F-18 choline PET does not detect increased metabolism in F-18 fluoroethyltyrosine-negative low-grade gliomas

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PURPOSE
Positron emission tomography (PET) with radiolabeled amino acids provides information on biopsy target and chemotherapy response in patients with low-grade gliomas (LGG). In this article, we addressed whether PET with F-18 choline (CHO) detects increased metabolism in F-18 fluoroethyltyrosine (FET)-negative LGG patients.

METHODS
Six LGG patients with nongadolinium-enhancing (magnetic resonance) FET-negative LGG were imaged with CHO PET. Regions of interest were positioned over tumor and contralateral brain. Uptake of FET and CHO was quantified as count ratio of tumor to contralateral brain.

RESULTS
The mean FET uptake ratio for FET-negative LGG was 0.95 ± 0.03 (mean ± standard deviation). Five tumors did not show increased uptake ratios for CHO (0.96 ± 0.12). Slightly increased CHO uptake was found in 1 patient (1.24), which, however, was not associated with tumor visualization.

CONCLUSIONS
Amino acid and choline uptake appear to behave similar in nongadolinium-enhancing LGG. For clinical purposes, CHO PET is not superior to FET PET.