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Case Report

Primary Hyperparathyroidism Due to Mediastinal Parathyroid Adenoma, Our Point of View

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ABSTRACT

Primary hyperparathyroidism is defined by elevated parathyroid hormone and calcium levels, most usually caused by a parathyroid adenoma. Parathyroid adenomas are most commonly detected in the neck or an ectopic site, seldom in the mediastinum. The parathyroid adenoma can occur in ectopic locations such as the mediastinum, thymus, or retro oesophagal area in 6-16% of cases. We presented the example of a 73-year-old woman who was found to have hypercalcemia during a regular test. The patient's serum calcium (3.11 mmol/L), alkaline phosphatase (162 U/L), parathyroid hormone (PTH: 379 pg/mL) and creatinine (111.6 umol/L) levels were higher than the reference values. A chest computerized tomography scan revealed an anterior mediastinal mass, and nuclear scintigraphy revealed functioning parathyroid tissue in the mediastinum. The mediastinal parathyroid adenoma was effectively removed surgically, and the PTH level began to fall. Any hypercalcemia and high PTH levels in the absence of a parathyroid adenoma in the neck should prompt clinicians to look for ectopic sites using a mix of imaging modalities.

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Introduction

Primary hyperparathyroidism is a common endocrine condition characterised by hypercalcemia and increased or abnormally normal serum parathyroid hormone levels. Primary hyperparathyroidism is most commonly asymptomatic in places where serum calcium levels are frequently tested. The parathyroid adenoma can occur in ectopic locations such as the mediastinum, thymus, or retro oesophagal area in 6-16% of cases. A combination of imaging modalities, including nuclear scintigraphy and high-resolution computerised tomography (CT), can aid in detecting an ectopic parathyroid adenoma. Many people without symptoms are followed without surgery. However, some patients progress to symptomatic hyperparathyroidism and require surgery, while others remain asymptomatic. Here we presented primary hyperparathyroidism caused by an ectopic parathyroid gland in the anterior mediastinum.

Case Report

A 73-year-old woman patient who was found to have hypercalcemia and elevated alkaline phosphatase (ALP) in her routine checkup was admitted to our department. Laboratory testing as part of a hypercalcemia workup revealed elevated serum calcium (3.11 mmol/L, reference range [RR]: 2.10-2.55), ALP (162 U/L, RR: 35-120), parathyroid hormone (PTH; 379 pg/mL, RR: 12.0-65.0), phosphorus (0.73 mmol/L, RR: 0.74-1.52) and vitamin D (53.14 nmol/L, RR: 75-250) levels. The serum creatinine concentration was 111.6 µmol/L (RR: 45-109), and the estimated glomerular filtration rate (eGFR) was 42 mL/min. The total T score for femoral bone mineral density, excluding osteoporosis, was –0.7. A single tracer, dual-phase anterior planar 99mTc-MIBI scintigraphy scan showed enhanced tracer uptake in the front of the sternum, and findings were interpreted as an ectopic parathyroid gland (*Figure 1*). A non-contrast CT of the chest revealed a well-defined soft tissue mass measuring 1.0x1.0x0.7

