

Abstract N°: JOINT4355

**Investigation of the Relationship Between Vitamin D and Osteopenia/Osteoporosis in Patients with
Thalassemia Major**

Azad Akberzade*¹, Laman Sultanova^{1,2}, Nabat Aghayeva¹

¹META Pediatric Endocrinology Center, BAKU, Azerbaijan, ²Azerbaijan Medical University, META Pediatric Endocrinology Center, Baku, Azerbaijan

Introduction:

Osteopenia and osteoporosis are common complications of thalassemia. Osteoporosis, marked by low bone mineral density and impaired bone structure, increases fracture risk. Despite optimal treatment, its prevalence in thalassemia major patients is 40–50%, with fractures occurring in 38–41%. Contributing factors include delayed puberty, endocrine disorders, bone marrow expansion, iron toxicity, chelators, growth hormone deficiencies, and vitamin D deficiency. While therapeutic advances have improved survival and quality of life, osteoporosis remains a major cause of morbidity due to fracture risk. This study aimed to investigate the relationship between vitamin D deficiency and osteopenia/osteoporosis in patients diagnosed with thalassemia major.

Methods:

A retrospective analysis was conducted on 124 regularly treated thalassemia major patients registered at our center. All patients were on regular transfusion therapy. Bone mineral density (BMD) of the left femur and lumbar spine (L-spine) was assessed using dual-energy X-ray absorptiometry (DEXA). According to T and Z scores, osteoporosis was defined as a Z-score below -2.5, while osteopenia was defined as a Z-score between -1 and -2.5. Data on patient age, sex, serum calcium (Ca), phosphorus (P), alkaline phosphatase (ALP), vitamin D, parathyroid hormone (PTH), thyroid-stimulating hormone (TSH), and ferritin levels were collected. Additionally, patients were assessed for a prior diagnosis of osteoporosis.

Results:

The study included 124 patients (80 males, 44 females) aged 6 to 43 years. Among them, 47 patients had osteopenia, 65 had osteoporosis, and 12 had both conditions. Statistical analysis revealed a significant correlation between DEXA T/Z scores and ferritin levels ($p < 0.001$), whereas the relationship between vitamin D levels and DEXA scores was weak. In patients over 18 years old ($n = 41$), the correlation between L-spine T-score and vitamin D level was $p = 0.127$, and between femur T-score and vitamin D level was $p = 0.178$. In patients under 18 years old ($n = 83$), the correlation between L-spine Z-score and vitamin D level was $p = 0.165$, and between femur Z-score and vitamin D level was $p = 0.137$. Thyroid and parathyroid function tests showed no significant abnormalities; thus, their effect on osteoporosis was not statistically significant.

Discussion: This study found no significant link between vitamin D levels and osteopenia/osteoporosis in thalassemia major. Thyroid and parathyroid function were also normal at diagnosis. Regular transfusions, iron chelation, and vitamin supplementation may



Joint Congress of ESPE and ESE 2025

Copenhagen, Denmark, 10-13 May 2025

ESPE
European Society for
Paediatric Endocrinology

European Society
of Endocrinology

help reduce endocrine complications. Larger samples and follow-up studies are needed for clearer conclusions.

Disclosure of interest: None declared