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Microsurgery for the treatment of primary malignant intracranial melanoma: A surgical series and literature review

J. Wang, Z.-Z. Guo, Y.-J. Wang*, S.-G. Zhang, D.-G. Xing

Department of Neurosurgery, The First Hospital of China Medical University, No 155 Nanjing North Street, Heping Ward, Shenyang 110001, China

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Abstracts

Background: Primary malignant intracranial melanomas are rare tumors of the central nervous system. These tumors are highly malignant and are associated with poor prognosis. The field of neurosurgery has struggled with the diagnosis and treatment of these tumors.
Methods: In this study, we present a surgical series of eight patients with primary malignant intracranial melanomas and retrospectively analyze the clinical features, imaging findings, pathological features and prognoses of these patients.
Results: All patients underwent microsurgery. Total and subtotal resection of the tumor was achieved in six and two patients, respectively. Of the eight patients, seven showed improvement while one remained the same at time of discharge. There was no neurosurgical deterioration. Radiotherapy was conducted in six patients after operation. The average follow-up duration was 13.8 months (range = 9–26 months). During the follow-up period, three patients died from this disease. One patient suffered from recurrence at the 16th month and underwent second surgery. The other patients were still alive with no evidence of tumor recurrence.
Conclusion: Microsurgery and radiotherapy should be the first line managements for patients with primary malignant intracranial melanomas. Improvements in chemotherapy, immunotherapy and targeted therapies may provide more effective treatments for malignant intracranial melanomas.

Keywords: Melanoma; Microsurgery; Radiotherapy; Chemotherapy

Introduction

Malignant intracranial melanomas are divided into primary and secondary subtypes, depending on the origin of the tumor. Primary malignant intracranial melanoma is a rare tumor of the central nervous system, while the development of secondary or brain metastatic melanomas is a frequent occurrence in patients with disseminated melanoma. These tumors are highly malignant and are associated with poor prognosis.[1–6] The rarity of the primary malignant intracranial melanomas contributes to the high chance of misdiagnosis. The author of this report diagnosed and treated eight patients with primary malignant intracranial melanoma between January 2002 and September 2013. All these patients underwent microsurgery. Pathological examinations confirmed that the resected lesions were consistent with the diagnosis of malignant melanoma. In the current report, the clinical characteristics of these cases and treatment strategies for malignant melanoma were discussed. A review of relevant literature was conducted to explore the therapeutic strategies for this type of rare disease.

Materials and methods

Selection of patients

Our surgical series included 8 patients, who had malignant intracranial melanomas surgically resected at the First Hospital of China Medical University between January 2002 and September 2013. In this series, 6 patients were

* Corresponding author. Tel.: +86 024 83283132; fax: +86 024 83283313.
E-mail addresses: wyj024@vip.sina.com, woaishoushu@hotmail.com (Y.-J. Wang).

