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Relationship Between Serum Vitamin D Level and Urinary Tract Infection in Children

Mahnaz Jazayeri Joneghani[1*], Zahra Mohammadghasemi Samani[2], Seyedeh Yasaman Derakhshandeh Ghahfarokhi[3*]

[1]Internist, Pediatrician, Clinical Research Development Center, Najafabad Branch, Islamic Azad University, Iran
[2]Faculty of Medicine, Najafabad Branch, Islamic Azad University, Najafabad, Iran
[3]Student Research Committee, Najafabad Branch, Islamic Azad University, Najafabad, Iran

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***Corresponding Author:**
Internist, Pediatrician, Clinical Research Development Center, Najafabad Branch, Islamic Azad University, Iran

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ABSTRACT

Introduction: One of the common infections in childhood is urinary tract infection (UTI), which, if left untreated, can have consequences for the child. According to the results of studies, low levels of vitamin D have been considered a potential factor in increasing the susceptibility to UTI. Therefore, this issue is significant for children's health. This study aimed to investigate the association of vitamin D levels with UTIs in children.

Methods and Materials: This case-control study was conducted with a non-random sampling method. Sixty children under 15 (with UTI and healthy controls) were selected from the chosen centers in Isfahan in 2022. The samples were divided into the control group (30 children without UTI) and the case group (30 children with UTI). A researcher-prepared checklist collected demographic data. UTI diagnosis in patients was established using culture-based microbial identification, pyuria (leukocyte count ≥5/HPF), and the Immunodiagnostic, Monokit, and IRAN tests determined serum vitamin D levels. They were classified into four groups: sufficient (≥37.0 nmol/l), insufficient (37.0 nmol/l ≥ 25 nmol/l), moderate deficiency (25 nmol/l ≥ 12.5 nmol/l), and severe deficiency (12.5 nmol/l). The data were then recorded in SPSS22 software for further analysis. Descriptive and analytic statistics (Chi-square test, independent t-test, Mann-Whitney test were used for data analysis.

Results: The mean age of the case group was 9.48 (± 4.54), while in the control group, it was 8.36 (± 4.53). The mean serum vitamin D level in the case group was 32.44 ± 15.28; in the control group, it was 36.83 ± 15.12. However, these differences were not statistically significant ($p > 0.05$). There was also no significant association between serum vitamin D level and UTI ($p > 0.05$). Among the variables examined in this study, age (p = 0./042) and children's weight (p = 0.043) had a significant inverse correlation with serum vitamin D levels in the case group. However, no significant correlation was found in the control group. In the case group, the serum vitamin D levels were higher in boys compared to girls.

Conclusion and Discussion: Based on the findings of this study, serum vitamin D levels did not significantly affect UTIs, and pediatricians do not require routine vitamin D monitoring for children with UTIs. However, it should be noted that the study did not measure the impact of this vitamin D supplementation on UTI, and further complementary studies are needed in this regard. These findings can be helpful for healthcare professionals and pediatricians.

Keywords: Child, Vitamin D, Urinary tract infections

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