EP36 VITAMIN D AND INTERFERON SIGNATURE GENE EXPRESSION IN SYSTEMIC LUPUS ERYTHEMATOSUS: A CROSS-SECTIONAL COHORT STUDY

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Background: Vitamin D deficiency is more prevalent in patients with systemic lupus eythematosus (SLE) as a result of sun avoidance. The potential negative impact of vitamin D deficiency on the disease activity of SLE has been shown in a number of studies. The expression of the interferon signature genes in SLE correlates positively with disease activity, and these genes are thought to mediate the clinical manifestations of the disease. The aim of this study was to establish whether a relationship exists between serum 25-hydroxyvitamin D level and the interferon signature gene expression in whole blood of SLE patients.
Methods: Informed consent was obtained from 92 SLE patients who were over the age of 18 and who fulfilled the SLICC classification criteria for SLE. The patients were interviewed and blood tests including full blood count, renal profile, calcium, 25-hydroxyvitamin D, complement 3 (C3), complement 4 (C4) and anti-double standed DNA (anti-dsDNA) titre were carried out. SLE disease activity was measured by SLE disease activity index-2K (SLEDAI-2K). RNA extraction was performed from whole blood. QuantiGene Plex technology was used to measure the expression of 12 interferon signature genes in the extracted RNA. The study was approved by the University Research Ethics Committee.
Results: 92.4% of the cohort studied were female. 58.7% were receiving vitamin D3 supplementation at a mean dose of 1031IU daily. 27.2% had vitamin D insufficiency (25-hydroxyvitamin D 21-29ng/ml) and 15.2% were vitamin D deficient (25-hydroxyvitamin D $<$ 20ng/ml). Mean serum 25-hydroxyvitamin D was 30.75ng/ml (standard deviation 9.53 ng/ml). Median SLEDAI-2K was 4 (range 0-12). Serum 25-hydroxyvitamin D had a significant negative correlation with body mass index (BMI) (R=-0.258, $p = 0.006$) but there was no significant negative correlation with SLEDAI-2K or with the expression of the interferon signature genes. The expression of most interferon signatures genes measured (IFI35, OAS1, MX1, IFITM1, STAT2, IFIT3, IFIT1, STAT1, SOCS1) had a significant positive correlation with SLEDAI-2K.
Conclusion: This study did not show a significant relationship between serum vitamin D level and disease activity. In keeping with this, there was no significant negative correlation between serum 25-hydroxyvitamin D and interferon signature gene expression. Further prospective studies and randomised controlled trials are required to study this relationship in greater depth.

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