



FET PET – Telling Live Tumor from Scar

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After radiation, a bright spot on MRI can be tumor or just treatment damage. Imaging the amino acid tells them apart.

A 54-year-old man came to us in June 2026 with a hard follow-up question. He had been treated for a glioblastoma – the commonest aggressive brain tumor in adults – with radiation and chemotherapy, and was doing well: back to his usual activities, no headache, no new weakness.

The trouble was on the scan. His follow-up MRI showed the main tumor in the left occipital lobe along with a few smaller bright spots. After radiation, though, an area that brightens with contrast can be two very different things – living tumor, or scar and dead tissue left by the treatment itself. On MRI the two often look alike. To separate them, he was sent for an F-18 (fluorethy-tyrosine) FET PET-CT.

What FET PET does

FET is a PET tracer built from an amino acid – a protein building block. Tumor cells are hungry for amino acids and soak it up, so active tumor lights up brightly while normal brain, scar and treatment damage stay dark. That single difference is what lets FET separate live tumor from treatment change – something MRI and the older FDG-PET often cannot do.

The same property makes it useful more widely: telling a recurrence from radiation damage, picking the best spot to biopsy, and tracking whether a tumor is responding to treatment.

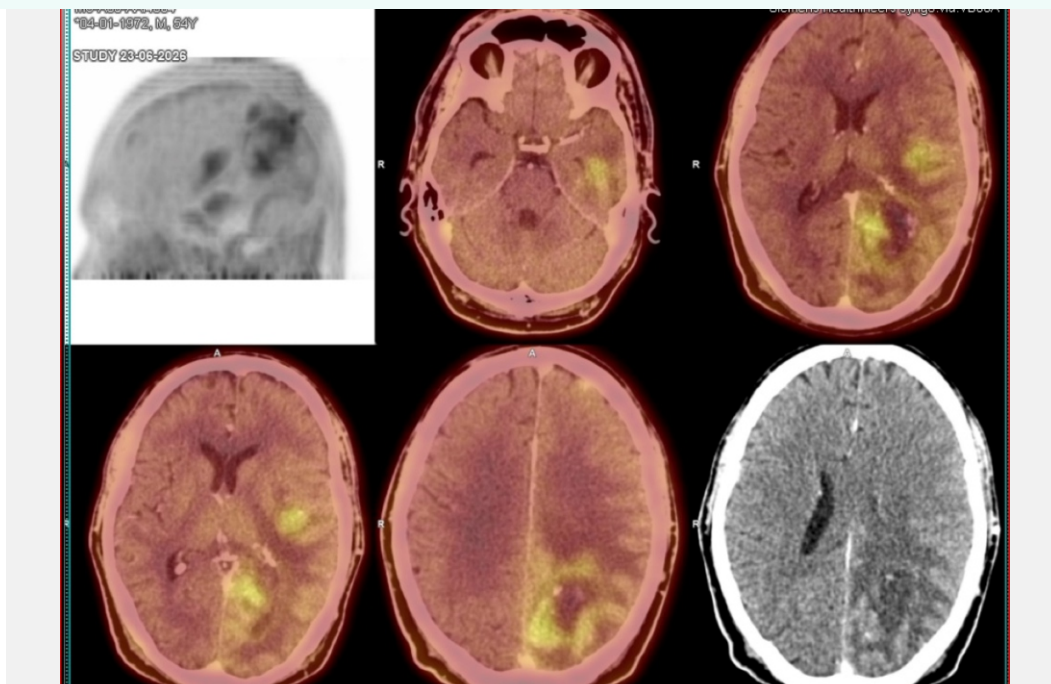


Fig. 1 – Fused FET PET-CT. The large occipital tumor takes up tracer only along one wall (live tumor); its center stays dark (treatment change). The smaller nodules in the insula, parietal and temporal regions also light up, confirming active tumor.

**At a glance**

- ◆ After radiation, a bright spot on MRI can be live tumor or just scar – the two look alike. FET PET tells them apart.
- ◆ It works because tumor cells take up the amino-acid tracer while

- scar and normal brain do not, giving a clear, high-contrast picture.
- ◆ FET also helps separate recurrence from radiation damage, guide biopsies, and monitor response to treatment.

In this man, FET drew the line cleanly. The large occipital mass took up tracer only along one wall – that rim was active tumor – while its center stayed dark, marking it as dead, treated tissue rather than live disease. The smaller nodules all lit up, confirming them as active tumor. His old, treated mouth-cancer site showed nothing.

For the referring physician. When a treated brain tumor throws up bright areas that MRI cannot classify, FET PET can say which are alive and which are not. Here it showed the center of the main tumor was dead while its rim and the satellite nodules were still active – the kind of answer that decides what needs treatment and what can be safely watched. FET PET can be fused with MRI solidifying clinical confidence and provides accurate therapy response assessment.

Reference: Law I, Albert NL, Arbizu J, et al. Joint EANO/EANO/RANO practice guidelines for the use of PET imaging in gliomas using labelled amino acid and [18F]FDG. Eur J Nucl Med Mol Imaging 2019;46:540–557.

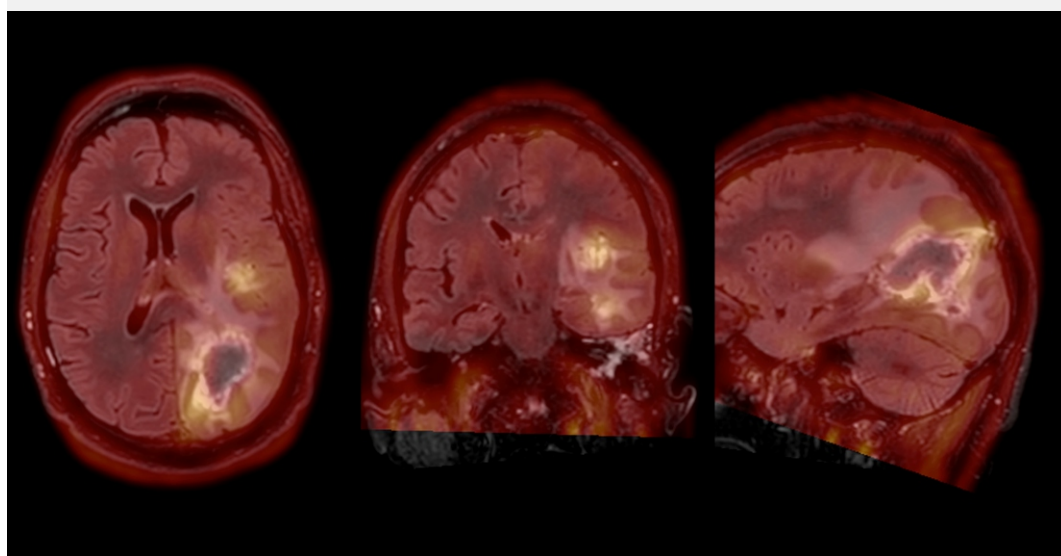


Fig. 2 – FET PET fused with MRI (axial, coronal, sagittal). Tracer uptake sits along the wall of the occipital mass and is absent in its dead center, mapping the live tumor directly onto the anatomy.

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