can lead to atypical images in the form of variable signal intensity on MRI, according to the age of the bleed [14].

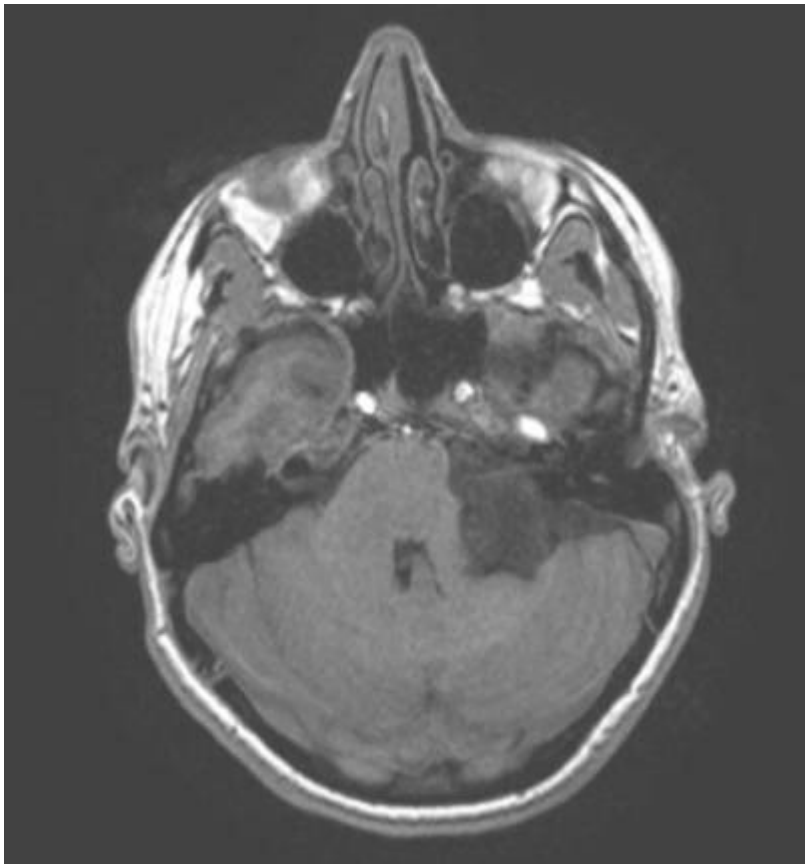
T1

Usually isointense to CSF

Higher MR signal compared to CSF around the periphery of the lesion is frequently seen

Rarely they can be of high signal and are known as white epidermoids

Rare intralesional haemorrhage can also result in intrinsic high signal



Cerebellopontine angle epidermoid cyst on T1-weighted MR imaging.

T1 C+ (Gd)

thin enhancement around the periphery may sometimes be seen in the rare cases of malignant degeneration, enhancement becomes more pronounced.

