

Primary Hyperparathyroidism in Pakistan: Challenges and Future Recommendations

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Primary hyperparathyroidism (PHPT) is found in one percent of the world's population. It is considered an asymptomatic disease. Increased serum calcium and parathyroid hormone (PTH) levels are the characteristic laboratory findings in PHPT; however, they are not part of routine investigations in Pakistan's healthcare system. As a result, correct diagnosis is delayed, and patients present only after significant symptoms are present. Serum calcium level should be routinely performed to make accurate and timely diagnosis of PHPT and checking serum PTH levels should also not be delayed. Hospitals, especially tertiary care, should be equipped with specialized tests such as ultrasound neck, Sestamibi scan, and contrast-enhanced computerized tomography. Increased awareness should be created among orthopedic surgeons, urologists, nephrologists, rheumatologists, and general practitioners about the PHPT and other parathyroid disorders.

Keywords: Endocrinology disorders; Hypercalcemia; Parathyroid disorders; Parathyroid gland; Parathyroidectomy

J Med Assoc Thai 2022;105(6):569-70

Website: <http://www.jmatonline.com>

Primary hyperparathyroidism (PHPT) affects approximately 1% of the world's population and its frequency increases to 2% after the age of 50 years⁽¹⁾. The combination of hypercalcemia and elevated parathyroid hormone (PTH) level makes the diagnosis of PHPT most likely. PHPT manifests in diverse ways across the world. In the Western world, it is diagnosed at the asymptomatic stage. This is a result of serum calcium being part of a routine investigation in the Western world⁽³⁾. However, the same phenomenon is not observed in Pakistan and in developing countries. In Pakistan, patients with PHPT manifest symptoms at the time of presentation^(2,3). In Pakistan, the screening of healthy individuals for hypercalcemia and PTH levels is not a routine practice even in urban areas. Furthermore, there is limited access to medical treatment in the rural areas where most of the population lives. While PHPT can cause

severe disease, delay in diagnosis multiplies the risk of severity⁽²⁾. Regardless of whether the disease is symptomatic or asymptomatic, patients with PHPT in developing countries have severe outcomes⁽⁴⁾. Pakistan has a massively disproportionate gender distribution of PHPT towards females. Only 1% to 22% of patients with PHPT are asymptomatic. Among the symptomatic patients, PHPT is a multisystem condition. Body ache is the most common complaint followed by renal manifestations, abdominal pain, and fractures^(2,3).

Due to regular screening and easily accessible investigating laboratories in the Western world, a condition called asymptomatic normocalcemic hyperparathyroidism is evident. However, the incidence of normocalcemic hyperparathyroidism is much less common in Pakistan and it is often symptomatic. In addition, Vitamin D deficiency is a common condition and concomitant deficiency can obscure the biochemistry manifestations of PHP, leading to normocalcemia. This suggests, in suspected individuals, besides investigating serum calcium, serum vitamin D, PTH level should also be emphasized⁽²⁾.

Although Sestamibi parathyroid scan (SPS) is the most reliable and commonly used imaging modality, non-invasive methods of investigation are being increasingly explored⁽²⁾. A large retrospective study conducted by Fatima et al found that neck

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How to cite this article:

Hassan Z, Kumari U, Jan IA, Abbas F. Primary Hyperparathyroidism in Pakistan: Challenges and Future Recommendations. *J Med Assoc Thai* 2022;105:569-70.

DOI: 10.35755/jmedassocthai.2022.06.13317

Table 1. Showing sensitivity, positive predictive value, and accuracy of ultrasound and Sestambi Parathyroid Scan⁽⁵⁾

Imaging modality	Sensitivity	Positive predictive value	Accuracy
Ultrasound neck	88.3%	94.6%	84.1%
Sestambi scan	90.4%	94.3%	85.7%

ultrasound (US) had comparable results with SPS as shown in Table 1⁽⁵⁾. The study suggested that neck US could potentially replace SPS and serve as the first line investigation in the diagnosis of PHPT⁽⁵⁾. The benefits of neck US include non-invasive nature, cost-effectiveness, no need to prepare the patient, time-saving, and free of side effects⁽⁶⁾. In difficult cases or uncertain findings on neck US, SPS can be used as a backup investigation⁽⁵⁾. During surgery, direct localization of the affected site is preferable over bilateral neck exploration. Preoperative localization of PTH gland by focused neck US also decreases the practice of bilateral neck exploration.

There is huge lack of research studies on PHPT from Pakistan when compared to the Western countries⁽²⁾. The postoperative events and endocrinal entity have been exceptionally under-reported. Pakistan has the non-existence of a trained PTH gland sonologist, so the number of diagnosed cases is less than reported from the other parts of the world. A previous study had found that ectopic PTH glands are commonly missed on neck US⁽⁵⁾. The sensitivity of diagnosing PHPT could be improved if sonologists were well-trained in neck US⁽⁷⁾. In a lower-middle-income county like Pakistan, easy access to neck US may prove a turning point in the management of PHPT. The musculoskeletal health of females is more sensitive than males, whereas PHPT in Pakistan is a disease predominantly in females. Therefore, it is even more important to address this issue in Pakistan.

Conclusion and recommendations

- The authors suggest enthusiastic efforts should be taken to include serum calcium in the routine baseline investigation. Patients will get benefit from diagnosis at the asymptomatic stage to prevent morbidity and mortality associated with PHPT.

- To the best of the authors' knowledge, based on information and existing literature review on PTH diseases in Pakistan, it is evident that important endocrinal aspect of PHPT had never been studied to estimate the prevalence of its clinical profile, understanding the diagnostic features, and observing the postoperative management outcome in the set-up, so further research on this aspect is needed.

- Sestamibi parathyroid scan has not been widely available even in tertiary hospitals, so it should be readily available to diagnose any PTH pathology on time.

- Investigation facility of serum calcium, vitamin D, and PTH level, and trained PTH sonologists and PTH surgeons or endocrinologists should also be provided in rural areas, to diagnose the disease at the asymptomatic stage.

- Increasing PTH disorders' awareness among physicians and otolaryngologists will not only help to diagnose more cases but will also help to increase evidence support for PTH disorders in Pakistan.

- Continuing medical education programs on PTH disorders aimed at specialists like orthopedic surgeons, urologists, nephrologists, rheumatologists, general practitioners, and PTH disorders centers should be done.

This concludes that PHPT is a crucial matter in the medical practice of Pakistan. If PHPT was to be diagnosed timely, the multifactorial causes of PHPT must be understood and population-specific measures should be adapted to manage the disease.

Funding disclosure

No financial support was acquired for this article.

Conflicts of interest

The authors report no actual or potential conflicts of interest.

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