ARE ELEVATED ANTI-MÜLLERIAN HORMONE LEVELS ASSOCIATED WITH AN INCREASED LIKELIHOOD OF PRETERM DELIVERIES IN INFERTILE PATIENTS WITH POLYCYSTIC OVARIAN SYNDROME UNDERGOING OVULATION INDUCTION?

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Background:

Polycystic ovarian syndrome (PCOS) is often associated with elevated anti-Müllerian hormone (AMH) levels. Women with PCOS may experience subfertility due to anovulation, and ovulation induction (OI) agents can help achieve pregnancy. Once pregnant, women with PCOS are at increased risk for complications including gestational diabetes, preeclampsia, and preterm delivery, although the role of AMH in predicting the risk of preterm birth is not completely understood.

Objective:

The purpose of this study was to evaluate the pregnancy outcomes of patients with PCOS undergoing OI and determine the relationship between AMH levels and preterm delivery risk.

Materials and Methods:

This was a retrospective cohort study of patients with PCOS (per Rotterdam criteria) undergoing OI with letrozole and/or clomiphene citrate in a single academic clinic from December 2019–August 2022. Patients were stratified by AMH quartiles (1Q: 0.63–4.78 ng/mL, 2Q: 4.79–8.16 ng/mL, 3Q: 8.17–12.23 ng/mL, and 4Q: 12.24–42.50 ng/mL). The primary outcome was the number of preterm deliveries among all quartiles. ANOVA and chi-square analyses were used to compare quartiles. A logistic regression analysis was used to determine if AMH level or quartile is associated with preterm delivery, with $p<0.05$ defining statistical significance.

Results:

During the study period, there were 301 patients with PCOS undergoing a total of 947 OI cycles. Of these cycles, 113 resulted in clinical pregnancies across 108 patients, and 76 carried pregnancies to at least 24 weeks and delivered within the same hospital system. Twenty-nine OI cycles across 28 patients resulted in clinical first-trimester pregnancies, but these patients did not deliver within the same hospital system and were excluded from analysis. In addition, 42 OI cycles across 39 patients were inductions of labor or scheduled cesarean sections and were excluded from analysis. Finally, 4 patients were still pregnant at the time of data collection and were excluded from analysis. Thus, 35 OI cycles across 34 patients were analyzed, representing cycles in which patients spontaneously went into labor.

In this cohort (n=35), median AMH was 10.07 ng/mL (interquartile range 7.24−16.90 ng/mL). Mean AMH levels were higher in the preterm delivery group than in the term delivery group, though the difference was not statistically significant (14.82 [n=4] vs. 11.81 [n=31], p=0.4791). Among AMH quartiles, there was no significant difference in mean age (p=0.5132); mean estimated gestational age at delivery (p=0.3571); number of preterm deliveries (p=0.5519); or

prevalence of pregnancy-related complications, including hypertensive disorders, diabetes, and cervical insufficiency (p=0.7887). Simple logistic regression of preterm delivery by AMH, age, and BMI revealed no significantly increased odds of preterm delivery with increasing AMH (OR=1.0558, p=0.4605, CI: 0.9140−1.2197) or AMH quartile (OR=2.7475, p=0.2453, CI: 0.4995−15.1137). Though the absolute number of preterm deliveries in this cohort was limited, it is worth noting that 50% of patients who delivered preterm had AMH levels above the 75th percentile, and 100% had AMH levels above the 50th percentile.

Conclusion:

Elevated AMH levels in patients with PCOS undergoing OI may not be significantly associated with increased likelihood of preterm delivery, although a larger sample size is needed to further elucidate this relationship.

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