

Effects of anesthesia upon ^{18}F -FDG uptake in rhesus monkey brains

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The kinetics of ^{18}F -fluorodeoxyglucose (^{18}F -FDG) in the monkey brain were monitored, and comparisons were made between the conscious state and when under ketamine and pentobarbital anesthesia. Rhesus monkeys were intravenously injected with ^{18}F -FDG and followed by 60 min of PET scanning. In the conscious state, the ^{18}F -FDG concentration reached a plateau 5 min after intravenous injection. Under ketamine anesthesia, the ^{18}F -FDG concentration gradually increased with time in all monitored regions. At 60 min after injection, the concentration in the striatum was about 3.2 times greater than that in the conscious state, and about 4.5 times greater in the cerebral cortex. Under pentobarbital anesthesia, the ^{18}F -FDG concentration in the occipital cortex was slightly lower. These findings demonstrate that ^{18}F -FDG concentration in the monkey brain is significantly affected by anesthesia. The results also imply the existence of a short-term regulation mechanism for hexokinase activity in intact monkey brain.

Key words: ^{18}F -FDG, rhesus monkey, brain, ketamine, pentobarbital, conscious