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
Medical Sciences

Structural Changes of Placenta in Preeclamptic Patients: Light and Electron Microscopic Study

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Abstract: Background: Preeclampsia is a disorder that occurs only during pregnancy and the postpartum period and affects both the mother and the unborn baby. It is a rapidly progressive condition characterized by high blood pressure and the presence of protein in the urine. The study was designed to investigate the histological and ultrastructural changes in placentas from pregnancies complicated by preeclampsia. Methods: Paraffin sections from placenta biopsies were prepared for light microscopic examination. For ultrastructural examination, biopsies were prepared and examined by digital scanning electron microscope. Results: Light microscopic examinations showed that the nuclei of syncytiotrophoblast layer were aggregated into clusters in numerous sprouts and in long anastomosing strands. Villous connective tissue core was progressively condensed while the fetal placental capillaries regressed up to complete disappearance. Endothelial degenerative and atheromatous changes were seen in placental stem vessels, also basal decidual arterioles showed endothelial degeneration, progressive fibrosis, and obliteration. By SEM, villous tissues from the preeclamptic cases demonstrated elongated villi with wrinkled surfaces and covered with fibrin-like plaques. Capillary loops in preeclamptic cases were sparse in number and significantly longer compared to the control cases. They exhibited fewer branches and majority of the loops were uncoiled. Conclusions: In placentas complicated by preeclampsia, ischemic damage of placental tissue with maldeveloped terminal villi occurs. These findings are consistent with an increase in fetoplacental vascular impedance where absent end-diastolic flow velocity was demonstrated in umbilical artery before delivery. These findings account for impaired gas and nutrient transfer in this disorder.

Key Words: Histology, placenta, preeclamptic patients

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