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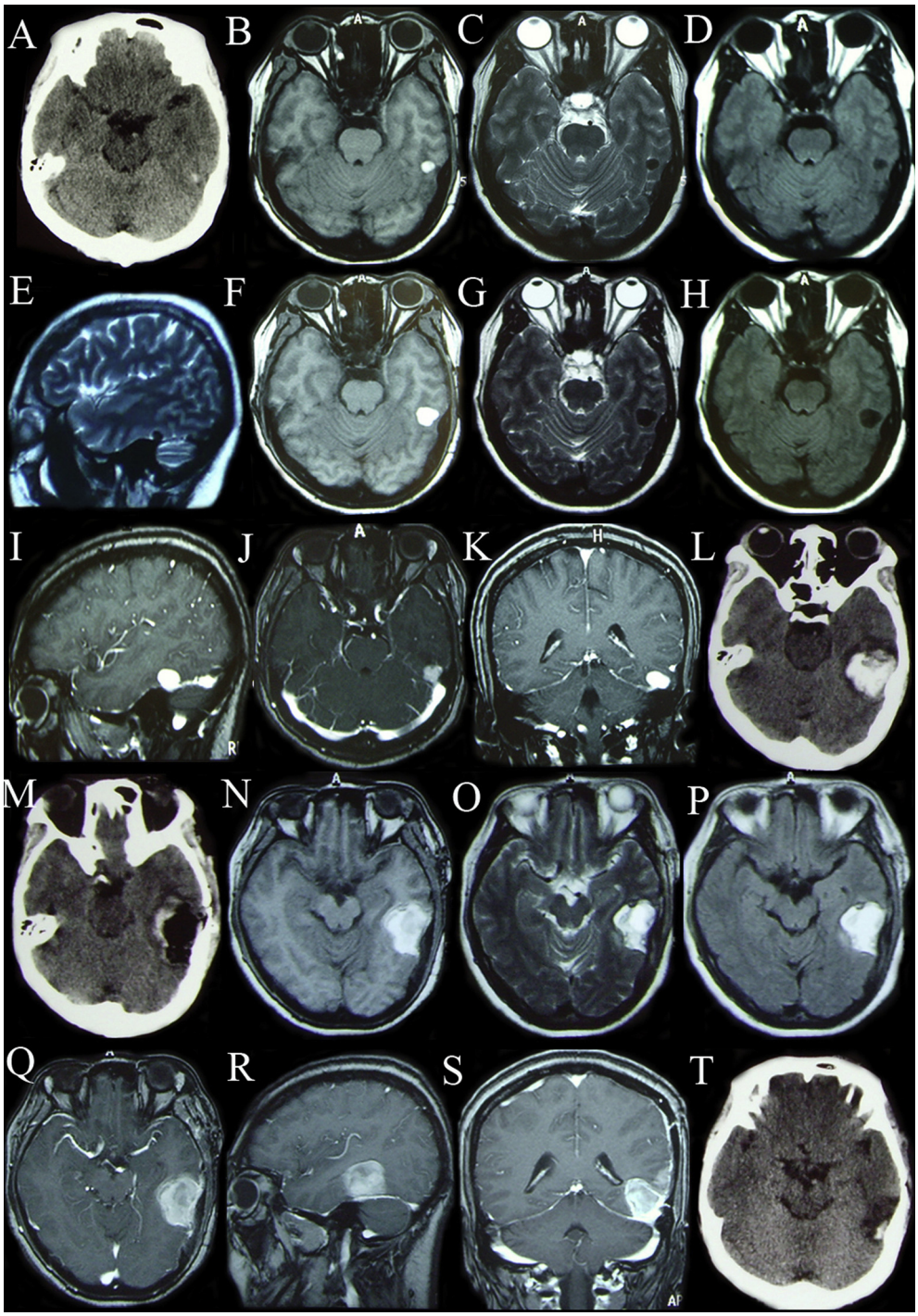

Figure 1. Pre- and postoperative CT and MRI scans in the patient accompanied by Nevus of Ota. (A−E) CT and MRI scans on 05/16/2009 showing a very small lesion in the tentorium cerebelli area with short T1 and T2 signals. (F−K) MRI scans on 04/20/2010 showing a slow growth of the lesion. (L) CT scans on 07/13/2011 showing a rapid growth of the lesion. (M−S) Postoperative CT scans on 07/21/2011 and enhanced MRI scans on 08/24/2011 showing complete resection of the lesion. (T) CT scans on 12/25/2011 showing the recurrence of the lesion.

female and two male. Their ages ranged from 33 to 74 years (median = 55.4 years). The lesions were located in the left frontal lobe in 2 patients, the bottom of the left temporal fossa in 2 (Figs. 1−3), right frontal lobe in 2, posterior brainstem in 1 (Fig. 4), right parietal lobe in 1 (Table 1).

Treatments

All patients underwent tumor excision by microneurosurgery operations. Surgeries were performed in general anesthesia using the operating microscope and microsurgical instrumentation in all cases. The lesion was