**ID-1-P-3321 Ultrastructural alterations in placenta in relation to pesticide exposure during pregnancy and delivery of low birth weight baby**

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Pesticide usage forms common agriculture practice. It is known that pesticides can reach placenta and accumulate there and have potential to cross the placental barrier and enter the foetal bloodstream. They can cause alterations in the development as well as functions of placenta resulting in adverse effects during pregnancy. The present study was undertaken to study changes in ultrastructure of placenta in tea garden workers exposed to pesticides during pregnancy and acetyl cholinesterase (AChE) activity was assessed as biomarker of organophosphate pesticide (OPP) exposure. The samples of placenta and blood (maternal and cord) were collected from singleton pregnancies from women exposed to pesticides working in tea gardens. The adverse health effects experienced by individuals were evaluated by questionnaires. Maternal & cord blood and placental tissue were assessed for traces of pesticides by GC-ECD and AChE activity was evaluated. The ultrastructure changes in placental tissue were studied with Hitachi (H-7500) transmission electron microscope (TEM). Significantly higher levels of OPPs were observed in tea garden workers than those from house wives while the AChE activity was significantly low in maternal & cord blood and placenta of tea garden workers. In addition, ultrastructural study of placenta has revealed that the villi in placenta of tea garden workers exposed to pesticides are comparatively longer and thinner and less vascularised as compared to non exposed group. Fibrinoid was frequently observed in villous stroma. The density of apical microvilli appeared considerably reduced and occasional microvilli-free areas were observed. The underlying trophoblastic basement membrane appeared significantly thicker than that of non-exposed workers. Occasionally fusion of cytotrophoblast and syncytiotrophoblast was also observed. Syncytial knots were numerous in exposed workers. In most of the cases of tea garden workers, trophoblasts (especially syncytial trophoblasts) showed dynamic changes in the nuclei such as increased heterochromatin content and nuclear aggregation. There was increased collagen in the villous stroma and shrunken endothelium in foetal capillaries. It is plausible that deleterious effect of pesticides on placental barrier of tea garden workers could result of impairment of placental barrier, restrict nutrient supply from mother to foetus and thus could be the cause the Low birth Weight (LBW). Therefore, it can be concluded that exposure to pesticides during pregnancy is likely to be detrimental to the growth of foetus and the extent of damage (foetal outcome) is related to the level of pesticide exposure.

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