

## **Structural changes in umbilical vessels in pregnancy induced hypertension.**

### **Abstract:**

Pregnancy Induced Hypertension (PIH) is associated with placental morphological changes, alterations in the blood flow patterns in the umbilical vessels and adverse fetal and maternal outcome. Studies have demonstrated changes in the structure of the umbilical vessels but these have not been described across the length of the cord or correlated with the severity of disease. **STUDY DESIGN:** A case control study. **SETTING:** Kenyatta National Hospital. **MATERIALS AND METHODS:** Thirty six umbilical cords from newborns of women with and without PIH (18 cases, 18 controls) were obtained and studied with light microscopy. Of the cases 9 women had severe PIH and 9 had mild PIH. Means and standard deviations for the various parameters of the various groups were obtained. Student's t-test and ANOVA were used to compare means, a p value of  $<0.05$  being significant. **RESULTS:** The structure of the umbilical vessels changes from the placental end to the fetal end. The umbilical vein in PIH had a greater wall thickness and a smaller luminal area than in the controls. The vein's wall-luminal ratio increased from the placental to the fetal end. Duplication of the elastic subintimal lamina (ESL) was higher in the cases. The ESL was more commonly duplicated in the fetal end. There were no structural differences between the umbilical arteries in PIH and in the controls. **CONCLUSION:** PIH is associated with structural changes in the umbilical vessels. These changes are more predominant in the vein than in the artery and in the vein, they are more obvious in the fetal end. The observed increase in wall-luminal ratio from the placental to the fetal end suggests that the fetal end of the umbilical vein has a more refined role in the regulation of blood flow to the fetus