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# Elevated Anti-Müllerian Hormone Level Is Associated with Lower Live Birth Rate in Patients Undergoing Fresh Embryo Transfer

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## Abstract

**OBJECTIVE:** Anti-Müllerian hormone (AMH) is a reliable predictor of ovarian response in IVF. However, its role as a prognostic marker of pregnancy outcome is conflicting. Traditionally, high AMH level is considered a marker of optimal ovarian reserve, but higher AMH level in patients with PCOS was found to corelate with poor IVF outcomes. Therefore, we propose to investigate the association between severely elevated AMH level and live birth rate (LBR) in young patients undergoing IVF for different etiologies.

**MATERIALS & METHODS:** A retrospective analysis of the Society of Assisted Reproductive Technology Clinic Outcome Reporting System Database (SART CORS) was performed using data from 2012-2016. All fresh autologous IVF cycles followed by fresh embryo transfer in women <35 years old were included (n=113,643). Based on AMH level, cycles were stratified into 3 groups; Low (<0.6 ng/mL, 10th percentile value), intermediate (0.6-7.88 ng/mL), high (>7.88 ng/mL, 90th percentile). Cycle characteristics and pregnancy outcomes were compared between the groups.

**RESULTS:** Women in the high AMH group were younger (31± 2.9 years) than the intermediate and low AMH group ($p<0.001$) and required lower doses of gonadotropins (1800 IU, $p < 0.001$) for stimulation. In the high AMH group, 74.6% of the patients had a primary infertility diagnosis other than PCOS. The fertilization rate was significantly higher in the high AMH group as compared to the intermediate and low AMH group (12 vs. 8 vs. 3 oocytes). LBR was significantly higher in the intermediate AMH group (36.4%) as compared to high AMH (31.1%) and low AMH (22.2%; $p < 0.01$). When compared between two groups, LBR was higher in the intermediate AMH group than high AMH group [$p<0.01$, OR 1.26 (1.22-1.32)]. The area under the curve for AMH for LBR was 0.52 in intermediate AMH and 0.47 in high AMH group.

**CONCLUSION:** In young women undergoing IVF for different indications, severely elevated AMH levels (>7.88 ng/mL) are associated with higher fertilization but lower LBR after fresh embryo transfer.

**IMPACT STATEMENT:** The result of this study underscores the fact that severely elevated AMH level does not translate into better pregnancy outcome in young women undergoing fresh transfer. This information is useful for patient counselling and individualization of IVF cycle for optimal outcome.