

Intraoperative Aneurysm Rupture during Resection for Presumed Metastasis

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A 54-year-old male with metastatic melanoma, including a presumed brain metastasis underwent elective surgery when there was sudden onset of extensive bleeding upon resection. An emergent cerebral angiogram revealed a fusiform left posterior cerebral artery aneurysm. Malignant melanoma commonly metastasizes to the brain and has shown to assume a wide variety of appearances with involvement of almost any intracranial structures. The unexpected intraoperative finding required immediate action and strategic rethinking. The patient successfully underwent vessel sacrifice by means of coil embolization.

Key Words: Aneurysm—angiography—brain metastasis—clipping—coiling—endovascular treatment—melanoma

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Case Report

Malignant melanoma commonly metastasizes to the brain which was considered a poor prognosis for the patient,¹ however, new treatment options have gained Food and Drug Administration approval in 2011 and showed improved survival rates. Researchers continue to investigate new therapy strategies, considering factors such as tumor mutation burden, T-cell activation, and acquired treatment resistance.

The typical appearance of metastatic melanoma lesions in the brain has been described as T1 hyper- and T2 hypointense to cortex for the melanotic pattern and T1 hypo- to isointense and T2 hyper- to isointense to the cortex for the amelanotic pattern.² However, malignant melanoma has

shown to assume a wide variety of appearances with involvement of almost any intracranial structures.

Differential considerations for intracranial hemorrhagic lesions include a vascular lesion or hemorrhagic metastasis. Malignancies presenting with hemorrhagic metastases include melanoma, choriocarcinoma, papillary thyroid cancer, renal cell, and hepatocellular carcinoma. Although a hemorrhagic intracranial lesion in a patient with one of the aforementioned malignancies immediately suggests itself to being a metastasis, caution must prevail and the possibility of a vascular lesion should be considered. Cross-sectional vascular imaging or possibly a cerebral angiogram can help in distinguishing a metastatic lesion from an aneurysm that mimics a presumed brain metastasis.

We present the case of a middle-aged patient with metastatic melanoma, including a presumed brain metastasis (Fig 1A-D) which increased in size, who underwent elective surgery of the brain mass at an outside institution when there was a sudden onset of extensive bleeding upon resection.

The extensive arterial bleeding encountered during attempted resection of the presumed metastatic lesion was concerning for this mass to actually represent an aneurysm. Efforts to intraoperatively clip the aneurysm were unfortunately unsuccessful.

The patient experienced significant estimated blood loss of 3.5 L for which he received massive transfusions including

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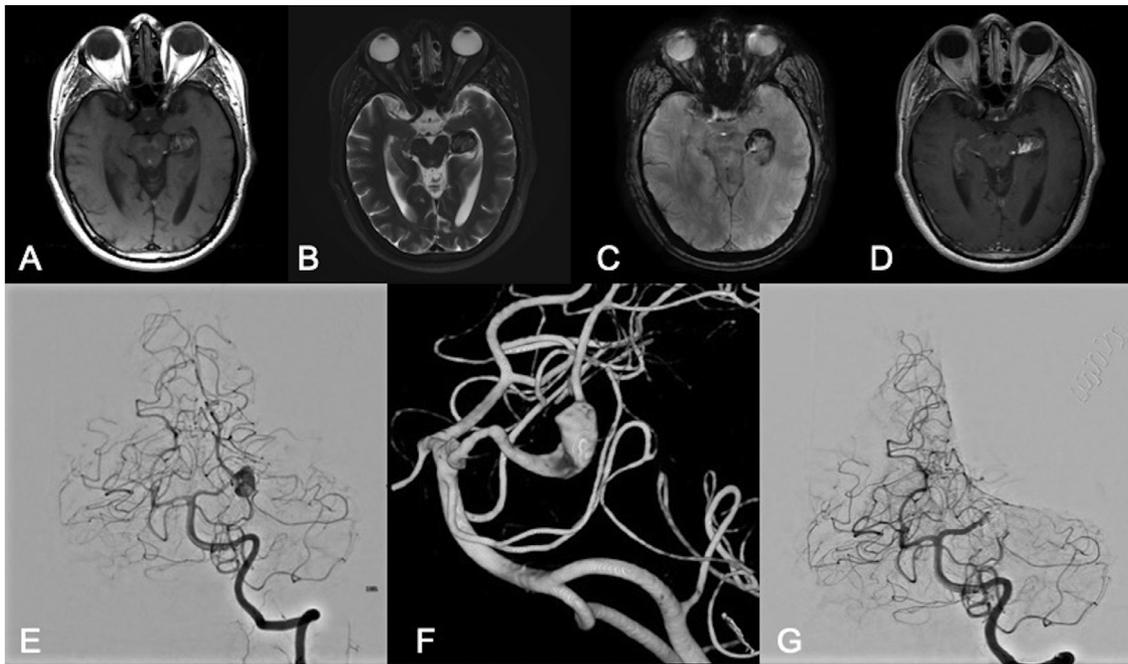


Figure 1. On the MRI study, the left temporal mass demonstrates a partially T1 hyperintense (A) and T2 iso- to hypointense (B) signal intensity. There is susceptibility artifact on the SWAN sequence (C) which can be seen with melanin and/or blood. The mass shows partial enhancement after the administration of contrast (D). The cerebral angiogram (E) and 3D-rotational angiogram (F) reveal a fusiform aneurysm of the left P3 segment. The left posterior cerebral artery is successfully sacrificed with coil embolization (G).

packed red blood cells, fresh frozen plasma, platelets, and crystalloid fluid. He was started on vasopressors and the resection cavity was packed to help control the bleeding. The patient's hemoglobin level dropped acutely to 11.4 g/dL from a preprocedure work-up level of 17.3 g/dL.

After the patient was stabilized, he was emergently transferred to our medical center where he immediately underwent a diagnostic cerebral angiogram which determined that the bleeding was indeed from a fusiform left posterior cerebral artery aneurysm (P3 segment) (Fig 1E and F). The patient successfully underwent vessel sacrifice by means of coil embolization (Fig 1G).

The patient remained intubated and on vasopressors after the intervention and was then transferred to the intensive care unit. He remained stable and continued to improve with decreasing vasopressor demands and successful extubation on postoperative day 1. The patient experienced some cognitive, language, and

visual perceptual deficits after the intervention but remained otherwise neurologically stable. Over the course of the hospitalization, he improved with only some mild word finding difficulty remaining. The patient was discharged to a skilled nursing facility for rehabilitation 2 weeks after the intervention.

Declaration of Competing Interest

The authors have no competing interest.

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