Ependymal enhancement

Some overlap with periventricular enhancement. Ependymal enhancement often heralds a serious condition [1)].

Main DDx is tumor vs. infectious process.

1. ventriculitis or ependymitis: ependymal enhancement occurs in 64% of cases of pyogenic ventriculitis [2)].

a) infection may occur in the following settings

● following shunt surgery

● after intraventricular surgery

● with indwelling prosthetic devices (e.g. Ommaya reservoir)

● with use of intrathecal chemotherapy

● with meningitis

● with viral ependymitis

● in some cases of CMV encephalitis in immunocompromised patients

● granulomatous involvement: esp. in immunocompromised patients; e.g. tuberculosis, mycobacterium, syphilis

b) infections may be [3)].

● bacterial (pyogenic) ventriculitis

● tuberculous ventriculitis

● cystic lesions suggest cysticercosis

2. carcinomatous meningitis: typically also produces meningeal enhancement

3. multiple sclerosis: usually more periventricular (in the white matter)

4. tumors

a) lymphoproliferative disorders

● CNS lymphoma

● leukemia

b) ependymoma

● with tumor spread

● transient enhancement reported in a child with ependymoma in the absence of tumor spread [4)]

c) metastasis

d) germ cell tumors

5. tuberous sclerosis: subependymal hamartomas appear as nodules that occasionally enhance. These gradually calcify with age

6. in the presence of appropriate constitutional symptoms: rare causes of linear enhancement

include: neurosarcoidosis, Whipple's disease, metastatic multiple myeloma (usually nodular)

In immunocompromised patients, the enhancement pattern may help distinguish between the following (which tend to occur in this population [5)]):

1. thin linear enhancement: suggests virus (CMV or varicella-zoster)

2. nodular enhancement: suggests CNS lymphoma

3. band enhancement: less specific (may occur with virus, lymphoma, or tuberculosis (TB).

[1)], [3)], [5)]
Guerini H, Helie O, Leveque C, et al. [Diagnosis of periventricular ependymal enhancement in MRI in adults]. J Neuroradiol. 2003; 30:46–56
[2)]
Fukui MB, Williams RL, Mudigonda S. CT and MR imaging features of pyogenic ventriculitis. AJNR Am J Neuroradiol. 2001; 22:1510–1516
[4)]
Butler WE, Khan A, Khan SA. Posterior fossa ependymoma with intense but transient disseminated enhancement but not metastasis. Pediatr Neurosurg. 2002; 37:27–31