WebLog Journal of Endocrinology and Diabetes

Research Article
Published: 10 Feb, 2026

Vitamin D Status in Patients with Primary Hyperparathyroidism: Results from a Retrospective Study

Gorgi K[1], Chaouche M[2], Errahali Y[3], Rifai K[1], Iraqi H[1] and Gharbi MH[1]*

[1]Department of Endocrinology, CHU Ibn Sina University Hospital, Rabat, Morocco

[2]Dermatology Department, CHU Mohammed VI, Agadir, Morocco

[3]Endocrinology-Diabetology Department, Military Mohammed V Hospital, Rabat, Morocco

Abstract

Introduction: Primary Hyperparathyroidism (PHPT) is frequently associated with vitamin D deficiency, which may exacerbate hyperparathyroidism, hypercalcemia, and bone complications.

Objective: To assess vitamin D status in patients with PHPT and analyze its biological and clinical impact.

Patients and Methods: A retrospective study conducted over seven years (2015-2022) including patients hospitalized for PHPT. Serum 25-hydroxyvitamin D [25(OH)D] levels were systematically measured.

Results: Sixty-three patients were included (mean age: 55.8 years). The mean 25(OH)D level was 19.2 ng/mL. Vitamin D deficiency was observed in 60.3% of patients, insufficiency in 17.5%, and normal status in 22.2%. Patients with vitamin D deficiency had significantly higher serum calcium and Parathyroid Hormone (PTH) levels.

Conclusion: Vitamin D deficiency is highly prevalent among patients with PHPT and is associated with a more severe biological profile. Routine screening and correction of vitamin D deficiency should be integral to patient management.

Keywords: Primary Hyperparathyroidism; Vitamin D; PTH; Hypercalcemia; Bone Metabolism

OPEN ACCESS

Correspondence:

Dr. Gorgi Khaoula, Department of Endocrinology and Metabolic Diseases, CHU Ibn Sina University Hospital, Rabat, Morocco; Tel: 0615591874; E-mail: khaoulagorgi@gmail.com

Received Date: *08 Jan 2026*

Accepted Date: *09 Feb 2026*

Published Date: *10 Feb 2026*

Citation:

Gorgi K, Chaouche M, Errahali Y, Rifai K, Iraqi H, Gharbi MH. Vitamin D Status in Patients with Primary Hyperparathyroidism: Results from a Retrospective Study. WebLog J Endocrinol Diabetes. wjed.2026.b1001. https://doi.org/10.5281/zenodo.18790479

Introduction

Primary hyperparathyroidism is a common endocrine disorder characterized by autonomous excessive secretion of Parathyroid Hormone (PTH), most often secondary to a parathyroid adenoma [1]. This leads to chronic hypercalcemia responsible for skeletal, renal, and cardiovascular complications [2].

Vitamin D plays a central role in calcium-phosphate homeostasis. Its deficiency is widespread in the general population, particularly in sunny countries, due to cultural, nutritional, and behavioral factors [3]. Among patients with PHPT, vitamin D deficiency is even more frequent and may worsen hyperparathyroidism, increase bone resorption, and complicate diagnostic interpretation [4, 5].

Patients and Methods

Study Design and Population

This retrospective study was conducted from January 2015 to December 2022 in the endocrinology departments of CHU Ibn Sina and Military Mohammed V Hospital in Rabat.

All patients hospitalized for biologically confirmed PHPT (hypercalcemia associated with inappropriate elevation of PTH) were included.

Data Collected

The analyzed parameters included:

- Age and sex
- Total serum calcium
- PTH level
- Serum 25(OH)D level

Vitamin D status was defined according to international guidelines [6]:

- Deficiency: <20 ng/mL
- Insufficiency: 20-29 ng/mL
- Normal: ≥30 ng/mL

Results

General Characteristics

Sixty-three patients were included with a mean age of 55.8 years. The majority were female.

Vitamin D Status

The mean serum 25(OH)D level was 19.2 ng/mL:

- Deficiency: 38 patients (60.3%)
- Insufficiency: 11 patients (17.5%)
- Normal status: 14 patients (22.2%)

Associated Biological Parameters

Patients with vitamin D deficiency or insufficiency had a mean serum calcium of 121.8 mg/L and a mean PTH level of 261.7 ng/mL, significantly higher than those with normal vitamin D levels (Figure 1).

