

Canine Model of Ischemic Stroke with Permanent Middle Cerebral Artery Occlusion: Clinical and Histopathological Findings

Byeong-Teck Kang, Jong-Hwan Lee¹, Chul Park, Dong-In Jung, Su-Hyun Gu, Hyo-Won Jeon, Chae-Young Lim, Jong-Hyun Yoo, Ha-Jung Kim, Ju-Won Kim, So-Young Lee, Jung-Hyun Kim, Fu-Shi Quan¹, Eung-Je Woo², and Hee-Myung Park*

*Department of Veterinary Internal Medicine,
College of Veterinary Medicine, Konkuk University*

¹*Department of Veterinary Anatomy, College of Veterinary Medicine, Konkuk University*

²*College of Electronics and Information, Kyunghee University*

The aim of the present study was to assess the clinical and histopathological findings in canine model of ischemic stroke. Cerebral ischemic stroke was induced by middle cerebral artery occlusion in 4 healthy Beagle dogs using silicone plug. They showed neurologic signs of forebrain dysfunction, such as reduced responsiveness, head turn, circling, postural reaction deficits, perceptual deficits, and hemianopsia. These signs gradually regressed within 4 weeks without therapy. On magnetic resonance imaging, T2 hyperintensity and T1 hypointensity were found in cerebral cortex and basal ganglia. These lesions were well-defined and sharply demarcated from adjacent brain parenchyma with a homogenous appearance. There were no abnormalities of cerebrospinal fluid. At necropsy, atrophic and necrotic lesions were observed in cerebral cortex. Cerebral cortex, basal ganglia, and thalamus were partially unstained with triphenyl-tetrazolium chloride. Histopathologically, typical features of infarction were identified in cortical and thalamic lesions. This study demonstrates that our canine model has a resemblance to real stroke patients.

This work was supported by the SRC/ERC program of MOST/KOSEF (R11-2002-103).

* Corresponding author: parkhee@konkuk.ac.kr