URTICARIA, ANGIOEDEMA

SERUM VITAMIN D AND VITAMIN D BINDING PROTEIN LEVELS DECREASE IN PATIENTS WITH URTICARIA AND ITS POSSIBLE ROLE IN PATHOGENESIS

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Background: Urticaria is mainly caused by IgE-mediated type I allergy, while noncannonical pathways mediated by vitamin D and vitamin D binding protein (VDBP) may also be involved in its pathogenesis.

Objective: To examine the relationship between serum vitamin D or VDBP status and urticaria. To evaluate the effect of vitamin D on human mast cell degranulation in vitro.

Methods: 45 acute urticaria, 45 chronic urticaria, 13 dermatographism patients and 45 healthy subjects were enrolled. Urticaria activity scores were administered to evaluate disease severity levels, and serum 25-(OH)-D and VDBP concentrations were measured. The human mast cell line HMC-1 were cultured and incubated in the presence of 1,25-(OH)2D under different concentration and culture time. Release rate of β-hexosaminidase and histamine levels were then calculated after Compound 48/80-mediated activation and degranulation of HMC-1.

Results: Levels of 25-(OH)-D were significantly lower in both chronic urticaria group and dermatographism group. Significant negative association between serum 25-(OH)-D levels and chronic urticaria severity was observed. Serum VDBP concentrations were much lower in chronic urticaria group, while no correlations were found between VDBP level and urticaria severity. For HMC-1 cells, exposure to 1,25-(OH)2D significantly reduced the release of both β-hexosaminidase and histamine. The suppression effect were strengthened when incubation period prolonged to more than 24 hours, but was unrelated with concentration of 1,25-(OH)2D.

Conclusion: Vitamin D plays an important role in suppression of degranulation and maintenance of the stabilization of mast cells.

Keywords: Vitamin D; Vitamin D binding protein; Urticaria; Mast cell