MR of cellular blue nevus.

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MR of Cellular Blue Nevus

Cellular blue nevus is a variant of blue nevus and arises in the dermis. It usually penetrates into the subcutaneous tissue, and many cases with local extension of the nevus have been reported in the literature [1, 2]. However, cases of cellular blue nevus associated with intracranial involvement are rare [3], and MR imaging of this condition has not been reported previously.

Case Report

A 9-year-old boy had had a large nevus of the scalp since birth. When he was 3 years old, the nevus was excised. The histologic diagnosis was cellular blue nevus. Two years later a follow-up CT scan showed a high-density mass in the base of right middle cranial fossa (Fig. 1). Coronal CT scan showed an extracranial extension of the tumor through the right petrosal bone. Partial removal of the intracranial tumor was performed via a subtemporal approach. The temporal muscle, periosteum, dura mater, and the surface of the cerebral cortex were black, and a local extension of the scalp nevus to the CNS was confirmed. Three years after the surgery, MR examinations were performed with a 0.22-T scanner.

Discussion

Melanin is a paramagnetic substance that has a permanent magnetic moment because of the presence of an unpaired spin. The local magnetic field produced by melanin shortens the T1 and T2 relaxation times of the surrounding hydrogen nuclei [4]. Gomori et al. [5] showed that melanotic tumors have a trend toward shorter T1 and T2 relaxation times as the amount of melanin increases. Thus, melanotic melanomas have a characteristic intensity pattern on MR. Unlike any other tumor, they are hyperintense on T1-weighted images and hypointense on T2-weighted images [5–7]. The nevus in our patient had this same characteristic pattern. Consequently, MR studies could not provide the differential diagnosis between cellular blue nevus and malignant melanoma.

The inversion-recovery images showed a clear advantage over CT scans, particularly in differentiating the tumor from surrounding normal structures in the skull base, because there was no bony artifact. The long SE images were not suitable to evaluate the extent of the nevus in the skull base because the low-intensity lesions could not be demarcated well from the surrounding tissue. The long SE images did have an advantage over the inversion-recovery images in demarcating the melanotic tumor of the skin from fatty tissue. Both melanin and fat are delineated as high-intensity areas in the inversion-recovery images. The short SE images were not useful because the cellular blue nevus was delineated as areas of isointensity.

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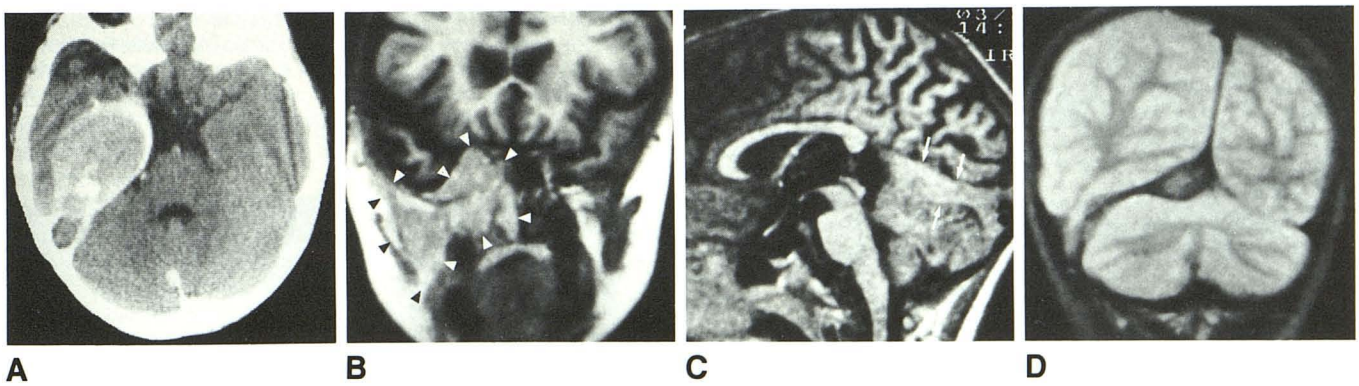

Fig. 1.—Cellular blue nevus in a 9-year-old boy.
***A*, Axial CT scan shows a high-density mass in base of right middle cranial fossa.**
***B*, Iversion recovery MR image, 1500/500/34, shows nevus as slightly high-intensity areas (*arrowheads*). Coronal images showed that residual tumor in right middle cranial fossa continued to pterigoid, masseter, and temporal muscles; all nasal cavities; and orbit on right side.**
***C*, Sagittal inversion recovery image shows straight sinus is completely involved by tumor (*arrows*).**
***D*, Long SE image, 1500/68, shows nevus as low-intensity areas. Coronal images showed thickening of cerebellar tentorium on right side.**