

ABSTRACT

Clin Nucl Med. 2022 Apr 29. doi: 10.1097/RLU.0000000000004238. Online ahead of print.

First-in-Man Noninvasive Initial Diagnostic Approach of Primary CNS Lymphoma Versus Glioblastoma Using PET With 18F-Fludarabine and I-[methyl-11C]Methionine.

Postnov A, Toutain J(1), Pronin I(2), Valable S(1), Gourand F(3), Kalaeva D, Vikhrova N(2), Pyzhik E(2), Guillouet S(3), Kobayakov G(2), Khokholova E(2), Pitskhelauri D(2), Usachev D(2), Maryashev S(2), Rizhova M(2), Potapov A(2), Derlon JM.

Author information:

(1)Normandie Univ, UNICAEN, CNRS, ISTCT.

(2)From the N.N. Burdenko National Medical Research Center of Neurosurgery.

(3)Normandie Univ, UNICAEN, CEA, CNRS, ISTCT/LDM-TEP group, GIP CYCERON, Caen, France.

OBJECTIVES: This study sought to assess 18F-fludarabine (18F-FLUDA) PET/CT's ability in differentiating primary central nervous system lymphomas (PCNSLs) from glioblastoma multiformes (GBMs).

PATIENTS AND METHODS: Patients harboring either PCNSL (n = 8) before any treatment, PCNSL treated using corticosteroids (PCNSLh; n = 10), or GBM (n = 13) were investigated with conventional MRI and PET/CT, using 11C-MET and 18F-FLUDA. The main parameters measured with each tracer were SUVT and T/N ratios for the first 30 minutes of 11C-MET acquisition, as well as at 3 different times after 18F-FLUDA injection. The early 18F-FLUDA uptake within the first minute of injection was equally considered, whereas this parameter was combined with the later uptakes to obtain R FLUDA 2 and R FLUDA 3 ratios.

RESULTS: No significant differences in 11C-MET uptakes were observed among PCNSL, PCNSLh, and GBM. With 18F-FLUDA, a clear difference in dynamic GBM uptake was observed, which decreased over time after an early maximum, as compared with that of PCNSL, which steadily increased over time, PCNSLh exhibiting intermediate values. The most discriminative parameters consisting of R FLUDA 2 and R FLUDA 3 integrated the early tracer uptake (first 60 seconds), thereby provided 100% specificity and sensitivity.

CONCLUSIONS: 18F-FLUDA was shown to likely be a promising radiopharmaceutical for differentiating PCNSL from other malignancies, although a pretreatment with corticosteroids might compromise this differential diagnostic ability. The diagnostic role of 18F-FLUDA should be further investigating, along with its potential of defining therapeutic strategies in patients with PCNSL, while assessing the treatments' effectiveness.

Copyright © 2022 Wolters Kluwer Health, Inc. All rights reserved.

DOI: 10.1097/RLU.0000000000004238

PMID: 35485864

Conflict of interest statement: Conflicts of interest and sources of funding: none declared.