The description of the structure of the placenta in hypertensive disorders of pregnancy correlated to the outcome of pregnancy

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Salgado, Liyanarachchige Sujatha Senadeera

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Abstract:

In view of the structural variations and profound metabolic changes in the function of the placenta, hypertensive disorders of pregnancy constitute one of the most serious threats to the foetus and also endanger the mother. The main aim of the study was to study the structure of the placenta in hypertensive disorders of pregnancy and the effects of the structural changes on the outcome of pregnancy. The study sample consisted of placentae from 150 normal and 200 hyperensive mothers. Light microscopic and electronmicroscopic studies were done on section taken from central and peripheral foetal areas of the placentae from these mothers. Ultrastructrual stereological quantitative studies of the placental tissue were performed. Villous variants such as syncytial knots, vasculo-syncytial membranes, thickened subtrophoblastic basement membranes, cytotrophoblasts, fibrinoid necrosis, placental infarctions and areas of calcification were studied in relation to maternal factors such as age, parity, and the period of gestation. To assess the outcome of pregnancy, foetal factors such as birthweight, head circumference and the apgar score were also studied in relation to different structural features of the placentae. For each villous variant, comparative villous counts were done in both central and peripheral areas. Majority of the foetal stem vessels showed obliterative endarteritic changes in placentae from mothers with hypertension. All villous variants showed statistically significant high values in relation to hypertension when compared to normals. Ultrastructural study showed increase in number of villous cytotrophoblast cells, thickening of the subtrophoblastic nasement membrane and increase in number of bulbous microvilli on the surface of the syncytium in hypertensive placentae when compared to normal placentae. Ultrastructural stereological analysis showed statistically significant increase in endothelial cytosol, mitochondria, rough endoplasmic reticulum, glycogen deposits of endothelial cells of terminal villous capillaries of hypertensive placentae. Statistically signicicant difference was seen in the thickness of the terminal villous capillary basement membranes of chorionic villi of hypertensive placentae when compared with normals. Highly complex interaction was seen between pericytes and endothelial cells of terminal villous capillaries of hypertensive placentae. Statistically significant increase was seen in the number of pericytes associated with endothelial cells of capillaries of hypertensive placentae than the normal placentae.

Key Words : Pregnancy outcome/regnancy, High-Risk