

Anesthetic Protocols Influences Brain 18FDG Uptake in Normal Dogs

Minsu Lee,¹ Ahra Lee,¹ Miae Jung,¹ Inhye Lee,¹ Sik Namgung,² Hyunwoo Chung,² Sangsoep Nahm³ and Kidong Eom^{1*}

¹*Department of Veterinary Radiology and Diagnostic Imaging, College of Veterinary Medicine, Konkuk University, Seoul, Korea*

²*Department of Nuclear Medicine, Konkuk Medical Center, Konkuk University, Seoul, Korea*

³*Department of Veterinary Anatomy, College of Veterinary Medicine, Konkuk University, Seoul, Korea*

Purpose: The purpose of this study was to assess the effects of four widely-used anesthetic mixtures on fluorine-18 fluorodeoxyglucose (18F-FDG) uptake in the brain regions using positron emission tomography combined with computed tomography (PET/CT) in normal dogs.

Materials and Methods: 18F-FDG PET/CT scanning was performed in normal five beagle dogs (two males and three females). The weight was 6.1 kg with a mean age 13.5 months. Four types of anesthetic protocols were evaluated; (1) propofol/isoflurane (2) medetomidine/pentobarbital (3) xylazine/ketamine (4) medetomidine/zoletil. Then, the effects of four anesthetic agents in six brain regions (frontal lobe, parietal lobe, temporal lobe, occipital lobe, cerebellum and brainstem) were determined by measuring of standard uptake values (SUV).

Results: Higher SUV was observed in the frontal and occipital lobes, which was significantly different than any other brain regions ($p < 0.05$). The highest SUV was observed in medetomidine/zoletil mixture group, whereas the lowest SUV was observed in propofol/isoflurane mixture. However, the types of anesthetic protocols did not have any influences in the degree of SUV when the same brain areas were compared.

Conclusion: We concluded that anesthetic protocols tested in our study do not evoke significant variation in 18F-FDG PET/CT examination. However, each anesthetic protocol elicits spatial differences in the brain glucose uptake, which should be carefully considered when comparing regional changes.

Key words: 18 F-FDG PET/CT, canine brain, standard uptake value, anesthesia, dog

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*Corresponding author: eomkd@konkuk.ac.kr