18F-FRP170

It is a hypoxic cell radiotracer, 1-(2-[18F]fluoro-1-[hydroxymethyl]ethoxy)methyl-2-nitroimidazole (FRP170).

Thirteen patients with glioblastoma underwent FRP170 PET before tumor resection. During surgery, tumor specimens were stereotaxically obtained from regions corresponding to high (high-uptake areas, HUAs) and relatively low (low-uptake areas, LUAs) accumulation of FRP170, and compared immunohistochemical staining for Ki-67 and hypoxia-inducible factor (HIF)-1α between HUA and LUA.

HIF-1α index was significantly higher in HUAs than in LUAs. In contrast, mean Ki-67 indices did not differ significantly between HUAs and LUAs.

Findings for HIF-1α index clearly indicated that HUAs on FRP170 PET represented hypoxic regions in glioblastoma. However, findings of Ki-67 index suggest that HUAs on FRP170 PET include regions retaining proliferative activity regardless of tissue hypoxia [1].

1)
Beppu T, Sasaki T, Terasaki K, Saura H, Mtsuura H, Ogasawara K, Sasaki M, Ehara S, Iwata R, Takai Y. High-uptake areas on positron emission tomography with the hypoxic radiotracer (18)F-FRP170 in glioblastomas include regions retaining proliferative activity under hypoxia. Ann Nucl Med. 2015 Jan 25. [Epub ahead of print] PubMed PMID: 25618012.