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Research Article

DIAGNOSIS OF PARATHYROID ADENOMA THROUGH TELEMEDICINE-A UNIQUE CASE REPORT

Mubasheer Ali[1]., Ayesha Nazneen[2] and Akhila Kosuru[3]

[1]Senior Consultant, Internal Medicine, Apollo Telehealth
[2]Department of Medicine and Senior Consultant, Apollo Telehealth
[3]Senior Consultant General Physician, Apollo Telehealth

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A B S T R A C T

A 44-year-old male patient presented to an internal medicine consultant over telemedicine through video consultation in July 2021 with gradual onset moderate generalised fatigue and acute body aches since 1 week. On further history it is known that the patient has no comorbidities, with significant family history of diabetes and hypertension in both his parents and that he recovered from mild COVID 19 infection 1 month back in home isolation. On general physical and systemic examination there was no abnormality detected. All his vital parameters were under normal limits. The patient was advised routine complete blood work in order to rule out any post covid complications. Investigations revealed that his serum calcium levels (13.9 mg/dl), and vitamin d levels(129 ng/ml) were high and Hba1c(6.3%) was in prediabetic range. There was no family history of hypercalcemia nor there was any history of renal calculi or fractures.

He was advised further investigations such as intact serum PTH (parathyroid hormone), ultrasound neck and was also asked to repeat serum calcium. Intact serum PTH(179 pg/ml) and serum calcium levels were found to be elevated and ultrasound neck revealed well defined elongated hypoechoic lesion measuring 9*6*5 mm adjacent to the right lobe of thyroid gland postero superiorly with a suspicious vascular pedicle suggesting parathyroid adenoma. To establish and confirm the diagnosis nuclear medicine TcSestamibi parathyroid scan and fine needle aspiration cytology (FNAC) were advised, which confirmed primary hyperparathyroidism secondary to parathyroid adenoma with hypercalcemia and hypervitaminosis D. The patient was counselled and surgerywasadvised for parathyroid adenoma. He underwent parathyroidectomy in July 2021 and he is hemodynamically stable with no complaints

INTRODUCTION

The four parathyroid glands are small ovoid structures located in the posterior aspect of thyroid glands. Secretion of parathyroid hormone (PTH) from these glands regulate the calcium and phosphorous homeostasis by their action on skeletal, renal and gastrointestinal systems(Wolfe SA, 2021). Abnormalities of serum calcium are the most commonly dealt parathyroid disorders in clinical practice. Parathyroid adenoma is a benign tumour of parathyroid gland. Hypercalcemia is incidentally discovered in most of the patients with parathyroid adenoma who are usually asymptomatic. Symptoms such as renal calculi, general fatigue and body aches, skeletal complications, neuropsychiatric disorders and constipation are the common manifestations of parathyroid adenoma(Michels & Kelly, 2013). Extreme manifestations can lead to complications such as cardiac arrhythmias, coma, and death. Primary hyperparathyroidism is mainly due to excessive secretion of PTH from one or more parathyroid glands caused mainly by parathyroid adenoma. Outright physical signs are rare in parathyroid adenoma. As the parathyroid gland is hardly palpable a typical neck mass indicates thyroid or parathyroid pathology.80 to 85% of hyperparathyroidism cases are due to a single parathyroid adenoma and 10-12% are due parathyroid carcinoma.

Hyperparathyroidism and is classified into primary, secondary and tertiary forms(Insogna, 2018). Secondary hyperparathyroidism is caused by the stimulation of the parathyroid glands as a feedback to low calcium levels or due to possible indifference of the parathyroid glands to elevated serum calcium levels and disarticulation of the normal negative feedback loop (pseudo hypoparathyroidism) (McDonald *et al*., 2005).Surgical management is usually appropriate looking at the potential complications like urolithiasis and osteoporosis(Sheldon *et al*., 2002).For all symptomatic patients parathyroidectomy is indicated and is the choice of treatment(Pasieka *et al*., 2009).Patient might need

Corresponding author:* **Mubasheer Ali
Senior Consultant, Internal Medicine, Apollo Telehealth

calcium supplementation and other supportive medication post-surgery.

CASE REPORT

A 44-year-old male patient consulted a general medicine expert through teleconsultation, and all of his demographic information was collected, and an electronic medical record with a universal health care identifier was established (UHID). In the past 1 week, he has been complaining of generalised tiredness and body aches. A review of the patient's medical history found that he had no comorbidities and had been infected with a mild COVID 19 infection one month prior, which he had recovered from completely under home isolation.

Vitals examination revealed a height of 177 cm,weight of 87.5 kgs, temperature 97 degfh, pulse rate of 90 beats per minute, regular with a normal rhythm, respiratory rate of 17 cycles per minute and blood pressure of 130/80 mmhg.. Assisting and coordinating with the center paramedic general and systemic examination were carried out virtually under specialist's guidance and instructions. General examination findings show no clubbing, no cyanosis, no pallor, no icterus, no lymphadenopathy, and no pedal oedema. With no heaves, thrills, murmurs and adventitious sounds apex beat was found in left 5th intercostal space in mid clavicular line with normal heart sounds s1 and s2.Respiratory system examination revealed trachea central with normal vesicular breath sounds. Noronchi or crackles were heard. Abdominal examination revealed no tenderness, guarding,rigidity, and there was no palpable mass or organomegaly. Auscultation revealed normal bowel sounds. Central nervous system examination revealed motor and sensory systems to be within normal limits. All deep tendon reflexes and plantar reflex were normal on eliciting. No abnormality was detected in gait and coordination.

