CASE REPORT

Diagnostic Issues of Primary Hyperparathyroidism in Indian Patients: The Perspectives and Imperatives—A Case Report

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ABSTRACT

In the last few decades, there has been remarkable progress in the diagnosis as well as treatment of primary hyperparathyroidism (PHPT) worldwide due to the advent of automated serum calcium estimation and radioimmunoassay of parathormone. Consequently, a fairly good number of asymptomatic and incidentally detected cases of PHPT who could have been missed otherwise are now being evaluated and treated successfully. Although this turn around is more pronounced in the West, the scenario has not appreciably changed in India. Lack of awareness and clinical suspicion among the clinicians and negligible use of biochemical screening tests are the common factors responsible for the diagnostic delay as is evident in our case report. Such delay in diagnosis and institution of treatment results in overtly symptomatic disease with affection of several target organs. We report the diagnostic dilemma and delay in treatment in one of our cases; a 28-year-old female who despite having severe PHPT at the time of diagnosis could be managed successfully with parathyroidectomy.

Keywords: Diagnostic dilemma, Hypercalcemia, Parathyroid adenoma, Parathyroidectomy, Primary hyperparathyroidism.

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INTRODUCTION

Primary hyperparathyroidism (PHPT) is not only an underdiagnosed condition in Indian patients but also there is inordinate delay in diagnosis. The most important reason for delay is due to the nonspecific nature of symptoms, which normally evades the clinical suspicion. It is observed that even after consultations in several clinical medicine departments, the definitive diagnosis of PHPT could not be ascertained. It may be attributed to lack of appreciating the early presentation of PHPT and thus not subjecting such patients to biochemical screening (serum calcium). By the time the endocrine surgeon is consulted, the disease has advanced substantially leading to affection of skeletal, renal and other systems. The advanced form of the disease marked by high levels of serum calcium, parathyroid hormone (PTH) and larger size of the adenoma are contributing factors for unfavorable outcome. It is also imperative to mention that coexistence of hypovitaminosis D3 and poor calcium nutrition in our women folk are other contributing factors for the severe form of the disease.¹ ²

Asymptomatic and normocalcemic PHPT³ have been found out recently in the endocrine armamentarium and has brought about perspective change in screening and diagnostic guidelines. Such changes have made a significance difference in diagnosing PHPT cases and instituting treatment. The mortality and morbidity of either untreated or late treated PHPT has been grossly reduced. Hence it is imperative to utilize our clinical acumen and effective awareness to diagnose and treat PHPT early in patients for better outcome. Focused minimally invasive parathyroidectomy has become the gold standard in majority of patients due to the use of ultrasonography, sestamibi, and 4D—CT scan. The complications of parathyroidectomy such as hypocalcemia, hungry bone syndrome and recurrent laryngeal nerve (RLN) injury has been minimized⁴ due to advancement in localization procedures and surgical techniques. Accurate preoperative identification of the abnormal gland and utilization of intraoperative PTH monitoring has reduced the incidences of persistent or recurrent hyperparathyroidism.

