
[PET using 11C-methionine in recognition of pseudoprogression in cerebral glioma after combined treatment].

[Article in Russian]
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Abstract
The purpose of the study was to evaluate the value of PET using 11C-methionine (PET-Met) for distinction between true glioma progression and pseudoprogression (PsPr). 72 patients with treated cerebral glioma investigated by PET-Met were identified from prospective database. Entry criteria included new or progressive MR imaging enhancing lesions within first 6 months after irradiation and definite final diagnosis on the basis of the pathological study (n=17) or clinical-radiological follow-up on an average 16 months. PET examinations were assessed by visual inspection and calculating 11C-methionine uptake index (UI). Results. Pseudoprogression was defined as early radiological progression with subsequent regress or stabilization, without salvage therapy. 42 patients were considered to exhibit PsPr and 30 patients had true glioma progression. In PsPr group PET scans were either negative (n=6) or slightly increased tracer uptake (UI range 1.2-2.14) was seen in the site of contrast-enhanced lesion. The UI was 1.48±0.39 (mean±SD). In comparison with pretreatment PET 15 patients showed decrease 11C-methionine uptake on an average by 26%. In recurrence group PET-Met showed abnormal high focal 11C-methionine uptake in the lesion. The UI was 2.54±0.84 (range 1.54-5.4). An UI threshold value of greater than 1.9 optimized differentiation between glioma progression and PsPr with sensitivity of 83.5% and specificity of 97.0%. Conclusion. Metabolic characteristics of PsPr included negative tracer accumulation or slightly increased 11C-methionine uptake in the contrast-enhancing lesion with UI less than 1.9.

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