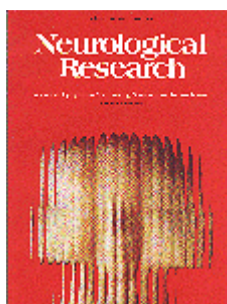




Magnetic resonance imaging characteristics of pilomyxoid astrocytoma



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Abstract:

Objective: Pilomyxoid astrocytoma (PMA) is a recently identified pediatric low-grade neoplasm that was previously classified as pilocytic astrocytoma (PA), yet demonstrates unique histological features and more aggressive behavior. These tumors have been shown to have significantly shorter progression-free and overall survival probability than classical low-grade astrocytomas, as well as a high rate of cerebrospinal fluid (CSF) dissemination. This paper describes the radiographic features of PMA.

Methods: Magnetic resonance imaging (MRI) was obtained for ten PMAs. Radiographic characteristics of the tumor were recorded in each case. All tissue samples were independently reviewed for confirmation of pathologic diagnosis.

Results: All tumors appeared well-circumscribed with no evidence of peritumoral edema or parenchymal infiltration on MRI. All tumors except one originated from the midline of the neuroaxis. Specifically, five tumors (50.0%) were located in the hypothalamic region, two (20.0%) were located in the spine, two (20.0%) were located in the dorsal brainstem and one was located in the right thalamus. Five tumors (50.0%) demonstrated solid composition, with the remaining five showing some cystic components. Mass effect, hydrocephalus and central necrosis were observed in 62.5, 50.0 and 0.0% of cases, respectively. Eight tumors (80%) were hyperintense on

T1-weighted MRI. Seven tumors (77.8%) were hyperintense on T2-weighted MRI. All tumors were hyperintense on fluid attenuated inversion recovery (FLAIR) sequence and hypointense on diffusion weighted imaging (DWI). Upon contrast administration, six tumors (60.0%) enhanced heterogeneously and four tumors (40.0%) enhanced homogeneously.

Conclusion: Pilomyxoid astrocytoma is a well-circumscribed pediatric neoplasm that commonly originates from the midline of the neuroaxis and lacks peritumoral edema or central necrosis. It is critical to recognize the predominantly solid and well-circumscribed nature of the neoplasm to avoid confusion with an infiltrating astrocytoma.

Keywords: ASTROCYTOMA; MAGNETIC RESONANCE IMAGING; RADIOLOGY; PILOCYTIC; PILOMYXOID

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