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CASE DESCRIPTION

Our case, a 28-year-old female had initial vague nonspecific symptoms like heel pain, pain in legs and thighs, low backache in 2008 for which she took Ayurvedic and Homeopathic treatment. In 2011, she developed severe weakness of lower limbs for which she consulted a neurologist and took some symptomatic medicines. Few days later, she fell down from sitting position and with this trivial trauma, she fractured her left shaft of Femur. On investigation by an orthopedician in a local hospital, she was found to have hypercalcemia (11.7 mg/dL) and high PTH (1585.2 pg/mL). On further evaluation, she had skeletal abnormalities like tufting of phalanges and subperiosteal thinning, salt and pepper erosions of skull, cystic changes in lower end of femur, and bilateral nephrolithiasis suggestive of PHPT as shown in Figures 1 to 4. USG Neck and Sestamibi scan was carried out and concordantly found a left superior parathyroid adenoma as shown in Figure 5. She underwent bilateral neck exploration under general anesthesia. The left superior parathyroid adenoma was found to be enlarged, encapsulated, lobulated, and adherent to right RLN without infiltration to surrounding structures. The adenoma was...
carefully excised with careful preservation of RLN (Fig. 6). All other parathyroid glands were found to be normal. She developed hypocalcemia postoperatively (hungry bone syndrome), which was managed with intravenous calcium initially followed by oral calcium supplementation. Histopathology report was consistent with parathyroid adenoma. Her serum calcium and PTH were normalized in the postoperative period, but alkaline phosphatase remained elevated for almost 6 months and then came to normal value. Due to fracture of her left femur, she was unable to walk. After her bone mineral density was improved to near normalcy, the orthopedic surgeon carried out osteotomy with intramedullary nailing (Fig. 7) in 2016. She continued with mild physiotherapy, calcium supplementation and now able to carry out her normal activities. She is working currently as a computer assistant commuting daily 3–4 km distance by a bike.

**Observation and Discussion**

With increasing awareness and use of biochemical screening tests PHPT cases can be diagnosed early, easily, and more accurately. If timely diagnosis and intervention is not instituted, significant morbidity and mortality may result. This condition is seen more commonly in females.\(^5\) The common age of presentation is 39.4 ± 14.6 years,\(^5\) which is so in our case. In India, PHPT is largely a symptomatic disease with varied systemic manifestations complicated by coexisting vitamin D deficiency.\(^6\) Skeletal manifestation, in most of the situations lead to the diagnosis which is also observed in most symptomatic cases in various series.\(^5,7,8\) Extreme degree of weakness of muscles, wasting, and easy fatigability are some presenting complaints. Despite bilateral renal calculi, our patient did not complain of abdominal pain or urinary symptoms. In some series, renal stones are the principle mode of presentation.\(^8,9,10\) Our patient had hypertension and diabetes mellitus, which is also a finding in some series.\(^9\) The trend of symptomatology has changed in countries with well-developed healthcare services due to early diagnosis made possible by routine biochemical screening.\(^11\)

PHT, serum calcium, and serum alkaline phosphatase were moderately raised in our case and correlates with severity of symptoms. In very large adenoma and parathyroid carcinoma, there is marked rise of PTH and serum calcium. Bilateral neck exploration was performed in our case even though there was...
concordant image because of our initial experience with PHPT and therefore fear of missing other pathologically enlarged parathyroid glands. The left superior adenoma was the culprit gland, and all other parathyroid glands were normal. Biochemical normalcy was achieved and bone health improved so also other symptoms.

Focused or minimally invasive parathyroidectomy is now the gold standard approach and carried out as daycare procedures with more than 95% cure rate. The risk involved in parathyroid surgery is low accounting to about 3.8%. Being a well-tolerated procedure, older patients who are excluded are often the ones who would
benefit most from surgery. The reason behind why these patients are not being referred for surgery is a mystery. If any patient has an endocrine disease that could be potentially cured by surgery, then they should be evaluated by an endocrine surgeon.

**Conclusion**

PHPT is no longer an uncommon disease as it used to be earlier. A high index of clinical suspicion coupled with serum calcium and PTH estimation clinches the diagnosis. Although it is observed that 1% of general population and 2% of postmenopausal women are affected by PHPT, the actual incidence will be higher in association with Vitamin D3 deficiency as well as low bone mineral density in Indian patients. Such type of patients should be evaluated thoroughly in the line of PHPT. Early diagnosis and removal of the pathological gland/glands by concordant imaging and ensuring successful removal by intraoperative PTH monitoring is the mainstay of treatment for PHPT. Whatever the stage of the disease maybe successful parathyroidectomy halts the progression of the disease and even reverts some of the complications. Frailty and extreme age are no contraindication for surgery considering the simplicity, ease and safety in expert hands. Before considering to adjourn the surgery by a clinician, the patient and their well-wishers should discuss with an endocrine surgeon regarding the benefits and risks.

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**References**


