

# **The Spectrum of Pilomyxoid Astrocytomas (PMA): Transitional Pilomyxoid Tumors**

MW Johnson, CG Eberhart, P Goldthwaite, PC Burger

The term pilomyxoid astrocytoma (PMA) was first applied to a pediatric brain tumor with small monomorphous bipolar cells, perivascular pseudorosettes, and abundant myxoid substance. The same tumor had been designated earlier as “infantile pilocytic astrocytoma.” The 2007 World Health Organization considers the PMA to be a grade II variant of pilocytic astrocytoma (PA) in light of the overall more aggressive nature of this lesion. In spite of subsequent experience, the pathological spectrum, degree of overlap, and transitions with PA are unclear. The assumption that the two are closely related has not been confirmed by a large study. We reviewed a large series of cases of pediatric astrocytomas with pilomyxoid features to define the spectrum of lesions presumed to link pilomyxoid astrocytoma (PMA) and pilocytic astrocytoma (PA). With the gradual addition of more cytoplasm, fibrillar background, microcysts, and thickened blood vessels, these intermediate tumors become more PA- and less-PMA-like, but no precise point of distinction or discrete milestones could be identified in this spectrum. Some lesions even had coexistent features of PMA and PA and appeared to be transitional or intermediate forms of the tumors. Patients with tumors in this ‘intermediate group’ were statistically older than those with PMAs. Features often assumed to be poor prognostic indicators, i.e. necrosis, mitoses, and vascular proliferation, were not uncommon in both lesions.