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*CASE REPORT*

# Delayed Diagnosis and Late Presentation of Primary Hyperparathyroidism in Somalia: A Case Report and Literature Review

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**Abstract:** Primary hyperparathyroidism (PHPT) is a rare endocrine disorder characterized by elevated serum calcium levels due to overproduction of parathyroid hormone (PTH). While parathyroid adenomas are the most common cause, they can present diagnostic and management challenges, especially in resource-limited settings. We present the case of a 51-year-old Somali female with a six-year history of generalized weakness, fatigue, and nonspecific abdominal pain. Laboratory investigations revealed elevated PTH levels (231 ng/ml) and hypercalcemia (14 mg/dl), consistent with PHPT. Cervical ultrasound identified a hypoechoic hypervascular solitary lesion suggestive of a parathyroid adenoma. The patient underwent a successful parathyroidectomy, resulting in the normalization of serum calcium levels and symptomatic relief. Histopathological examination confirmed the diagnosis of parathyroid adenoma. This case underscores the importance of early recognition and intervention in PHPT, particularly in underserved regions where healthcare resources may be limited. Efforts to raise awareness, provide training for healthcare workers, and improve access to diagnostic and treatment modalities are crucial in optimizing outcomes for patients with PHPT.

**Keywords:** Primary Hyperparathyroidism, Hypercalcemia, Somalia.

## 1. INTRODUCTION

An endocrine disorder termed primary hyperparathyroidism (PHPT) is characterized by elevated serum calcium levels because of parathormone oversecretion and is most often caused by parathyroid carcinomas, hyperplasia, and parathyroid adenomas, which together account for most instances. Although parathyroid gland adenomas are uncommon, they can be difficult to surgically treat [1]. Parathyroid adenomas, or PTAs, typically have a size of less than 2 cm and a weight of less than 1 g [2]. It is crucial to identify hyperparathyroidism early on in order to prevent problems that could harm the kidneys (nephrolithiasis or nephrocalcinosis) and bones (osteitis fibrosa cystica and osteoporosis) [3].

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Primary hyperparathyroidism (PHPT) is a common endocrine disorder characterized by excessive secretion of parathyroid hormone, leading to hypercalcemia and associated complications. In high-income countries, PHPT is often diagnosed early due to routine biochemical screening; however, in low-resource settings like Somalia, delayed diagnosis and late presentation are prevalent due to limited access to healthcare, lack of awareness, and insufficient diagnostic facilities. This case report aims to highlight the challenges of diagnosing PHPT in Somalia, where patients frequently present with advanced disease and complications such as severe bone disease, renal calculi, and neuropsychiatric manifestations. The rationale for this study lies in the need to raise awareness among healthcare providers about the atypical and advanced presentations of PHPT in resource-limited settings, emphasizing the importance of early recognition and intervention. By reviewing the existing literature and detailing a representative case from Somalia, this report seeks to contribute to the limited body of knowledge on PHPT in sub-Saharan Africa, thereby advocating for improved diagnostic strategies and healthcare resources to mitigate the burden of this condition in underserved populations.

We present a case involving a 51-year-old Somali patient from a rural area who experienced weakness and nonspecific abdominal discomfort for six years before being diagnosed with primary hyperparathyroidism due to a parathyroid adenoma, resulting in elevated parathyroid hormone and serum calcium levels.

## 2. CASE REPORT

A 51-year-old Somali female patient from a remote region was admitted to our internal medicine department because of generalized weakness, fatigue, constipation, and vague abdominal pain for the past 6 years. The patient had weakness in both legs and arms and had tenderness in the abdomen which was revealed by physical examination. There were no other remarkable findings. The vitals were also stable with no abnormality.

## 3. INVESTIGATION AND DIAGNOSIS

Parathormone and serum calcium levels were elevated, with PTH levels of 231ng/ml and calcium 14 mg/dl. Other laboratory investigations demonstrated normal range, hematocrit, and a euthyroid state, with TSH, T3, and T4 levels within the normal limits and normal biochemistry results. Ultrasound of her neck revealed a normal-sized thyroid gland, while a 1.6x1.2 cm in size hypoechoic hypervascular solitary lesion was located in the posterior inferior right thyroid lobe (Fig. **1**). Laboratory examination and cervical sonographic features revealed parathyroid adenoma as the cause of hyperparathyroidism.

