Orbital metastases from malignant mesothelioma

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A 74-year-old man with malignant mesothelioma presented at the thoracic oncology clinic at the Clinical Center of the National Cancer Institute (Bethesda, MD, USA) in February, 2019, with acute-onset blurry vision and diplopia, which had worsened over the course of the previous 2 weeks. He had been participating in a phase 2 clinical trial at the National Cancer Institute, being on study drug (a poly ADP ribose polymerase inhibitor) for 2 months.

At presentation, he had left-sided conjunctival edema, exophthalmos, and his left pupil was minimally responsive to light. He had been diagnosed with unresectable right-sided malignant pleural mesothelioma, epithelioid type, 18 months previously. He had pleural progression despite treatment with carboplatin AUC 5 and pemetrexed 500 mg/m² every 21 days for a total of six cycles, and had received combination ipilimumab and nivolumab 3 months previously. T2-weighted MRI of the orbits (figure, A), revealed a 3·7×1·8 cm left orbital mass within the inferior rectus muscle that encased the left optic nerve, with substantial orbital proptosis. He was treated with emergent ophthalmologic cytoreductive surgery, undergoing orbitotomy salvage of his optic nerve. Pathology from the mass confirmed epithelioid mesothelioma, revealing keratin AE1/AE3+, WT1+, CK 5/6–, and loss of BAP1 expression (figure, B). Residual tumour involving the optic nerve was irradiated with conventional radiotherapy, at a dose of 5 Gy over 5 days, with improvement of his vision within 4 weeks of treatment. He started gemcitabine 1000 mg/m² on days 1, 8, and 15 every 28 days shortly afterwards, and continues on treatment at 5 months.

Mesothelioma often spreads locally to adjacent organs and surfaces, with hematogenous spread being rare. Orbital metastases are very uncommon in mesothelioma, with only a few reported cases. These usually occur in very advanced disease and affected patients have a poor prognosis. Radiotherapy is the mainstay of treatment, with tumour resection to alleviate physical symptoms and for emergent indications.

Contributors

IM, EP, RH, and AG all were involved in treatment of the patient and generation and review of the manuscript. EP facilitated evaluation by radiology and consultations with radiation oncology and ophthalmology services. IM and AG were involved in obtaining written consent from the patient. Written informed consent to publication was obtained.

Declaration of interests

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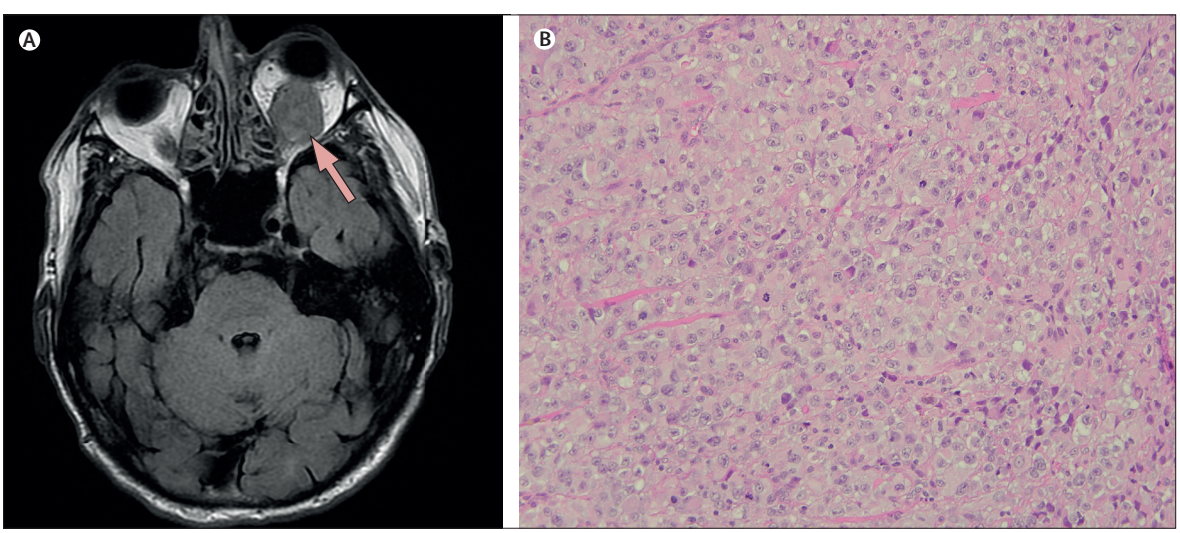

Figure: **Orbital metastases of malignant mesothelioma**
(A) Axial MRI shows a left orbital mass causing mass effect on the surrounding orbit and optic nerve. (B) Hematoxylin–eosin stain of orbital mass (×20 magnification) shows epithelioid mesothelioma with cellular atypia.