After complete evaluation he was advised to get routine blood work in order to rule out post covid complications. Investigations revealed that his serum calcium levels, and vitamin d levels were high and Hba1c was in prediabetic range. There was no family history of hypercalcemia nor there was any history of renal calculi or fractures. He was advised further investigations such as intact serum PTH (parathyroid hormone), ultrasound neck and was also asked to repeat serum calcium. Intact serum PTH and serum calcium levels were found to be elevated and ultrasound neck revealed well defined elongated hypoechoic lesion measuring 9*6*5 mm adjacent to the right lobe of thyroid gland postero superiorly with a suspicious vascular pedicle suggesting parathyroid adenoma. To establish and confirm the diagnosis nuclear medicine TcSestamibi parathyroid scan and fine needle aspiration cytology (FNAC) were advised, which confirmed primary hyperparathyroidism secondary to parathyroid adenoma with hypercalcemia and hypervitaminosis D. The patient was advised surgery parathyroidectomy which he underwent in July 2021.The patient is in regular follow ups with complete alleviation of his symptoms.

DISCUSSION

Parathyroid tumours are not visible or palpable on clinical examination usually. The clinical symptoms are more often connected with the clinical expression of hypercalcemia. In this particular case there were no local pain or gland enlargement demonstrated.

Calcium affects almost all functions of the organ systems. Manifestations of hypercalcemia are very diverse. The classic pentad of hypercalcemia symptoms is kidney stones, painful bones, abdominal groans, psychic moans, and fatigue overtones. Symptoms of early hypercalcemia are often undiagnosed, especially in developing countries, in which limited laboratory facilities are available. Reduced bone mineral density causing osteopenia, osteoporosis, and fractures is a frequent complication in late-diagnosed hypercalcemia.

Clinical symptoms are often used to confirm a diagnosis of parathyroid adenoma, which is then supported by laboratory findings. Increased calcium and parathyroid hormone levels are significant diagnostic tests. There can be inconsistencies in laboratory data, such as an increase in PTH, an increase in calcium with hypophosphatemia, and an increase in urine calcium excretion, all of which imply a disorder in calcium homeostasis in the body(Levine *et al*., 2014).

Parathyroid abnormalities usually cause glandular enlargement. Examination with sestamibi NM scan has a high sensitivity of up to 81% in determining the location of a single parathyroid adenoma. Examination by contrast-enhanced CT and MRI can also be used primarily to determine the location of parathyroid adenomas outside of the parathyroid gland. The results of ultrasonography, Sestamibi NM scan and FNAC , in this case, revealed well defined elongated hypoechoic lesion measuring 9*6*5 mm adjacent to the right lobe of thyroid gland postero superiorly with a suspicious vascular pedicle suggesting parathyroid adenoma(Shafiei *et al*., 2012). Thus, the examination supported the diagnosis of parathyroid adenoma. Therefore, parathyroidectomy was advised to the patient(Wilhelm *et al*., 2016).

Parathyroid adenoma should be strongly suspected if a patient presents with any prolonged fatigue, body aches, osteoporosis that is not associated with age, and multiple fractures without significant trauma. The treatment of parathyroid tumours is the surgical exploration of the neck and removal of pathological parathyroid glands followed by another parathyroid gland biopsy to determine the possibility of adenoma or multiple gland hyperplasia(Leere *et al*., 2017).

A delay in the diagnosis of parathyroid adenoma results in manifestations that lead to severe complications (Mourad *et al*., 2015). Parathyroid adenoma has an excellent prognosis with early diagnosis, prompt intervention and thereby surgical treatment if needed (Prihantono *et al*., 2019).

CONCLUSION

National medical council and Government ministry of health and family welfare, India having realised the reach and potential of telemedicine in such a crisis situationas COVID 19 pandemic, have formulated and laid out telemedicine practice guidelines, thereby accommodating registered medical practitioners to reach out to the patients and provide quality health care(Board of Governors - Indian Medical Council, 2020). Patients appear to be fearful and insecure about visiting hospitals physically during the COVID 19 pandemic since they may be exposed to the virus inadvertently. As a result, there's a good probability that numerous medical illnesses, such as parathyroid adenoma, may go undiagnosed and untreated, leading to substantial consequences. This has proven to be a

major gap in the healthcare system in the current scenario and Telemedicine very conveniently fills up this gap providing continuum of the speciality health care. This case report clearly signifies the huge role of telemedicine in the present health crisis in assessing and guiding the patient and contributing further in early diagnosis and prompt management of the condition without any delay. Telemedicine has shown the perfect path to medical professionals and health care workers around the world, in successfully managing many vital medical conditions, without overburdening the health care system, which otherwise is facing severe shortage of resources due to COVID 19 pandemic. The Apollo Telehealth and telemedicine, in this case, is a leading example of delivery of specialty health and facilitation of early diagnosis, surgery and prevention of serious complications of parathyroid adenoma, digitally(Katz *et al*., 2022).

Declaration of Patient Consent

The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient has given his consent for his investigations and other clinical information to be reported in the journal. The patient understands that his name and initials will not be published, and due efforts will be made to conceal identity, but anonymity cannot be guaranteed.

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Conflicts of Interest

There are no conflicts of interest.

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