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FETO-PLACENTAL STEROID METABOLISM IN GROWTH RETARDED HUMAN FETUSES

Women bearing fetuses with intrauterine growth retardation (IUGR) frequently have low serum estriol (E3) levels in the gestation. One origin of the low E_3 production in these pregnancies may be reduced secretion of fetal adrenal cortex-derived neutral steroid precursors of estriol synthesis in the placenta. However, there is evidence that placental conversion of the neutral precursors to estrogen may be low in association with a fetus with IUGR. In order to investigate the relative importance of these two possible causes of low E_3 production, umbilical venous, and maternal venous neutral steroid and estrogen levels were assessed in a series of pregnancies in which the fetus had IUGR.

The significantly low E_3 values in both umbilical and maternal samples are postulated to result not only from the reduced fetal adrenal dehydroepiandrosterone sulfate (DHAS) secretion, but also underactive 16α-hydroxylase activity in fetal liver or low efficiency of 16α-OH-DHAS relative to DHAS, as a substrate for placental conversion to an estrogen.

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