ABSTRACT

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Paediatric spinal cord low-grade gliomas-evaluation and management of post-surgical residual disease.

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PURPOSE: To assess the evaluation and management of post-surgical residual disease for low-grade intramedullary spinal cord tumours (IMSCT) in childhood.

METHODS: A single-centre retrospective review of low-grade IMSCTs treated between 2000 and 2019. All surgeries were performed with intent of safe maximal resection guided by intra-operative neurophysiological monitoring (IONM). Pre- and post-operative MRIs were reviewed to assess the extent of resection (EOR), recorded as follows: gross total resection (GTR), near total resection (NTR), sub-total resection (STR) and partial resection (PR). Outcome measures were time to recurrence, need for and modality of additional therapy and ambulatory status at last follow-up.

RESULTS: Thirty patients underwent surgery for IMSCT (median age 6.9 years). EOR was GTR = 8, NTR = 4, STR = 9, PR = 9. All patients were alive at last follow-up (median follow-up 73 months [IQR 93 months]). Eighteen patients (60%) remained radiologically stable. Twelve patients (40%) developed recurrence during surveillance. Progression free survival was significantly better in cases with GTR + NTR in comparison to either STR or PR (p = 0.039). 10/30 (33%) patients were treated with additional therapy. At last follow-up, 26/30 patients were independently mobile.

CONCLUSION: Survival rates for low-grade IMSCT are excellent. Radical micro-surgical resection, guided by IONM provides effective means of balancing the objectives of maximal safe resection, functional outcome and tumour control. Whilst evidence of 'residual disease' was identified in over 2/3 of immediate post-operative MRI scans, additional treatment was required in only 1/3 of cases. Critical appraisal of post-operative imaging findings is required to better define 'residual disease'. Small volume residual disease (< 5%) does not compromise progression-free survival.

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