

ABSTRACT

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Surgical resection versus stereotactic radiosurgery on local recurrence and survival for patients with a single brain metastasis: a systematic review and meta-analysis.

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BACKGROUND: Brain metastases (BM) are the most frequent intracranial tumours in adults. In patients with solitary BM, surgical resection (SR) or stereotactic radiosurgery (SRS) is performed. There is limited evidence comparing one treatment over the other.

OBJECTIVE: To compare SR versus SRS on patients with solitary BMs, regarding local recurrence (LR) and overall survival (OS) conducting a systematic review and meta-analysis.

METHODS: Systematic review of literature following PRISMA guidelines, using the databases of Medline, Clinicaltrials.gov, Embase, Web of Science, Sciencedirect, CINAHL, Wiley Online Library, Springerlink and LILACS. Following study selection based on inclusion and exclusion criteria, data extraction and a critical analysis of the literature was performed according to the GRADE scale. For quantitative analysis, a random effects model was used. Data were synthesized and evaluated on a forest plot and funnel plot.

RESULTS: Two randomized clinical trials, four cohort studies and one case-control studies met our inclusion criteria for the qualitative analysis. None was excluded subsequently. Overall, 614 patients with single metastasis were included. Studies had high heterogeneity. Multiple significant variables affecting the outcome were signaled. Meta-analysis showed no significant differences for survival (HR, 1.10; 95% CI, 0.75-1.45) or LR (HR, 0.81; 95% CI, 0.42-1.20).

CONCLUSIONS: According to current evidence, in patients with a single small metastasis there is no statistically significant difference in OS or LR among the chosen techniques (SR or SRS). Multiple significant co-variables may affect both outcomes. Different outcomes better than OS should be evaluated in further randomized studies.

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