

Very Large Metastases to the Brain: A Retrospective Study on Outcomes of Surgical Management.

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Introduction

Development of brain metastases from extracranial cancer continues to rise, related to advances in treatment of primary disease. No study to our knowledge focuses exclusively on brain metastases larger than 4 cm. We aimed to assess surgical outcomes of patients with 4 cm metastases.

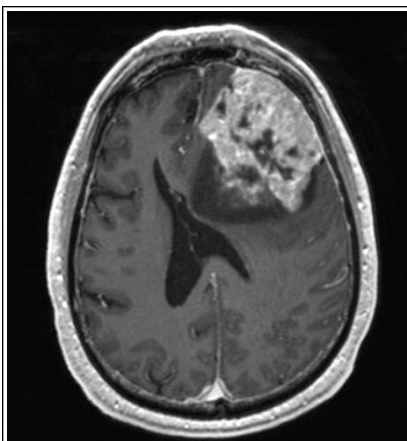


Figure 1: A very large (greater than 4 cm) left frontal brain metastasis.

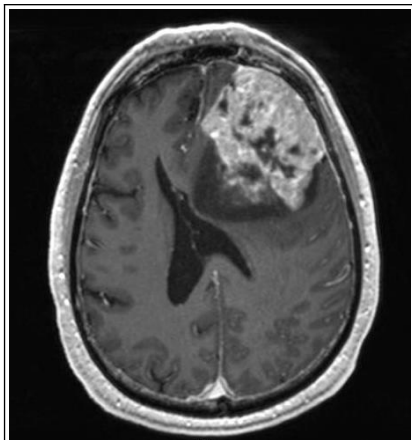


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Methods

This is a retrospective chart review of inpatient data at our institution from January 2006 to September 2015. Sixty-one patients with brain metastases 4 cm or greater were identified. We excluded patients with prior invasive treatment. Primary endpoints were overall survival, progression-free survival, and local recurrence rate. Patients were followed until confirmed death or final follow-up.

Results

Sixty-one patients had a total of 67 brain metastases larger than 4 cm: 52 supratentorial and 15 infratentorial. Forty-three patients underwent surgical resection. Average duration of disease freedom after resection was 4.79 months (range 0-30). Excluding patients with residual on immediate post-operative MRI, average rate of local recurrence was 7 months (range 1-14). Overall survival in the surgically treated group, excluding patients who chose palliation in the immediate postoperative period, averaged 8.76 months (range 1-37). Thirty-five (81.4%) of 43 patients had stable or improved neurological exams post-operatively. Six (13.95%) patients developed surgical complications. There were 3 (6.98%) major complications: 2 pseudomeningoceles requiring intervention, and 1 post-operative hematoma requiring external ventricular drain placement. The patient with the hematoma ultimately discharged to hospice. There were 3 (6.98%) minor complications: 1 self-limited pseudomeningocele, 1 subgaleal fluid collection which resolved after two needle aspirations, and 1 post-operative seizure which resolved after increase in antiepileptic drug regimen.

KPS Score	10-40	50-70	80-100
Overall average survival (Months)	2.67	7.19	9.47
Number of patients who had surgical resection	6	12	25
Average survival after surgical resection (months)	2.83	9.08	11.32
Number of patients who did not have surgical resection	9	4	5
Average survival without surgical resection (months)	1.89	1.5	0.2

Table 1: Comparison of surgical and non-surgical outcomes based on preoperative Karnofsky Performance Scale.

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Conclusions

We observed stability or improvement of neurological symptoms in the majority of cases (81.4%), with a mean recurrence rate of 7 months and mean overall survival of 8.76 months. There is need for prospective studies to further evaluate surgical management for brain metastases larger than 4 cm.

Learning Objectives

By the conclusion of this session, participants should be able to:

- 1) Understand the need and importance of studying the outcomes of surgery for very large intracranial metastases
- 2) Review our institution's results in surgical management of metastases 4 cm and larger
- 3) Consider surgery as an option for treatment of patients with metastases 4 cm and larger

References

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- 2) Gans, J.H. et al. The Role of Radiosurgery to the Tumor Bed After Resection of Brain Metastases. *Neurosurgery*. 2013 Mar;72(3):317-25; discussion 325-6.
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