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Maternal diabetes proliferate the choroid plexus and enlarge the lateral ventricle in brain of newborn rats

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Introduction: Microvascular systems alteration is responsible for the most devastating complications of diabetic patients. Similar to the microvascular systems of retina and kidney the choroid plexus can be a vulnerable target organ for hyperglycemia. Hyperglycemia alters the electrolyte composition of CSF which probably reflects the microvascular alteration of choroids plexus. In the present study we examined the effects of maternal hyperglycemia on the vascular structure of choroids plexus and the volume of lateral ventricle in newborn Wistar rats.

Methods: At 7th day of pregnancy hyperglycemia was induced by a single injection (i.p.) of streptozotocyn (55 mg/kg). Control animals were given an equal volume of citrate buffer. After parturition 2 pups were randomly selected from each litter, their brain dissected, fixed in 10% formalin, sectioned in 7 µm thickness and stained by H.E. By applying stereological techniques and systematic random sampling scheme the volume of choroids plexus, length density and total length of capillaries and the volume of the lateral ventricles were estimated.

Results: Statistical analyses showed significant increase ($P<0.01$) in the volume of lateral ventricles, volume of choroids plexus, the length density and total length of capillaries in choroids plexus of pups born from diabetic mothers when compared with controls.

Conclusion: These results reveal that maternal hyperglycemia may cause abnormal angiogenesis in choroid plexus. Increase surface of CSF secreting epithelium may lead to efflux imbalance at CSF- blood barrier and increase the ventricular volumes.