Anti-Müllerian Hormone concentration levels in maternal plasma during the first, second and third trimester of pregnancy

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Introduction:

Follicle-Stimulating Hormone (FSH) drops rapidly in pregnancy but Anti-Müllerian Hormone (AMH) has not been shown to drop until about 12 weeks. Since the follicles that secrete AMH are thought to be FSH independent, AMH levels should slowly decline in the absence of FSH because when the follicles reach FSH dependence, they would die off. The study by Nelson et al. presents data that suggests a decline in AMH levels suddenly starts at 12 weeks gestation.[1]

This study was performed to assess for and validate a decline of AMH in pregnancy and to assess for an acute versus gradual decline in AMH between trimesters.

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Materials and methods:

This retrospective cohort study was carried out on 167 samples from 112 women that were randomly distributed across all gestational ages ranging from 5.6 to 41 weeks. Fifty women provided serial samples which were accounted for in the analysis. The study was approved by the Institutional Review Board. The samples were obtained from the University of Iowa (UIHC) Maternal Fetal Tissue Bank. The plasma samples were collected and then stored at -80 degrees Celsius.

The samples were then grouped based on the trimester collected; the first, second, or third trimester. AMH levels were then assessed for each sample using the AMH generation two assay kit (Beckman Coulter).

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Results:

We observed an acute drop in AMH levels prior to 20 weeks of gestation when sampling women from the UIHC Maternal-Fetal Tissue Bank.

Discussion:

The present study agrees with Nelson et al.[1] in regards to a decline in AMH after the first trimester. There is a sharp decline in AMH at 12-16 weeks gestation indicating that the follicular development is actively suppressed, not passively lost because of a drop in FSH. It appears that pregnancy may be a unique situation in regards to AMH.

Reference:

[1]Nelson SM, Stewart F, Fleming R, Freeman DJ. Longitudinal assessment of antimüllerian hormone during pregnancy-relationship with maternal adiposity, insulin, and adiponectin. Fertil Steril. 2010 Mar 1;93(4):1356-8.