

Comparison of placental endothelin-1 (ET-1) expression under hypoxia between normal versus preeclampsia

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Objective : To evaluate endothelin-1 (ET-1) expression in the villous explants from normal and preeclamptic (PE) placentae under hypoxic condition.

Methods : Villous explants from normal (n=5) and PE (n=4) placentae were obtained. To obtain hypoxic culture condition, villous explants were cultured in hypoxic chamber or treated with deferoxamine (DFO). ET-1 mRNA expressions in villous explants were evaluated by RT-PCR following 0, 24, and 48 h of culture in hypoxic chamber, and 0, 2, 4, 6 h following DFO treatment. ET-1 protein levels in media were measured by enzyme immunoassay.

Results : After 24 and 48 hours of incubation of villous explants from normal and PE placenta in hypoxic chamber, ET-1 mRNA and protein level increased in both group, however, ET-1 production seemed to be more exaggerated in the villous from PE placenta. During 6 h of DFO exposure, ET-1 mRNA level was increased in the villous explants from PE placenta comparing to those from normal placenta ($p < 0.05$). Interestingly, the increase in the villous explants from PE placenta was enhanced than those from normal placenta. Concordantly, increments of protein level between 0 to 2 h and 2 to 4 h were significantly higher in villous explants from PE placenta ($p < 0.05$).

Conclusion : ET-1 mRNA and protein were increased in villous explants from PE placenta compared to those from normal placenta. Furthermore, villous explants from PE placenta showed upregulated ET-1 expression upon hypoxic stimulation. This enhanced sensitivity to hypoxia may contribute to ET-1 overexpression in PE placenta in vivo and it needs further investigation for clarification.