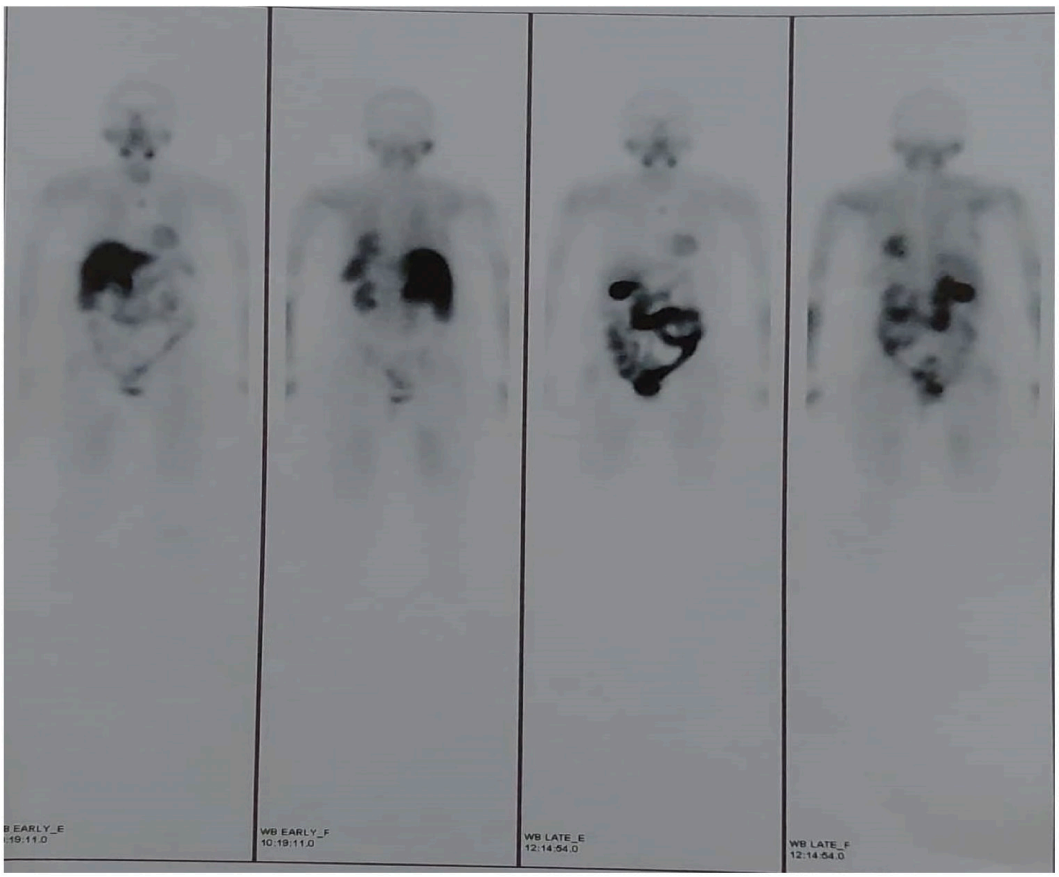

Figure 1. 99mTc-MIBI parathyroid scintigraphy, the early (1,2) and the late (3,4) planer images.

cm that was located retrosternal (*Figure 2*). The patient was treated effectively by surgically removing 3x3x1 cm parathyroid tissue and 1.2 cm parathyroid adenoma. The histopathological investigation revealed an adenoma composed of homogeneous cells with eosinophilic and lighter cytoplasm and spherical nuclei. The surgical material changes described confirmed an adenoma in an ectopically located parathyroid gland. PTH levels and serum calcium levels gradually drop after surgery.

Discussion

Primary hyperparathyroidism is an uncommon condition characterised by elevated parathyroid levels and hypercalcemia, usually caused by a parathyroid adenoma. Parathyroid adenomas are typically found in the neck in the juxta thyroid position, but earlier research has shown that 6-16% of parathyroid adenomas can present in an ectopic location. According to Roy et al.[4], parathyroid adenomas in the anterior mediastinum are one of the rarest areas, occurring in only 4% of affected patients. Recurrent kidney stones, bone pain, and gastrointestinal symptoms are the hallmarks of hyperparathyroidism. However, this type of presentation in clinical practice is becoming less common, owing to increasingly frequent routine checks that allow for early diagnosis, even in the asymptomatic phase.[5] Our patient is an example of this, as she has no symptoms, and the condition was discovered via routine laboratory tests. Ultrasonography, radionuclide scintigraphy, CT, and magnetic resonance imaging are all diagnostic modalities for imaging parathyroid adenomas.[1] The combination of a 99mTc-MIBI sestamibi scan with a CT scan offers 100% sensitivity and 97.4% positive predictive value for diagnosing ectopic parathyroid adenoma. At the 2013 Fourth International Workshop, surgical indications for operative treatment of an asymptomatic case were strictly specified. Age under 50 years, serum calcium level greater than 1 mg above normal, DEXA scan, osteoporosis, and renal problems (creatinine clearance less than 60 mL/min) are all examples. At the same time, surgery is the sole option for such patients.

