

DIMINISHED FOLLICULAR FLUID SOLUBLE ENDOGLIN LEVEL IN WOMEN WITH LOW OOCYTE YIELD

Papri Sarkar, MD, Monica Moore, M.S., M.S.N., Kellie Larsen MSc, Nihan Semerci, MSc, Asli Gokturk, M.SC., Hasan Alhasan, MD, Anthony N Imudia, M.D., Umit A Kayisli, PhD, Charles J Lockwood, MD, MHCM and Ozlem Guzeloglu-Kayisli, PhD,

(1)University of South Florida, Tampa, FL, (2)Tampa, FL, (3)Postdoctoral researcher, Tampa, FL, (4)University of South Florida and SGF Tampa Bay, Tampa, FL, (5)Department of Obstetrics and Gynecology, Morsani College of Medicine, University of South Florida, Tampa, FL

Background:

In an ovarian stimulation cycle, advanced maternal age (AMA) and diminished ovarian reserve (DOR) are associated with lower oocyte yield. Ovarian fibrosis is a key factor in causing structural changes in ovarian stroma, resulting in ovarian aging and potentially DOR. Previous studies have shown that fibrotic tissue leads to microenvironmental changes for angiogenesis. Transforming growth factor-beta (TGF- β) signaling, via TGF- β 1 and soluble endoglin (sEng) contribute to the regulation of inflammation, and angiogenesis. Thus, their levels are likely to get affected in conditions associated with ovarian fibrosis, which remains unexplored in IVF population.

Objective:

To evaluate the relationship between TGF- β 1, and sEng, in the serum and follicular fluid of women with poor outcome in an ovarian stimulation cycle compared with that of women with normal ovarian stimulation cycle outcome.

Materials and Methods:

Prospective case-control study conducted at an academic hospital after Institutional Review Board approval over a period of 12 months. Quantification of TGF- β 1, and sEng levels by ELISAs was performed in the first follicular fluid (FF; N=30) and serum samples collected from women undergoing IVF. Statistical analysis was performed using *t*-test and $P < 0.05$ accepted as significant.

Results:

sEng level in the FF of women with DOR (anti-mullerian hormone (AMH) level < 1 ng/mL; $n=10$) was lower as compared to age-matched women who had normal ovarian reserve (AMH level ≥ 1 ng/mL; $n=11$; 9014.06 ± 1437 vs. 10479.39 ± 1495 pg/ml; $p=0.034$). Similarly, in women ($n=10$) with ≤ 3 mature (MII) oocytes, sEng level in FF was lower as compared to women ($n=18$) with > 3 MII oocytes (8752.79 ± 1703 vs. 10379.70 ± 1271 ; $p=0.006$). There were no statistically significant associations found between sENG in serum, TGF- β 1 in serum and FF among these women. These levels were compared between young women (< 35 years old) and women of advanced age (> 37 years) with normal ovarian reserve and no significant associations were found.

Conclusions:

Our findings indicate that low sENG levels are correlated with DOR and poor MII yield.

Support:

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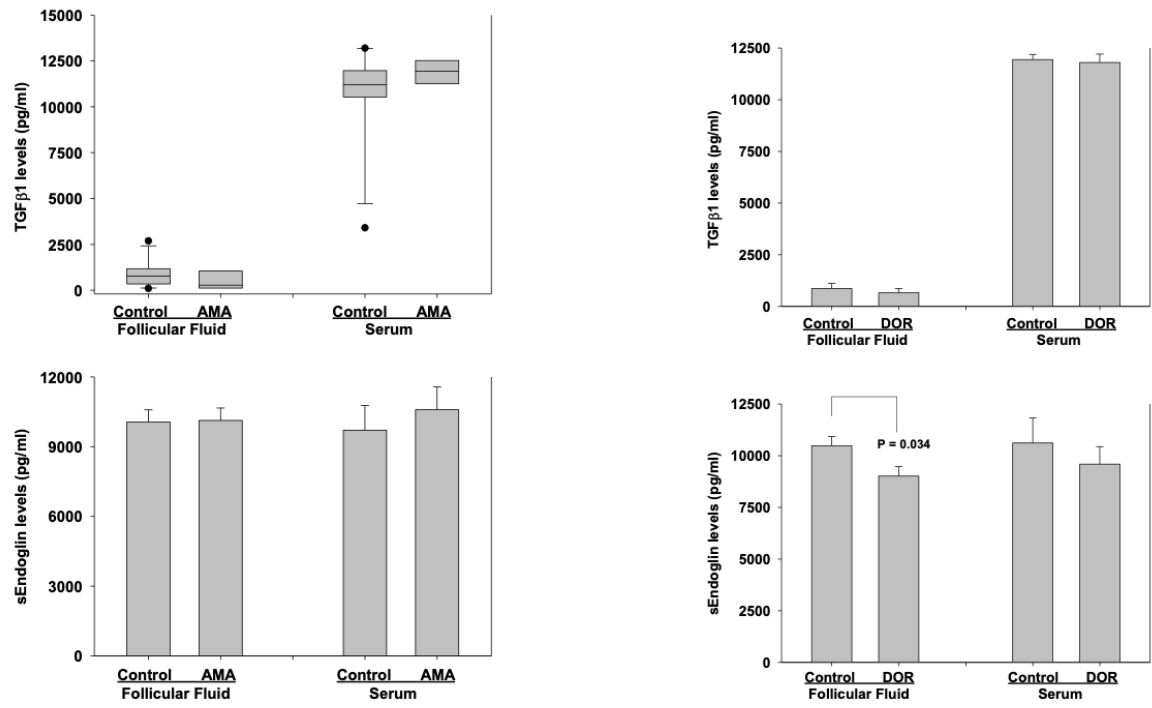


Figure: Serum and follicular level of TGF-β1, and sEng.

(A) Comparison between young (<35 years) old and AMA (>37 years).

(B) Comparison between age matched control patients with normal ovarian reserve and DOR.