Abstract

Title: Structural changes in model of hypoxic-ischemic encephalopathy in rat

Objectives: The aim of the research is to develop a model of hypoxic-ischemic encephalopathy in a rat that would represent perinatal injury in a human and then histologically differentiate the most commonly damaged cerebral structures.

Methods: This is an experimental study. Five laboratory rats underwent hypoxic-ischemic conditions causing encephalopathy according to the Rice-Vannucci model. The control group representing the other five rats underwent hypoxia for 1.5 hours. Subsequently, the animals were returned to their mother. 48 hours later, cerebral perfusion, paraffinisation, slicing the brain into sections and followed by applying these sections onto slides. Sections to represent morphological changes and degeneration of neurons were stained with Hematoxylin-Eosin, Fluoro Jade B and immunohistochemically. The sections were then observed and evaluated under a light microscope.

Results: Following the onset of hypoxic-ischemic encephalopathy in 7-day-old rat pups, damage to the investigated structures was observed in two animals. Other animals in the experimental group exhibited only minor morphological changes in neurons observable in H&E staining. Brains of the control group were intact.

Keywords: necrosis, apoptosis, animal model, brain injury