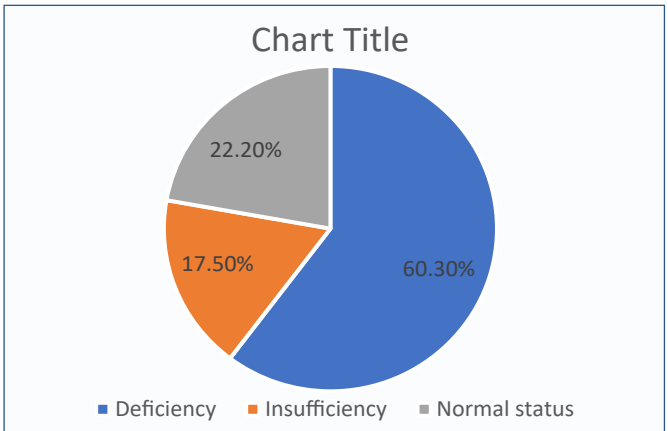

Figure 1: Distribution of vitamin D status among patients with primary hyperparathyroidism (n=63).

Discussion

Our study demonstrates a high prevalence of vitamin D deficiency among patients with Primary Hyperparathyroidism (PHPT), affecting more than 60% of cases. These findings are consistent with previous reports indicating deficiency rates ranging from 50% to 80%, depending on geographic regions and studied populations [7-9].

From a pathophysiological standpoint, vitamin D deficiency leads to decreased intestinal calcium absorption, which secondarily stimulates PTH secretion. In patients with PHPT, this exacerbates pre-existing hyperparathyroidism and may mask or worsen disease severity [10].

Several studies have shown that PHPT patients with vitamin D deficiency exhibit more pronounced bone involvement, including significantly reduced bone mineral density and increased fracture risk [11, 12]. Furthermore, vitamin D deficiency correlates with higher PTH levels and more severe hypercalcemia, as observed in our cohort [13].

Historically, vitamin D supplementation in PHPT was approached cautiously due to concerns about aggravating hypercalcemia. However, recent studies have demonstrated that careful vitamin D repletion is safe, reduces PTH levels, and improves bone remodelling without significantly increasing serum calcium [14-16].

Current guidelines therefore recommend systematic screening and gradual correction of vitamin D deficiency in PHPT patients, including prior to potential parathyroidectomy [6, 17].

Our results underscore the critical importance of systematic vitamin D assessment at the time of PHPT diagnosis. Correcting hypovitaminosis D not only improves the biological profile but also optimizes disease severity evaluation and bone management, particularly in patients considered for parathyroidectomy.

Conclusion

Vitamin D deficiency is very common in patients with primary hyperparathyroidism and is associated with a more severe biological disease profile. Systematic screening and carefully monitored supplementation are essential components of comprehensive patient care.

References

1. Bilezikian JP. Primary hyperparathyroidism. J Clin Endocrinol Metab. 2018.
2. Eastell R. Diagnosis of asymptomatic primary hyperparathyroidism. Lancet Diabetes Endocrinol. 2019.
3. Holick MF. Vitamin D deficiency. N Engl J Med. 2007.
4. Silverberg SJ et al. Vitamin D deficiency and primary hyperparathyroidism. J Bone Miner Res. 2014.
5. Cusano NE. Vitamin D and primary hyperparathyroidism. Endocr Pract. 2013.
6. Bilezikian JP. Guidelines for the management of primary hyperparathyroidism. J Clin Endocrinol Metab. 2022.
7. Walker MD, Cong E, Lee JA, Kepley A, Zhang C, McMahon DJ, *et al.* Vitamin D in Primary Hyperparathyroidism: Effects on Clinical, Biochemical, and Densitometric Presentation. J Clin Endocrinol Metab. 2015; 100(9): 3443-3451.
8. Griebeler ML. Vitamin D status in PHPT. Endocrine. 2016.
9. Minisola S. Vitamin D and PHPT. Nat Rev Endocrinol. 2017.
10. Khan AA. Vitamin D replacement in PHPT. Endocrine. 2019.
11. Lowe H. Bone density and vitamin D in PHPT. J Clin Endocrinol Metab. 2007.
12. Rubin MR. Skeletal manifestations of PHPT. J Bone Miner Res. 2008.
13. Rao DS. PTH levels and vitamin D deficiency. Clin Endocrinol. 2010.
14. Rolighed L, Rejnmark L, Sikjaer T, Heickendorff L, Vestergaard P, Mosekilde L, *et al.* Vitamin D treatment in PHPT. J Clin Endocrinol Metab. 2014.
15. Shah VN. Safety of vitamin D replacement in PHPT. Endocr Pract. 2015.
16. Bollerslev J. Medical management of PHPT. Lancet Diabetes Endocrinol. 2018.
17. European Society of Endocrinology Guidelines. Eur J Endocrinol. 2021.