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Tip of the Iceberg or the Whole Titanic: Discrepant Representation of Glioblastoma on Different Imaging Modalities

Omer Gal, MD,* and Rupesh Kotecha, MD*,†

*Department of Radiation Oncology, Miami Cancer Institute, Baptist Health South Florida; and †Department of Radiation Oncology, Herbert Wertheim College of Medicine, Florida International University, Miami, Florida

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A 36-year-old woman with no significant past medical history presents with headaches for 1 week. Brain magnetic resonance imaging (Fig. 1) reveals multinodular areas of enhancement in the right frontal lobe and an infiltrative tumor mass with large volumes of fluid-attenuated inversion recovery signal abnormality throughout the frontal lobes and across the corpus callosum without enhancement. Stereotactic needle biopsy of the right frontal lesion is consistent with high-grade infiltrating glioma, isocitrate dehydrogenase wild-type, O6-methylguanine-DNA methyltransferase unmethylated, and no other relevant molecular alterations. Due to a syncopal episode pending pathology results, a repeat magnetic resonance imaging (Fig. 2) revealed interval worsening of nodular areas of enhancement within the right frontal white matter, and a preplanning F18-Fluciclovine positron emission tomography (Fig. 2) identified abnormal activity corresponding to a large right frontal brain lesion that appears to extend to the left frontal region across the corpus callosum. Her Eastern Cooperative Oncology Group performance status is 1.

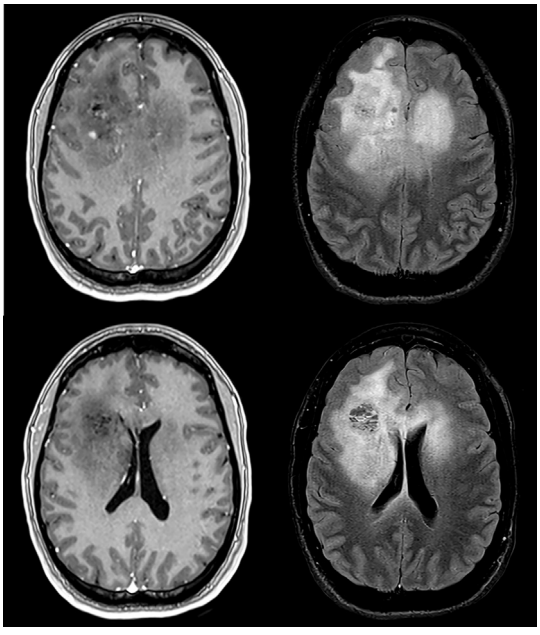

Fig. 1. Representative slides of the patient's initial diagnostic imaging study. Contrast-enhanced T1-weighted (left top and bottom) and fluid-attenuated inversion recovery (right top and bottom) magnetic resonance imaging.

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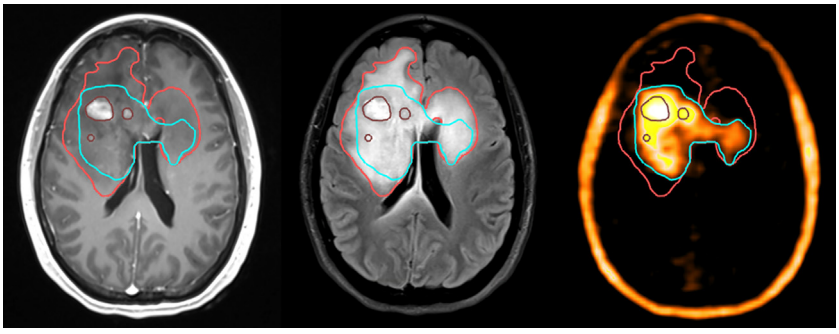

Fig. 2. Contrast-enhanced T1-weighted (left) and fluid-attenuated inversion recovery (middle) magnetic resonance imaging and F18-Fluciclovine positron emission tomography (right) of the brain at a 3-week interval after the previous imaging study.

Questions

1. What are your target volumes?
2. What dose fractionation schedule would you use?
3. Would you order any additional studies before finalizing the treatment plan?

Corresponding author: Rupesh Kotecha, MD, E-mail: rupeshk@baptisthealth.net.

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