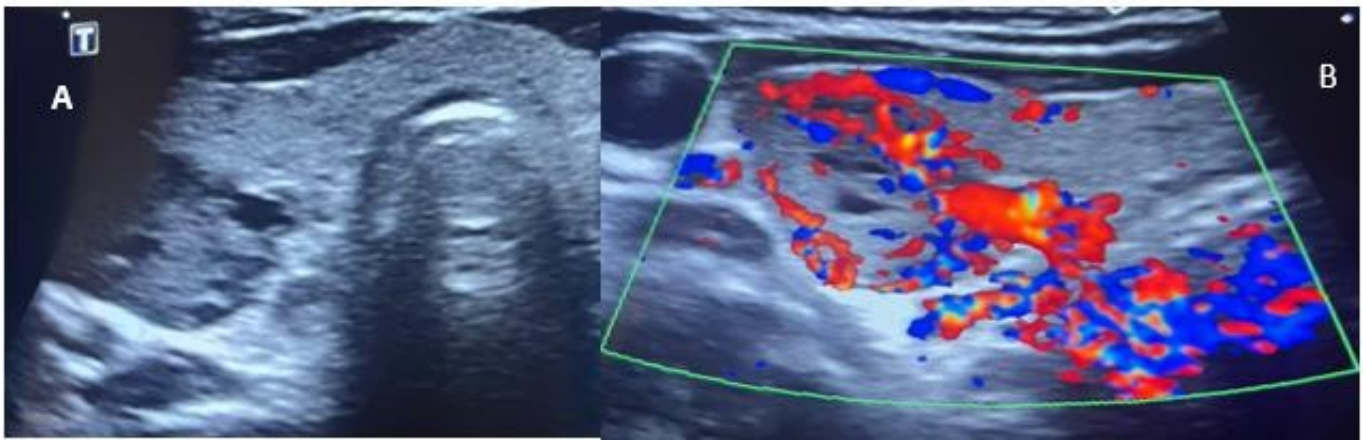


**Fig. (1).** Posterior inferior to the right thyroid lobe 2cm sized hypoechoic lesion compared to the thyroid tissue (**A**) with vivid vascularization in color Doppler examination (**B**).

## 4. INTERVENTION AND TREATMENT

The patient was admitted to the internal medicine department for fluid and electrolyte optimization and then transferred to the surgical department for parathyroidectomy. The patient was then transferred to the operating room after written consent was obtained. A resection of the right parathyroid gland was performed by an experienced general surgeon through a Typical MIP incision approximately 2 cm in length, with successful parathyroidectomy. The excised 1 cm specimen was removed, and intraoperative PTH was sent according to the vein criteria and more than 50% drop in pth levels (pre-op PTH 231pg/ml intraoperative PTH 38pg/ml). The surgical pathology specimen sent for pathological examination showed areas of hemorrhage and focal endocrine atypia (low-power view, high-power view) and histopathological confirmed parathyroid adenoma (Fig. **2**).

