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Poster Presentation

p160 - Effects of infantile acute repeated hyperglycemia on neuronal density of hippocampus and severity of pentylenetetrazol induced epileptiform convulsions in Wistar rats

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Purpose: Hyperglycemia and metabolic disturbances may induce morphological and behavioral changes in some neuronal structures such as hippocampus. The aim of our study was to investigate the effects of infantile repeated acute hyperglycemia on neuronal density of hippocampal CA3 region in newborn Wistar male and female rats and its effect on pentylenetetrazol induced generalized seizures in adult rats. Method: Ten days old male and female Wistar rats were randomly divided into 4 groups (n=20 for each): female and male hyperglycemia and control. Hyperglycemia was induced by intraperitoneal injections of 2 g/kg dextrose solution, 2 times /day for 14 days. Control animals received saline solution. Blood glucose regularly was measured. After that, the brains of rats (n=10 for each group) were removed for histological (stereological) analysis. Other animals were kept until 2.5 month old. Then, seizure was induced in all groups by an intraperitoneal pentylenetetrazol injection (45 mg/kg) and latency periods of epileptiform convulsions were recorded. All experiments were approved by Local FUM Committee for Animal Ethics.

Results: showed that the difference of hippocampal CA3 neuronal density and susceptibility to pentylenetetrazol induced convulsions in hyperglycemic and control groups were significant, but these differences between male and female rats were not significant. Conclusion: The present study determined that acute repeated increments in daily blood sugar levels in infantile period of rats may induce damage of neuronal structures of the Central Nervous System especially in hippocampus and such morphologic disturbances may elevate the susceptibility to pentylenetetrazol induced epileptiform convulsions.

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