Risk for leptomeningeal seeding after resection for brain metastases: implication of tumor location with mode of resection.

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Abstract
Object Surgical spillage has been one of the causative factors for the development of leptomeningeal seeding (LMS) after resection of brain metastases. In this paper, the authors' goal was to define the factors related to the development of LMS and to evaluate the difference according to tumor location. Methods The authors retrospectively analyzed 242 patients who had undergone resection for brain metastases. The factors investigated included tumor location with proximity to the CSF pathway (that is, contacting, involved with, or separated from the CSF pathway), the method of resection, and the use of the Cavitron Ultrasonic Surgical Aspirator (CUSA). Results A total of 39 patients (16%) developed LMS at a median of 6.0 months (range 1-42 months) after resection. The risk of developing LMS was significantly higher in patients whose tumors were resected piecemeal than in those whose tumors were removed en bloc, with a hazard ratio (HR) of 4.08 (p < 0.01). The incidence of LMS was significantly higher in patients in whom the CUSA was used, and the HR was 2.64 (p < 0.01). The proximity of tumor to the CSF pathway in the involved group conferred an increased risk of LMS compared with the separated group (HR 11.36, p < 0.01). The risk of piecemeal resection for LMS was significant only in involved lesions (p < 0.01), and the use of the CUSA in both contact and involved lesions increased the incidence of LMS (p < 0.01 and p < 0.03, respectively). Conclusions The authors suggest that piecemeal resection using the CUSA should be limited because of the risk of postsurgical LMS, especially when the tumor is in contact with the CSF pathway.

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