




LETTER TO THE EDITOR

25-Hydroxyvitamin D Insufficiency in Pregnant Indian Women and the Development of Preterm Prelabour Rupture of Membranes

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Preterm prelabour rupture of membranes (pPROM) is a significant obstetric problem. Although many factors are linked to pPROM, the exact pathogenesis is yet to be ascertained. Hypovitaminosis D is one of the factors linked to the development of pPROM [1]. This cross-sectional, case control study was designed to reduce the gaps in our knowledge in this field. After due clearance from the Institutional Ethics Committee, patients were enrolled from the Maternal and Child Health block. Informed consent was obtained from the patients prior to enrolment. Serum levels of vitamin D were measured in three groups ($n = 180$) where cases included patients with idiopathic, preterm prelabour rupture of membranes (pPROM) ($n = 60$). The other two groups were

comprised of controls, one of which comprised idiopathic spontaneous preterm birth with intact membrane (sPTB) ($n = 60$) and the other included term birth (TB) ($n = 60$).

The levels of 25(OH) vitamin D were measured via a chemiluminescent-based assay (Access II, Beckman Coulter, USA) as per the instructions from the manufacturer. The data were analysed using SPSS software (SPSS Statistics V20.0). For comparisons of the vitamin D levels, one-way ANOVA was applied, followed by Tukey's test. p values less than 0.05 were considered statistically significant.

Vitamin D levels were significantly lower in pPROM (13.75 ± 7.21 ng/ml) as compared to the sPTB group (18.83 ± 6.07 ng/ml) ($p = 0.000$) and TB group (17.38 ± 6.65 ng/ml) ($p = 0.009$).

This is the first study where the levels of vitamin D have been compared between pPROM with sPTB and TB as controls. The levels of vitamin D were found to be significantly low in pPROM when compared with sPTB, as well as TB.

Earlier studies have reported [2, 3] that low levels of vitamin D are found in patients of pPROM and have suggested its use as a predictive marker in such situations. However, there is still no consensus on the normal range for these levels.

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Vitamin D is also known to play a role in immunomodulation [4]. A study has described its role as an anti-inflammatory agent as it restrains inflammatory cytokines like INF- γ , TNF- α , IL-6, while promoting the release of antimicrobial peptide like cathelicidin hCTD, in the placenta. Thus, the low levels of 25(OH) D, observed in our study, in pPROM might be linked with an enhanced/unchecked inflammatory state resulting in the weakening of the membranes. Thus, our data suggest that low levels of vitamin D may have a role in the pathogenesis and, hence, in the development of pPROM.

Another important observation was that vitamin D levels were lower than the normal values (hypovitaminosis D) in all the three groups (pPROM and controls, i.e. sPTB and TB). This is in accordance with a previous study [3]. Thus, guidelines for the normal reference range of vitamin D also need to be developed for pregnancy.

In conclusion, a significant decrease in the levels of vitamin D found in pPROM patients in comparison with TB and sPTB suggests that it might play a role in the pathogenesis of pPROM. This probably occurs by the modulation of the inflammation-oxidative stress axis. Its role as a predictive marker also needs to be further explored.

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Declarations

Conflict of interest The authors have no conflicts of interest to declare that are relevant to the content of this article.

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