Rozprawa doktorska

Status witaminy D u dzieci z wybranymi chorobami reumatycznymi

Vitamin D status in selected juvenile rheumatic diseases

Lek. Maciej Konrad Stawicki

Streszczenie w języku angielskim

Vitamin D deficiency represents a significant clinical problem in the general population and may affect an estimated over one billion people worldwide. According to available research, it particularly affects patients burdened with chronic diseases, including rheumatic diseases. The importance of diseases from this group is steadily increasing, reflected in clinical observations and epidemiological data, while also being associated with the dynamic development of pediatric rheumatology.

According to multiple scientific data the pleiotropic action of vitamin D, beyond its classical role in regulating calcium homeostasis, includes the immunomodulatory effect on inflammatory processes. Observations made both in vitro and in vivo lead to the search for the potential role of vitamin D and its proper concentration in the pathogenesis and evolution of rheumatic diseases. Currently available data in this area are mainly focused on the adult population.

The aim of this study was to assess the frequency of vitamin D deficiency among patients treated for juvenile idiopathic arthritis (JIA). Additionally, the relationship between vitamin D levels and inflammatory parameters, calcium-phosphate metabolism parameters, clinical course, and treatment of JIA was investigated.

The study included 189 patients diagnosed with JIA based on standard criteria. Clinical assessment was based on physical examination. All patients at the time of study qualification were in a stable phase of the disease, ascertained by JADAS27 scale. Anthropometric measurements including body mass, height, and BMI were performed using standard techniques consistent with WHO guidelines. Serum / blood levels of 25(OH)D, CRP, ESR, calcium, phosphate, and ALP were determined. Vitamin D deficiency was defined as serum

25(OH)D concentration <20 ng/ml. These data were subsequently subjected to statistical analysis using commonly available software.

The median 25(OH)D concentration in the study population was 15.00 ng/ml (IQR 12.00 ng/ml). Vitamin D deficiency was confirmed in 67.2% of the JIA patients. Vitamin D levels did not correlate with gender, clinical presentation, CRP, ESR, ALP, or phosphate levels. However, an inverse correlation was found between 25(OH)D levels and BMI ($r=-0.19$), in addition to positive correlation between 25(OH)D levels and serum calcium calcium ($r=0.19$). The administered, weekly dose of MTX treatment was significantly higher in patients with lower 25(OH)D levels, both in univariate and multivariate analysis ($p<0.05$). Contrary glucocorticoids (GCs) used in treatment did not significantly correspond to 25(OH)D levels ($p>0.05$). However, a negative correlation was shown between calcium levels and the use of either GCs or MTX, and combination therapy ($p<0.05$).

In summary, vitamin D deficiency was a significant problem in the studied population of JIA patients. 25(OH)D levels were not associated with gender, age, disease activity, or inflammatory parameters. MTX treatment should be considered a possible iatrogenic risk factor for vitamin D deficiency. The use of GCs did not affect vitamin D levels in JIA patients, but was significantly associated with calcium and phosphate levels. Vitamin D supplementation, following currently applicable guidelines for the general population, should be recommended for patients treated for JIA, especially those on long-term methotrexate therapy.