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## Simultaneous Occurrence of Epidermoid and Dermoid Cysts in the Posterior Fossa: CT and MR Findings

Both dermoid and epidermoid tumors of the brain are extremely rare, accounting for less than 2% of all intracranial tumors [1]. We report a case of the simultaneous occurrence of an epidermoid tumor and a dermoid tumor of the posterior fossa.

### Case Report

A 61-year-old woman had bilateral sensorineural hearing loss and difficulty with balance but no vertigo. Neurologic examination showed a right-sided peripheral facial nerve palsy, nystagmus on right and left lateral gaze, hypesthesia in the territory of the right trigeminal nerve with corneal hypesthesia, deviation to the right at toe walking, and positive Romberg sign.

CT (Fig. 1A) of the brain showed a hypodense lesion in the right cerebellopontine angle with displacement of the brainstem and the basilar artery; administration of IV contrast material produced no enhancement. Differential diagnosis was an arachnoid or epidermoid cyst. A second lesion at the level of the vermis had mostly negative attenuation values ( $-80$  H) but with peripheral calcifications and central dense opacity. This lesion was considered typical for a dermoid cyst.

On T1-weighted MR images (Figs. 1B and 1C), the hyperintense signal of the vermian lesion confirmed its fatty nature. The central part was almost isointense to brain. On T2-weighted MR images (Fig. 1D), the fatty component of the lesion was hypointense and the central part was hyperintense. The peripheral calcification was seen as a dark rim. These radiologic findings again were considered typical of a dermoid cyst. The ventral lesion was hypointense on T1-weighted images but had some streaky infiltrations within the lesion. On T2-weighted images, the lesion was almost isointense to CSF and was inhomogeneous. This appearance suggested an epidermoid cyst.

Both lesions were removed during one operation. The ventral lesion was diagnosed as an epidermoid cyst at pathologic examination. The vermian lesion was a dermoid cyst and contained whorls of hair and fatty tissue. The cyst wall was calcified.

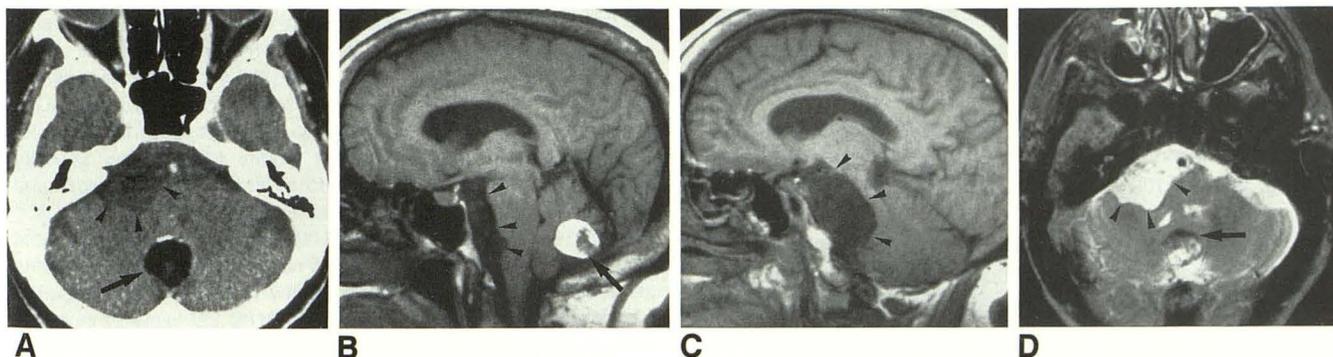
### Discussion

Intracranial dermoid and epidermoid tumors are congenital neoplasms resulting from aberrations of closure of the dorsal neural tube [1]. Epidermoid tumors are composed of a collagenous wall, lined by a stratified squamous epithelium. The lumen contains a mixture of keratin and cholesterol crystals [1]. On CT, the lesion is hypodense without enhancement after infusion of contrast material [2, 3]. It is often difficult to differentiate the lesion from an arachnoid cyst [2–6] and from the surrounding CSF spaces. On MR, the lesion displays low intensity on T1-weighted images and has an inhomogeneous internal architecture. On T2-weighted images, the lesion is hyperintense and inhomogeneous [4–9]. The low intensity on T1-weighted images, despite the presence of lipids, is attributed to the presence of solid crystalline cholesterol and keratin [5] or to the mixed nature of the lesion [5, 7]. In comparison with CT, MR allows better discrimination between the solid content of the lesion and CSF; the lesion also is better differentiated from CSF-containing cisterns [4, 7, 9]. In the posterior fossa, the absence of bone artifacts is a clear advantage of MR.

Dermoid tumors differ from epidermoid tumors by the addition of mesodermal components with fat and epidermal elements, such as hair, hair follicles, and sweat and sebaceous glands [1]. Dermoid tumors tend to be located on the midline [7] and are characterized by negative attenuation values on CT and hyperintensity on T1-weighted MR images [7, 10]. Calcifications are well visualized on CT but are missed on MR [7]. In our patient, both CT and MR adequately depicted this rare simultaneous occurrence of an epidermoid and a dermoid tumor of the posterior fossa.

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**Fig. 1.**—Simultaneous epidermoid and dermoid cysts in posterior fossa.  
**A,** Contrast-enhanced CT scan shows hypodense lesion (*arrowheads*) in right cerebellopontine angle, displacement of brainstem, and fatty lesion (*arrow*) in inferior vermis with peripheral calcification and central opacity.  
**B,** Sagittal T1-weighted MR image, 520/15, shows strongly hyperintense lesion (*arrow*) in midline at level of inferior vermis. Central hypointense part corresponded to hair. Calcification is not visible. Ventral lesion (*arrowheads*) displaces brainstem.  
**C,** Right parasagittal T1-weighted MR image, 520/15, shows inhomogeneous hypointense lesion (*arrowheads*) in right cerebellopontine angle, displacing brainstem.  
**D,** Transverse T2-weighted MR image, 2500/90, shows ventral lesion (*arrowheads*) is hyperintense although with an inhomogeneous aspect. Fatty component of vermian lesion is hypointense; remainder is hyperintense. Calcification (*arrow*) of ventral wall is seen as a hypointense rim.

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