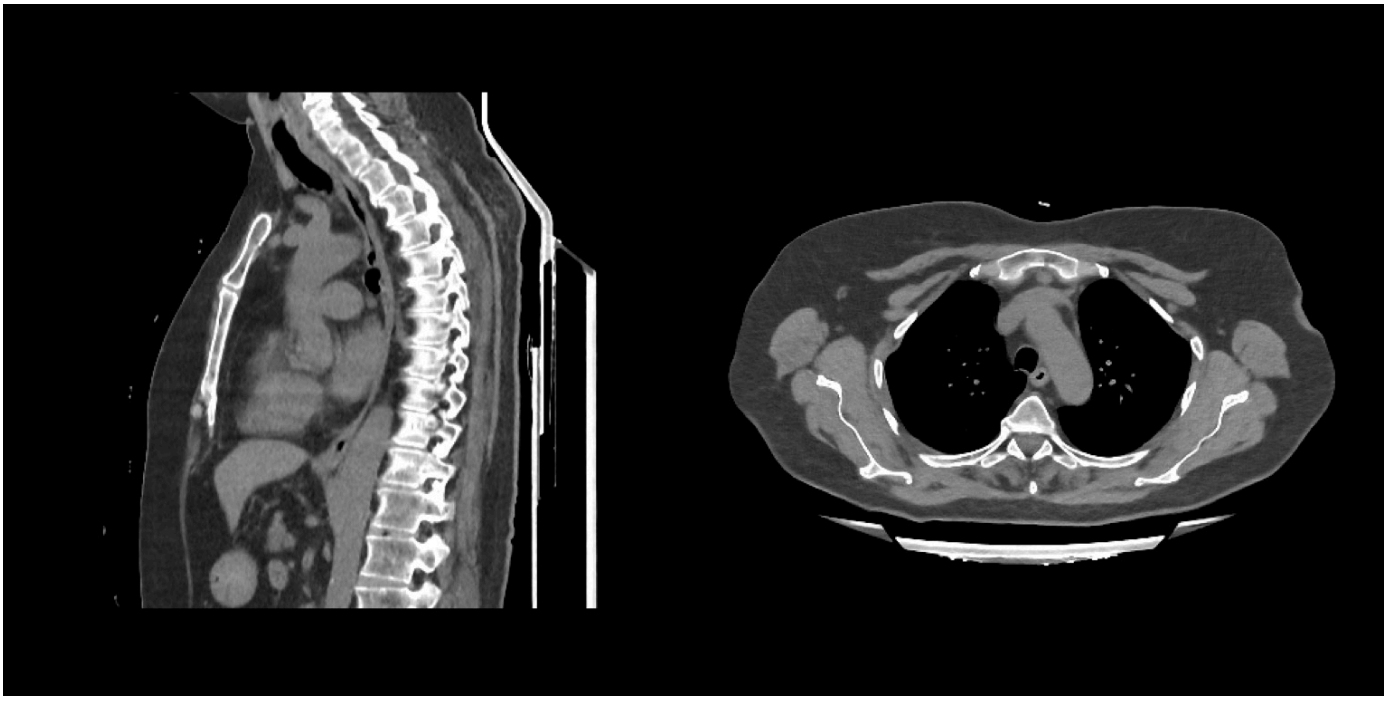

Figure 2. Computerised tomography scan of the thorax.

Concluisons

Any hypercalcemia and elevated PTH levels in the absence of a parathyroid adenoma in the neck should alert clinicians to look for ectopic sites using a mix of imaging modalities. This example highlights the need for you to consider the diagnosis of an ectopic parathyroid adenoma in the absence of neck swelling and prolonged hypercalcemia. This instance case was reported due to its rarity and odd presentation.

Conflict of Interests

The authors declare that there is no conflict of interest about this manuscript.

Informed Consent

Written consent was obtained from the patient.

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Authors' Contribution

Literature Review, Critical Review, and Manuscript preparing held by all authors.

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