



MELANOMA AND MELANOCYTIC NAEVI

HIGH-RESOLUTION MRI DEMONSTRATES THAT MOST SMALL INTRACRANIAL MELANOMA METASTASES ARE LOCATED AT THE INTERFACE BETWEEN THE CORTEX AND LEPTOMENINGES

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Introduction: Despite classic teaching that intracranial metastases typically arise at the grey-white matter junction, small intracranial melanoma metastases (IMMs) are frequently observed at the interface between the cortex and leptomeninges (i.e. "corticomeningeal"), suggesting possible leptomeningeal origin.

Objective: To determine the frequency of a corticomeningeal location in patients with small IMMs on MRI.

Materials and Methods: MRI brain examinations of melanoma patients treated at the Peter MacCallum Cancer Centre from July 2015 to June 2017 were retrospectively reviewed by a single neuroradiologist. The MRI examination on which IMMs were first visible was identified, including only patients with MRIs performed at our institution utilising 1mm volumetric post-contrast imaging prior to local therapy. Individual metastases (up to 10 per patient) were assessed for the presence of leptomeningeal contact, as well as their number, size and morphology. Lesions <2mm or ≥10mm were excluded from analysis in order to examine early metastatic disease.

Results: 74 patients had evidence of IMMs. 15 patients had only lesion(s) measuring ≥10mm at diagnosis, and one had metastatic disease isolated to the cranial nerves, leaving 58 patients. 199 individual metastases were examined (median 2 per patient, interquartile range 1-4), 181 (91%) demonstrating leptomeningeal contact. A nodular morphology was observed in 163 of 199 (82%), 30 (15%) were ovoid but elongated along the cortex, and 6 (3%) showed linear or curvilinear cortical extension. Only four patients (2%) also exhibited a 'classic' linear leptomeningeal disease appearance.





Conclusions: Our findings indicate that most IMMs measuring between 2 and 10mm in diameter are corticomeningeal nodules. These data raise the hypothesis that deeper parenchymal extension of IMMs occurs secondarily. If the leptomeninges provide a preferential site for establishment of IMMs, further investigation of the underlying biology of this phenomenon may provide opportunities for novel therapeutic strategies for patients with IMMs.