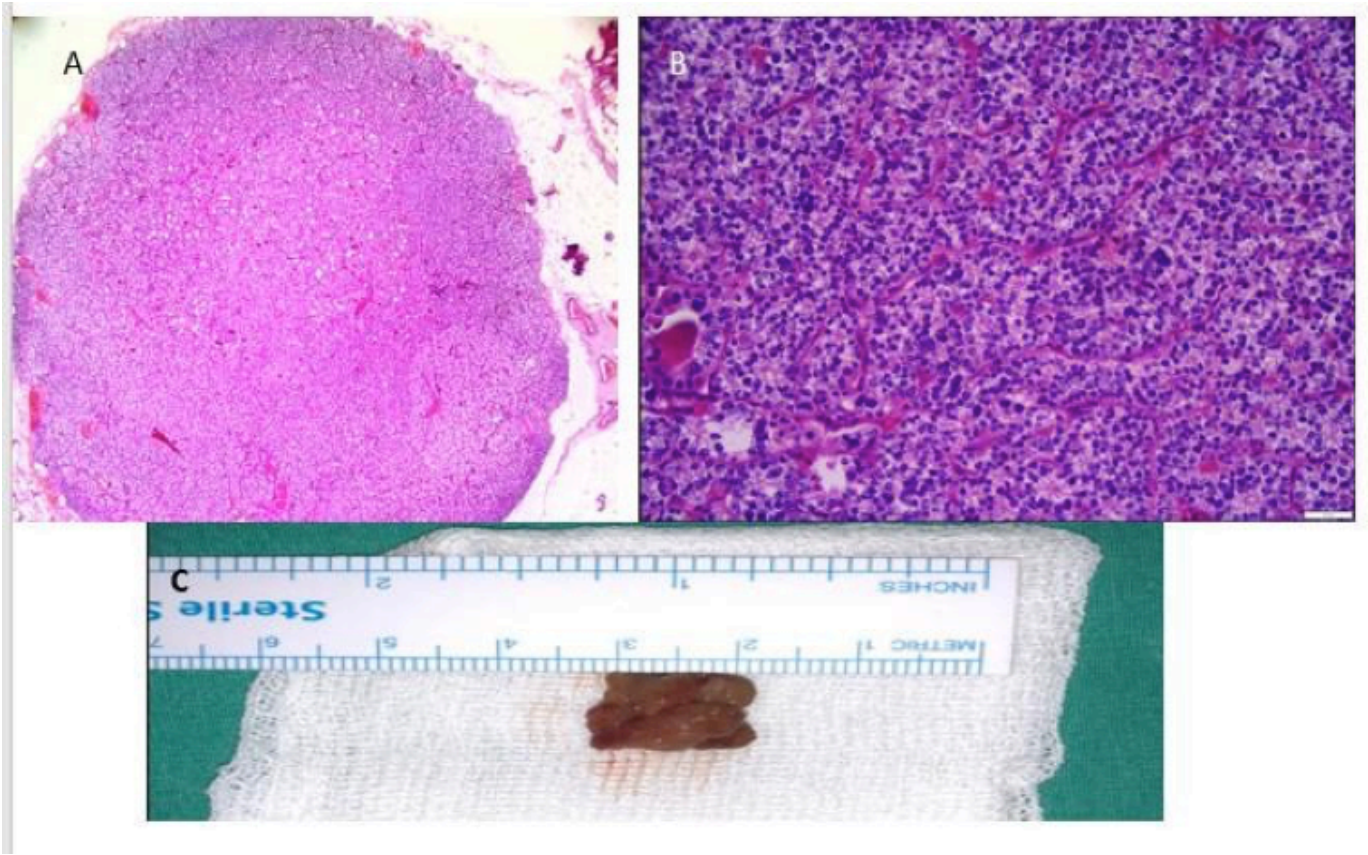


**Fig. (2).** Parathyroid adenoma, parathyroidectomy. Parathyroid adenoma (Chief cell adenoma) shows areas of hemorrhage and focal endocrine atypia (**A**) Low power view, (**B**) high power view) Surgical pathology specimen (**C**).

## 5. OUTCOME AND FOLLOW-UP

The postoperative with a slight decline in calcium (9,5 mg/dL), while her parathormone (PHT) levels returned to normal limits approximately one day after surgery. She was discharged the next day, and after 2 months of follow-up, she reported no further symptoms.

## 6. DISCUSSION

The endocrine disease known as primary hyperparathyroidism has been defined by high PHT levels and hypercalcemia [4]. With no sex predisposition, its incidence is roughly 0.5% [5]. About 80% of PHPT cases are caused by parathyroid adenomas, which are the most common cause of PHPT. Additional factors include hyperplasia and parathyroid carcinoma, which is thought to affect 1% of patients [1].

A physical examination of the cervical region frequently reveals nothing unusual, although symptoms related to non-specific skeletal, neurological, renal, and gastrointestinal issues are linked to increased cal-

cium levels [6]. Neuromuscular weakness, exhaustion, impaired focus, and memory loss are common symptomatology. Along with peptic ulcers and muscular and joint discomfort, primary parathyroid hormone can cause nephrolithiasis and neuphrocalcinosis in patients. A uncommon illness called as hypercalcemic crisis can result from dehydration or fluid loss, which can cause an abrupt spike in serum calcium levels. Acute stomach discomfort, nausea, vomiting, and constipation are the main symptoms; cardiac or renal dysfunction may also be evident [7].

