Gestational age-specific expression of placental endoglin in normal human pregnancy

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The study examined the expression of Endoglin (Eng) in normal human pregnancy throughout gestation. Placentas were collected from normotensive women from first, second and third trimester of normal pregnancy, without medical complications, and analyzed by ELISA using monoclonal antibody (mAb) to human Eng as capture antibody. Independent T Test and Spearman's correlation were performed. 280 placentas were analyzed. Age was comparable between the groups. The mean ± SD Eng, expressed as nano gram per 100 milligram tissue were: 58.82 ± 26.82; 45.33± 26.96 and 28.95 ± 11.89 for first (n=115), second (n=79), and third trimester (n=86), respectively; showing a decline in protein expression with an increase in gestational age. Spearman's correlation also reflected the decline showing a significant negative correlation (r = -.506, p = .000) between Eng protein and gestational age in days. The findings show higher Eng expression in the first trimester of normal pregnancy when a hypoxia state prevails in the placenta but as placental environment transitions to normoxic state, a steady decline in Eng was observed. There are reports that Eng expression is up-regulated in preeclamptic placentas. Increased Eng results in overexpression of its soluble form (sEng) in maternal circulation. sEng by coupling with angiogenic proteins impairs placentation, deranges angiogenesis and promotes vasoconstriction. Currently the use of mAb to sEng, administered during early pregnancy to women at risk for preeclampsia seems promising, with the hope that by inhibiting the action of sEng, the production of several angiogenic molecules can be increased; giving clinicians a potential way to postpone delivery. It therefore follows that identifying the dose at which the mAb to sEng could be administered is informative and could largely depends on the expression of Eng in the first and second trimester of pregnancy. Our findings provide preliminary information which is currently unavailable in the literature.