Pilocytic astrocytomas range in appearance:

Large cystic component with a brightly enhancing mural nodule: 67%

nonenhancing cyst wall: 21%

enhancing cyst wall: 46%

heterogeneous, mixed solid and multiple cysts and central necrosis: 16%

completely solid: 17%

Enhancement is almost invariably present (~95%). Up to 20% may demonstrate some calcification.

Haemorrhage is a rare complication.

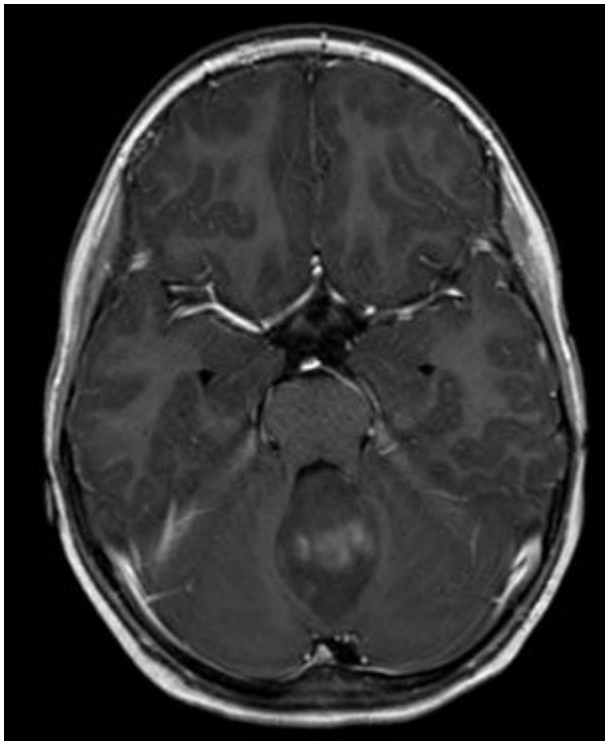
MRI

“Classic” MRI finding: posterior fossa cyst with an enhancing mural nodule. The cyst wall sometimes enhances, usually as a thin rim (biopsy negative for neoplasm, enhancement may be reactive [1]).

Signal characteristics include:

T1: iso to hypointense solid component compared to adjacent brain

T2: hyperintense solid component compared to adjacent brain



Apparent diffusion coefficient (ADC) values have been shown to assist in differentiating cerebellar pilocytic astrocytomas and medulloblastomas. Previous studies have applied only ADC measurements and calculated the mean/median values.

The 25th percentile for mean (MD) yields the best results for the presurgical differentiation between pediatric cerebellar pilocytic astrocytomas and medulloblastomas. The analysis of other DTI metrics

does not provide additional diagnostic value [2].

1)

Beni-Adani L, Gomori M, Spektor S, et al. Cyst wall enhancement in pilocytic astrocytoma: neoplastic or reactive phenomena. Pediatr Neurosurg. 2000; 32:234–239

2)

Wagner MW, Narayan AK, Bosemani T, Huisman TA, Poretti A. Histogram Analysis of Diffusion Tensor Imaging Parameters in Pediatric Cerebellar Tumors. J Neuroimaging. 2015 Sep 2. doi: 10.1111/jon.12292. [Epub ahead of print] PubMed PMID: 26331360.