Diagnosing hyperparathyroidism (HPT) requires the study of PTH and calcium levels. may also have raised PTH and normalized calcium levels, even though elevated PHT and blood calcium levels are the hallmarks of typical primary hyperparathyroidism. It is important to differentiate this illness from normocalcemic hyperparathyroidism, a subsequent form of hyperparathyroidism [8].

Intestinal calcium malabsorption, vitamin D deficiency, and renal insufficiency are the most common causes of secondary HPT [9]. Patients with preoperatively elevated calcium levels should be closely monitored following surgery because pathological gland resection causes an abrupt drop in calcium levels, which can lead to temporary hypocalcemia. Additionally, a feedback effect causes the non-pathological parathyroid glands to stop functioning normally. [10].

With increased PTH levels of 231 pg/mL and calcium levels of 14 mg/dL, respectively, our patient was diagnosed with primary PHTP. A slightly lower calcium level of 8 was found in postoperative measurements around a day after surgery, exhibiting normal function of the three surviving parathyroid glands.

Even if clinical and laboratory criteria are employed to establish the diagnosis of PHPT, a range of imaging modalities are used for the preoperative evaluation of PHPT and localization of the diseased glands. An ultrasound scan of the neck, with an approximate sensitivity and specificity of 75% and 85%, respectively, can be used to detect the parathyroid gland prior to surgery [11].

Unfortunately, patients with somalia cannot obtain 99m Tc-MIBI parathyroid scintigraphy. It is possible to discover aberrant parathyroid tissue by identifying and using the absorption of radiotracers from hyperactive parathyroid tissue [12]. PHPT is surgically treated by excising the abnormal parathyroid tissue using either neck exploration or minimally invasive parathyroidectomy [13].

The initial strategy involved identifying each of the four parathyroid glands through a thorough thyroid examination, and then removing the most likely problematic glands according to their size. Removing a single hyperactive parathyroid gland with the least amount of intervention is the aim of minimally invasive parathyroidectomy [14]. Under local anesthetic, the MIP method involves a small cervical incision for unilateral neck exploration. Preoperative localization of the target parathyroid gland and labeling are essential to avoid needless injury to adjacent tissues. The excision of the diseased parathyroid gland can be verified by measuring intraoperative parathormone (ioPTH). The PHT returns to normal within minutes of the damaged gland being removed due to its short half-life [15]. The intraoperative PTH level recovered to normal following the excision of the adenoma.

The absence of proper healthcare facilities can be a contributing factor in late presentations and poorer outcomes in cases of primary hyperparathyroidism, such as our case, which necessitates early detection and intervention of the condition. In order to overcome the issues that are associated with late presentations of medical illnesses in underserved locations, it is essential to make efforts to promote awareness, offer training for healthcare workers, and enhance access to diagnostic equipment and treatment alternatives.

## CONCLUSION

Patients who appear with vague weakness consistent with increased serum calcium levels should be suspected of having hyperparathyroidism, a common endocrine condition. Patients who exhibit symptoms related to calcium and inexplicable weakness should be suspected of having hyperparathyroidism. Clinically, primary HPT is linked to parathyroid adenoma (80–85%), hyperplasia (10–15%), and malignancy (<1–5%). Complementary cervical ultrasonography was used in conjunction with the clinical and biochemical histories to confirm the diagnosis. The recommended course of treatment is surgery. Preopera-

tive and postoperatively, we can now distinguish between single- and multi-gland parathyroid disorders because to new advancements in diagnostic imaging and intraoperative rapid PTH testing. Aside from its tiny size and delayed manifestation, our patient's adenoma was successfully treated surgically.

## AUTHORS' CONTRIBUTIONS

AAO: Writing – original draft; and editing and Conceptualization. AMA: Writing original draft; investigation. IMA: writing – review and editing. ASH: Investigation; writing – review and editing. SMA: Writing – original draft. MOA: writing – original draft. MOOJ: Writing – review and editing and Conceptualization

## DATA AVAILABILITY

The data is available from the corresponding author if requested.

## ETHICS STATEMENT

The Ethics committee of Mogadishu Somali Turkiye Training and Research Hospital waived the ethical approval for this case report.

## CONSENT FOR PUBLICATION

Oral and written informed consent were obtained from the patient to publish this case report anonymously.

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## CONFLICT OF INTEREST

The author confirms that this article's content has no conflict of interest.

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Declared none.

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