Atypical MR Imaging Features of Juvenile Pilocytic Astrocytoma

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Purpose
The diagnosis of pilocytic astrocytoma usually is entertained when the tumor contains cyst and a solid mural nodule. This exhibit illustrates the atypical features of pilocytic astrocytoma that can be mistaken for glioblastoma, primitive neuroectodermal tumor, anaplastic astrocytoma, ependymoma, medulloblastoma, craniopharyngeoma and optic chiasm glioma. The correct MR imaging diagnosis is critical as radical resection may cure pilocytic astrocytoma regardless of their location.

Materials & Methods
Seventy-five patients with tumor, histologically proven to be pilocytic astrocytoma (median age at diagnosis was 10.1 years), were analyzed retrospectively by MR imaging.

Results
Tumor location consisted of the following: suprasellar (20), brainstem (20), cerebellar hemispheres/vermis (17), cerebral hemispheres (9), thalamus (6), and lateral ventricles (3). MR imaging appearance of tumor consisted of cyst with enhancing solid tumor component (48%), the so-called typical feature of pilocytic astrocytoma. The atypical features include solid tumor (36%), multiple nodules with string of beads appearance (9%), and purely cystic (7%). Irregular enhancing tumor margins resembling high-grade malignant tumor was seen in 10% of cases. Leptomeningeal tumor seeding in brain and spine also was observed in 2 patients.

Conclusion
The exhibit illustrates the MR imaging features of pilocytic astrocytoma with emphasis on the atypical features that can improve further diagnostic accuracy.

References