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Global Cerebral Ischemia in a Beagle Dog

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Introduction: Global cerebral ischemia occurs commonly in patients who have a variety of clinical conditions including cardiac arrest and shock. Cerebral ischemia results in a rapid depletion of energy stores that triggers resulting in excitotoxic death. Imaging studies of the brain with computed tomography(CT) or magnetic resonance imaging(MRI) are necessary to confirm the clinical neurolocalization, identify any associated mass effect, and rule out other causes of focal brain disorders.

Material and Methods: Cardiopulmonary arrest was occurred by propofol anesthesia in a 1 year old, intact female Beagle dog. After successful cardiopulmonary resuscitation was performed within 5 minutes, clinical signs such as vocalization, paddling, opisthotonus and seizure were represented. At the 12th day, CT and MRI of the brain was performed in order to evaluate the brain. After euthanasia, histopathologic examination was performed.

Results: On transverse image of CT, lesions appeared as a hypodense in the right dorsal surface of the frontal lobe and level of optic canal, and dorsomedial surface of occipital lobe of cerebrum. No contrast enhancement was represented following intravenous contrast administration. On transverse image, sagittal image and dorsal image of MRI, the lesions were seen signal changes that were a hyperintense on T2-weighted image and a isointense or mild hypointense on T1-weighted image. Hyperintense lesions both T2-weighted and T1-weighted images was observed at the surrounding cerebral sulcus. Signal change after injecting contrast agent was not shown on T1-weighted image. Histopathologic examination after euthanasia, the lesion was revealed necrosis of the cerebral cortex caused by cerebral ischemia.

Clinical relevance: This report described a case that evaluated global cerebral ischemia caused by cardiopulmonary arrest with CT and MRI.

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