50th ANNUAL DIAGNOSTIC SLIDE SESSION 2009

CASE 2009-5

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Clinical History: A 54-year-old female with a history of a recurrent, extensively treated right frontal anaplastic oligodendroglioma presented to her neurosurgeon following a 15-month history of gradual neurologic decline and a surveillance MRI concerning for tumor progression.

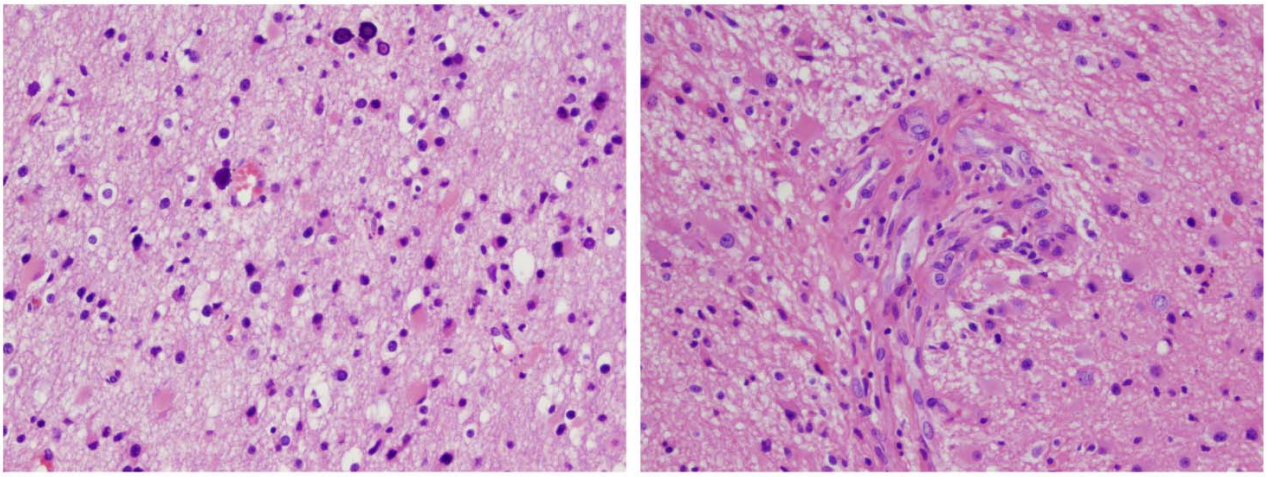
The patient initially presented nine years previously with a headache, and neuroimaging studies at that time showed a solid and cystic, heterogeneously enhancing right frontal mass. She underwent gross total resection of the mass, for which a diagnosis of anaplastic oligodendroglioma was rendered. The tumor showed no evidence of chromosome 1p or 19q deletion by fluorescence in situ hybridization. She subsequently completed fractionated radiotherapy with concomitant and subsequent combination chemotherapy consisting of procarbazine, CCNU, and vincristine. Over the course of the next seven years, she received treatment with multiple chemotherapeutic agents for disease recurrences along the resection margins. Agents included temozolomide, carboplatin, etoposide, paclitaxel, and imatinib.

MR imaging performed at the completion of her final chemotherapy treatment demonstrated near-complete resolution of the enhancement along the resection margins. However, at this time, MR imaging showed faint gyriform contrast enhancement over the right frontal lobe surrounding the macrocystic encephalomalacic changes of the resection cavity. MR performed at the time of presentation (two years later) demonstrated a prior right frontal craniotomy with macrocystic encephalomalacia of the resection cavity. Postcontrast T1-weighted imaging showed marked enlargement and nodular enhancement of the right frontal lobe cortex and juxtacortical white matter surrounding the resection cavity, with T2-weighted imaging showing extensive edema-like signal throughout the right frontal white matter. The degree of cortical thickening and nodular enhancement had progressed dramatically from the above-described previous MR study, although the encephalomalacic changes were relatively unchanged. There was no significant enhancement along the resection margins and no mass-like area of enhancement.

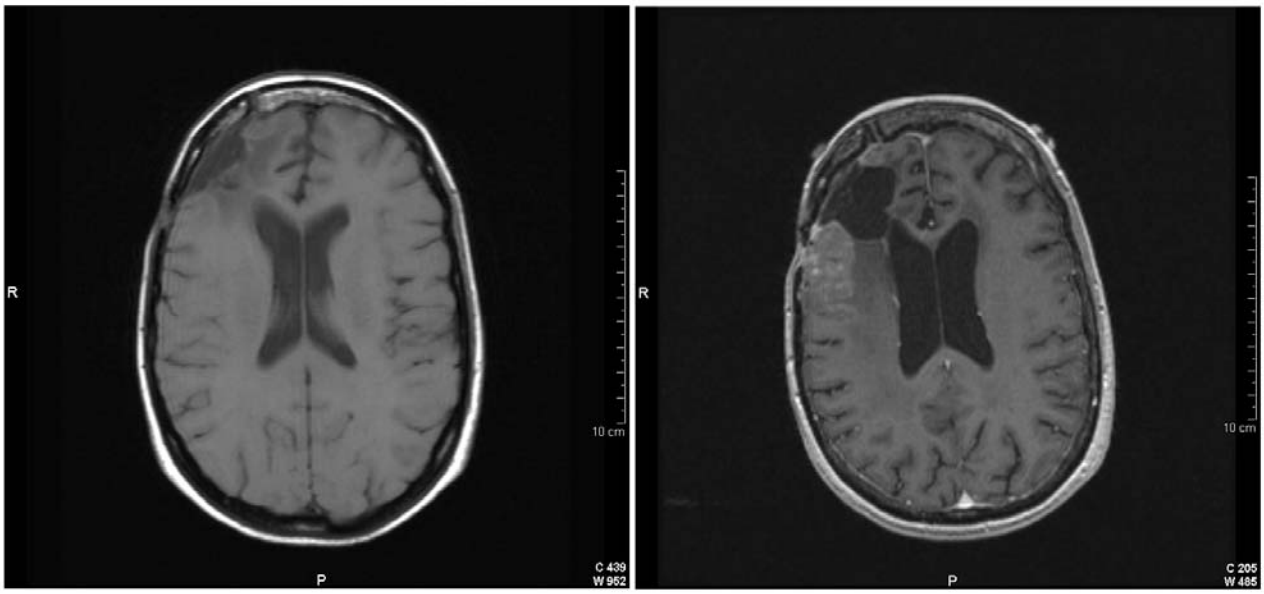
Due to the concern for disease recurrence, the patient eventually underwent surgical debulking of portions of the radiographically abnormal frontal tissue.

Material submitted:
1. H&E section from the right frontal cortex
2. Digital images of initial tumor resection (H&E; jpeg format)
3. Digital images of MRI findings (jpeg format)

Points for discussion:
1. Diagnosis
2. Pathogenesis



Images from 1998 resection of anaplastic oligodendroglioma with prominent minigemistocytes (H&E)



Post-resection MRI, 2000

Most recent surveillance MRI, 2007