Management of First Recurrence or Progression of Craniopharyngioma After Resection Alone: A Systematic Review and Individual-Participant Data Meta-Analysis

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Introduction: The initial management of craniopharyngioma is generally either gross total resection (GTR) or subtotal resection (STR) with adjuvant radiotherapy (RT). However, the optimal management strategy for recurrent/progressive craniopharyngioma remains unclear.

Methods: In this systematic review and individual participant data meta-analysis, we aimed to compare the outcomes of surgery and/or RT for the first recurrence/progression of craniopharyngioma after resection alone. The exposure was the treatment that was administered for the first recurrence/progression, and the outcomes were tumor regrowth and overall survival (OS). Subgroup analyses were performed by age at the treatment for the first recurrence/progression (<18 or ≥18 years old), duration between the first treatment and the first recurrence/progression (<2 or ≥2 years), and the initial treatment that was administered (STR or GTR).

Results: Of the 2932 studies screened, 11 studies reporting a total of 80 patients were included. Across almost all subgroups, patients who received RT for the first recurrence/progression had a significantly lower risk of tumor regrowth than those who did not, regardless of whether surgery was performed and the extent of resection. There was no significant association between the treatment administered for the first recurrence/progression and OS, except for patients with a recurrence/progression <2 years after the first treatment, where GTR was associated with a higher risk of mortality.

Conclusion: For patients with the first recurrence/progression of craniopharyngioma after resection alone, RT should be considered for better local control. In cases where RT is not administered, GTR is preferred over STR provided it can be safely performed, for improved local control.

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