Significant correlation between regulatory T cells and vitamin D status in term and preterm labor

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Abstract:

Background and aim: Vitamin D insufficiency and deficiency have been associated with an increased risk of adverse pregnancy outcomes. Also, vitamin D is known to play a role in promoting the function of regulatory T cells (Tregs). Tregs play an important role in suppressing the immune response during pregnancy. Our study aimed to investigate Tregs phenotypes in preterm and tem laboring women and its association with vitamin D level. Methods: This cross-sectional study included 82 pregnant women, divided into 46 term and 36 preterm laboring women in addition to 30 healthy non-pregnant women. The percentage of CD4+CD25+Foxp3+Treg cells and their composition of four different Treg subsets were evaluated using flow cytometric analysis. Also, serum vitamin D levels were measured by ELISA. Results: The percentage of the CD4+ CD25+ Foxp3+ Tregs were significantly decreased in term and preterm laboring women compared to the non-pregnant controls. The percentage of CD45RA+ Tregs, was significantly increased in term laboring women than preterm laboring women and non-pregnant women. Also, term labor women had increased proportion of HLA-DRhighTregs. Preterm labor women had significant increased proportion of HLA-DRnegative Tregs compared to term labor women. The overall prevalence of vitamin D deficiency and vitamin D insufficiency was higher in preterm than term laboring women and non-pregnant women. Significant positive correlations were found between serum level of 25 (OH)D and percentage of CD4+ CD25+ Foxp3+Tregs and percentage HLA-DRhighTregs among term and preterm laboring women with vitamin D deficiency. Conclusion: There is a strong association between the percentage of Treg phenotypes and vitamin D level in term and preterm labor women with vitamin D deficiency. Also, the onset of term and preterm labor is associated with changes in the composition of the total Treg pool with different Treg subsets which in turn may be responsible for immunologic mechanisms that associated with labor induction.

Keywords:

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