Analysis of vitamin D3 metabolism in women with recurrent spontaneous abortion and fertile controls

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Background: Regulation of immune system is essential for pregnancy maintenance. Vitamin D3 levels appear to be connected to the pregnancy success through its immunomodulatory functions. We hypothesized that impaired vitamin D3 metabolism could be associated with miscarriage in women with recurrent spontaneous abortion (RSA).

Methods: Blood and endometrial samples were obtained from unexplained RSA patients and fertile women. Serum levels of 25-hydroxyvitamin D, parathyroid hormone and calcium were measured. Expression of transcripts for molecules essential in vitamin D3 action including vitamin D receptor (VDR), 1α-hydroxylase and 24-hydroxylase was investigated by real time RT-PCR. Protein levels of aforesaid molecules were quantified in endometrial samples by immunohistochemistry and western blot using antibodies generated against specific peptides.

Results: There was no significant difference in VDR, 1α-hydroxylase and 24-hydroxylase gene and protein expressions in endometrial tissues of RSA patients compared to normal subjects. While both groups had comparable levels of serum 25-hydroxyvitamin D, RSA patients had significantly higher levels of PTH and lower levels of calcium compared to fertile controls.

Conclusion: Comparable levels of endometrial VDR and enzymes involved in vitamin D metabolism in both groups reflect insignificant connection of inherent aberrations in vitamin D metabolism and RSA. Instead, extracellular calcium levels may be more relevant determinant in the course of recurrent spontaneous abortion.

Keywords: Recurrent spontaneous abortion, Vitamin D, Vitamin D receptor (VDR), 1α-hydroxylase, Calcium.

Comparative analysis of NK cell subsets in menstrual and peripheral blood of patients with unexplained recurrent spontaneous abortion and fertile subjects

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