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# Posterior fossa ependymomas: new radiological classification with surgical correlation.

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### Abstract

**PURPOSE:** The key determinant of long-term outcome in infratentorial ependymomas remains the extent of surgical resection. We describe a new radiological classification system which is validated against surgical findings and correlated with risk of post-operative residual tumour.

**METHODS:** Twenty-five consecutive patients (12 females, mean age 4.9 years, range 0.5-17 years) with infratentorial ependymomas were studied. Lesions were classified on pre-operative MRI according to the pattern of extension, brainstem displacement and involvement of the obex, as lateral-type or midfloor-type tumours. Twenty-one operative records were reviewed with respect to the microanatomical tumour origin by a paediatric neurosurgeon, blinded to MRI findings. Follow-up imaging studies were evaluated for residual tumour.

**RESULTS:** There were 15 cases of midfloor-type tumour (anterior displacement of brainstem, infiltration of obex) and 10 cases of lateral-type tumour (lateral displacement of brainstem, obex free of tumour). Extension into prepontine or cerebellopontine cisterns was more common in lateral-type tumours. Agreement between the radiological classification and tumour origin, as defined by operative records, was seen in 18 out of 20 cases. Risk of residual tumour in lateral-type tumours was more than twice that of midfloor-type tumours (80% vs. 33%,  $p=0.04$ ). Risk of tumour residual was also significantly higher when vessel encasement or prepontine extension was observed.

**CONCLUSIONS:** Infratentorial ependymomas can be pre-operatively classified as lateral-type or midfloor-type tumours. This correlates well with operative findings. Lateral-type tumours have significantly increased risk of residual tumour compared to midfloor-type tumours and this may influence intensity of imaging surveillance.

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MeSH Terms

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