Diffusion weighted magnetic resonance imaging

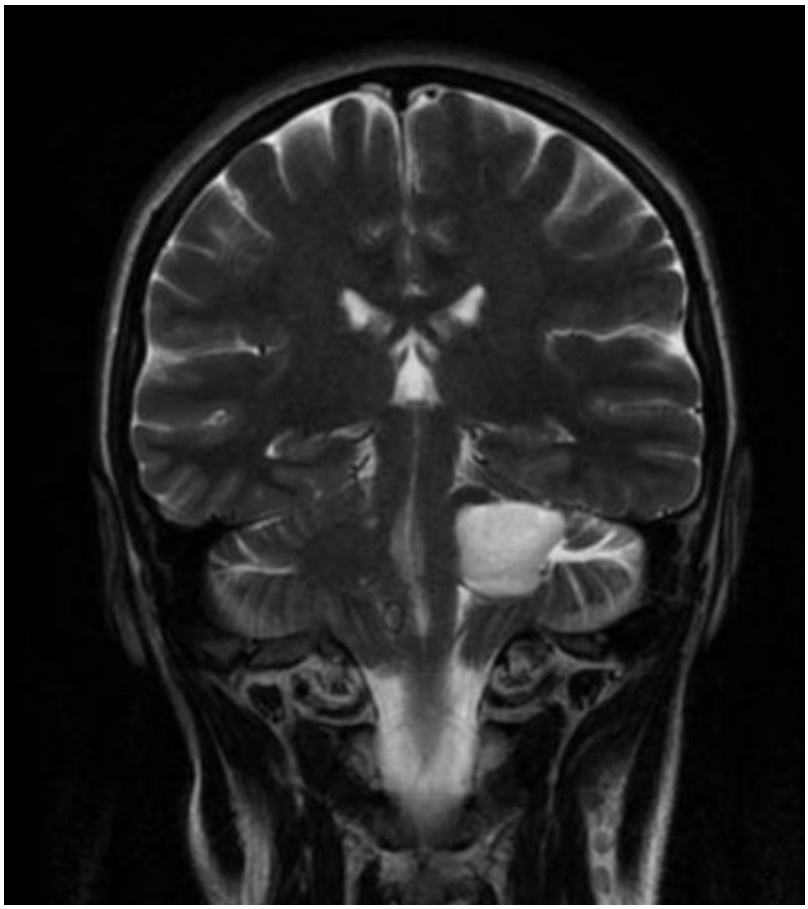
see Epidermoid cyst diffusion weighted magnetic resonance imaging.

T2

Usually isointense to CSF (65%)

Slightly hyperintense (35%)

rarely hypointense, usually in the setting of the so-called white epidermoid (the term refers to the T1 appearance)

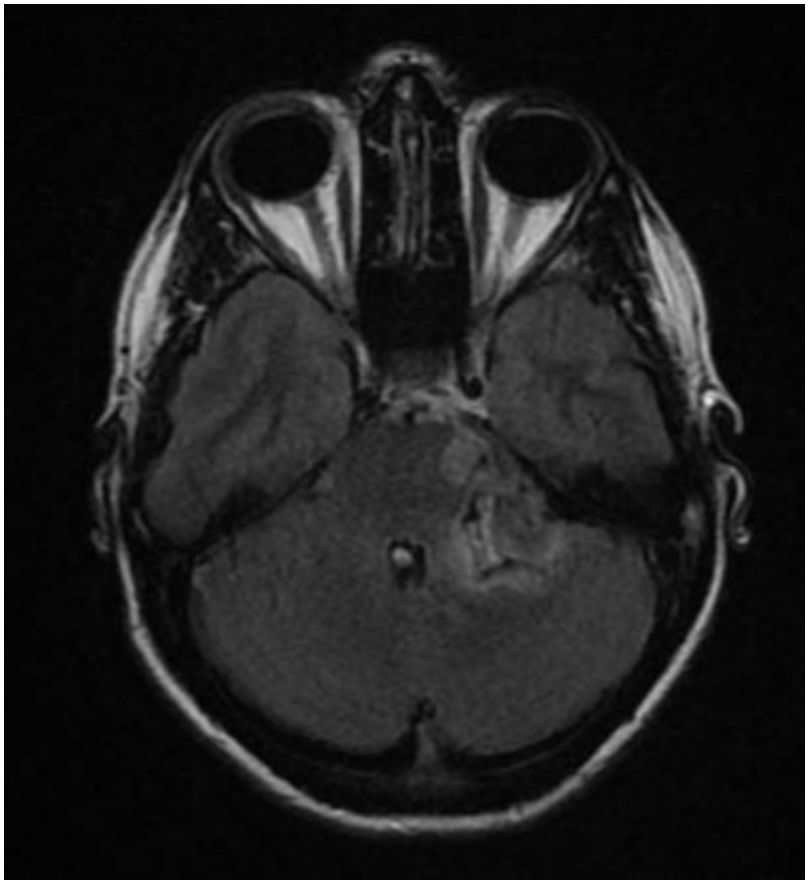


Cerebellopontine angle epidermoid cyst on T2-weighted MR imaging.

FLAIR

Often heterogeneous/dirty signal; higher than CSF

Beware of flow artefact from CSF pulsation which can mimic this appearance



Cerebellopontine angle epidermoid cyst on FLAIR MR imaging.

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