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Complications of Primary Hyperparathyroidism: A Retrospective Study of 83 Cases

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Abstract

Introduction: Primary hyperparathyroidism (PHPT) is one of the most common endocrine disorders, characterized by inappropriate secretion of parathyroid hormone (PTH), leading to disturbances in calcium–phosphate metabolism and multisystem complications.

Objective: To determine the prevalence and profile of clinical, biological, and radiological complications of PHPT in a Moroccan hospital-based cohort.

Materials and Methods: We conducted a retrospective descriptive study including 83 patients with PHPT, followed between 2015 and 2022 in two university hospitals in Rabat. Clinical, biochemical, radiological, and bone densitometry data were analyzed.

Results: The mean age was 53.27 years (range: 11–85 years), with a marked female predominance (90.4%). Skeletal manifestations were the most frequent (56.6%), followed by digestive (15.7%), urinary (10.8%), and cardiovascular manifestations (10.8%). Skeletal complications were observed in 48.2% of patients, including fractures (14.5%) and brown tumors (9.6%). Osteoporosis was identified in 33.7% of cases.

Conclusion: Complications of PHPT remain frequent and severe, reflecting delayed diagnosis in our setting. Early detection and appropriate management could significantly reduce associated morbidity.

Keywords: Primary Hyperparathyroidism; Complications; Osteoporosis; Nephrolithiasis; Parathyroid Hormone

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Introduction

Primary hyperparathyroidism (PHPT) is a common endocrine disorder, with an estimated prevalence ranging from 0.1% to 0.4% in the general population, predominantly affecting postmenopausal women [1, 2]. It is most often caused by a parathyroid adenoma leading to autonomous and inappropriate secretion of parathyroid hormone (PTH), resulting in chronic hypercalcemia [3].

While asymptomatic forms are increasingly diagnosed in Western countries due to routine serum calcium screening, symptomatic forms remain predominant in developing countries [4, 5]. PHPT may lead to skeletal, renal, digestive, cardiovascular, and neuropsychological complications, significantly impairing quality of life and functional prognosis [6–8].

The aim of this study was to analyze the prevalence and spectrum of PHPT-related complications in a Moroccan hospital cohort of 83 patients and to compare our findings with recent literature data.

Materials and Methods

Study Design

Retrospective descriptive study.

Study Population

Eighty-three patients diagnosed with PHPT and followed between January 2015 and December 2022 at:

- The Department of Endocrinology, Ibn Sina University Hospital, Rabat.

- The Department of Endocrinology, Mohammed V Military Hospital, Rabat.

Data Collection

The following data were collected from medical records:

- Demographic characteristics.
- Clinical manifestations.
- Biochemical assessment (serum calcium, phosphate, PTH levels).
- Bone and renal imaging.
- Bone mineral density (DEXA).
- Electrocardiography and transthoracic echocardiography.

Statistical Analysis

Descriptive analysis with calculation of frequencies and percentages.

Results

General Characteristics

- Mean age: 53.27 years (range: 11–85).
- Female sex: 90.4%.

Discussion

Our study confirms that PHPT remains frequently diagnosed at a complicated stage in our context, in contrast to Western series where asymptomatic forms predominate [4, 9].

Skeletal Complications

Skeletal manifestations were the most frequent in our cohort (56.6%), consistent with data reported by Silverberg et al., who described skeletal involvement in 50–70% of symptomatic PHPT cases [10]. The prevalence of osteoporosis (33.7%) is comparable to rates reported in Asian and African studies [11, 12].

Brown tumors, now rare in industrialized countries, were still observed in our series (9.6%), reflecting prolonged and severe disease evolution [13].

Renal Complications

Renal complications were present in 10% of patients, a lower prevalence than that reported in large European cohorts (15–25%) [14], possibly due to underdiagnosis of asymptomatic nephrolithiasis. Nephrolithiasis remains the most common renal complication, secondary to PTH-induced hypercalciuria [15].

Digestive Complications

Digestive manifestations were observed in 15.7% of patients, including cases of acute pancreatitis. Several recent studies support an association between PHPT and pancreatitis, although the exact pathophysiological mechanisms remain controversial [16, 17].

Table 1: Clinical manifestations of primary hyperparathyroidism.

Clinical manifestations	Prevalence (%)
Skeletal	56.6
Digestive	15.7
Urinary	10.8
Cardiovascular	10.8
Neuropsychological	6.5
Neuromuscular	6.5

Table 2: Complications of primary hyperparathyroidism.

Type of complication	Clinical data
Overall skeletal complications	48.2%
Pathological fractures	14.5%
Brown tumors	9.6%
Bone densitometry performed	85.5%
Osteoporosis	33.7%
Osteopenia	20.5%
Overall renal complications	10%
Nephrolithiasis (among patients with renal involvement)	39.8%
Digestive complications	4.8%
Acute pancreatitis	2 cases
QT interval shortening	6%
Echocardiographic abnormalities	In patients with pre-existing heart disease

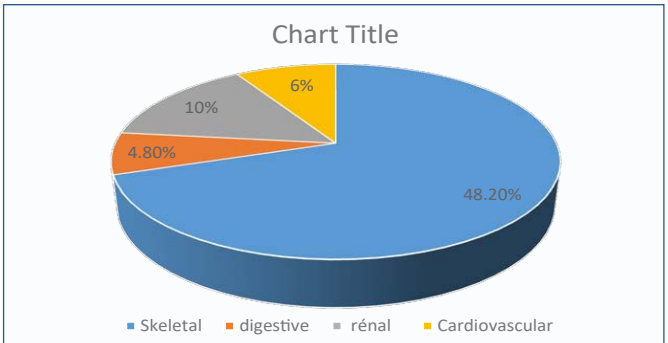


Figure 1: Distribution of complications of primary hyperparathyroidism.

Cardiovascular Involvement

PHPT is increasingly recognized as an independent cardiovascular risk factor. QT interval shortening and ventricular dysfunction reported in the literature are attributed to the direct effects of PTH and hypercalcemia on myocardial and endothelial function [18–20].

Comparison with the Literature

Compared with large Western series, our population exhibited:

- A higher proportion of symptomatic disease,
- More severe skeletal complications,
- Delayed diagnosis.

These findings highlight the importance of early screening and access to parathyroid surgery [21, 22].

Conclusion

In our setting, primary hyperparathyroidism remains a frequently complicated disease, predominantly involving skeletal and renal systems. Early detection strategies and timely surgical management are essential to reduce associated morbidity.

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