




Sarcoidosis Lymph Node Mimicking a Cervical Parathyroid Adenoma on 99m-Tc Sestamibi Imaging

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Abstract

A 70-year-old woman presented to our department with hypercalcemia. Laboratory tests revealed elevated parathyroid hormone levels at 335 pg/mL, while vitamin D 25-OH levels were normal at 26 ng/mL. Based on these findings, primary hyperparathyroidism was suspected. A neck ultrasound revealed a 12-mm mass near the lower pole of the left thyroid lobe, and a subsequent 99m-TcMIBI (technetium-99m sestamibi) scan confirmed increased uptake in the same area, suggesting a left inferior parathyroid adenoma. Given the concordance between the ultrasound and MIBI scan results, the patient underwent surgical exploration. Unexpectedly, the histopathological report identified a lymph node formation containing monomorphous epithelioid granulomas, suggestive of sarcoidosis. Through this interesting case, the authors highlight the importance of considering sarcoidosis in the differential diagnosis of hypercalcemia, especially when imaging findings suggest a parathyroid adenoma, as sarcoidosis can mimic such an adenoma in isolated cervical lymph nodes.

Keywords

- sarcoidosis
- lymph node
- parathyroid adenoma
- 99m-Tc sestamibi

Introduction

Hypercalcemia is a common laboratory finding that can arise from a variety of conditions, including malignancy, primary hyperparathyroidism, and granulomatous diseases such as sarcoidosis. In the majority of cases, hypercalcemia is attributed to malignancy, particularly solid tumors, and primary hyperparathyroidism, which is often linked to a solitary parathyroid adenoma. However, in some instances, hypercalcemia can present as a diagnostic challenge, as it may be associated with nonparathyroid causes, such as sarcoidosis. This case report describes a 70-year-old woman with hypercalcemia, initially suspected to have primary hyperparathyroidism, but later diagnosed with sarcoidosis. The case highlights the importance of considering alternative diagno-

ses, even when diagnostic imaging suggests a parathyroid adenoma.

Case Report

A 70-year-old woman was admitted to our department with a history of hypercalcemia. She had no known family history of hypercalcemia or related disorders. On initial presentation, laboratory tests revealed elevated parathyroid hormone (PTH) and total calcium levels respectively at 335 pg/mL (normal range: 12–65 pg/mL) and at 15.2mg/dL (normal range: 8.5–10.2 mg/dL), while vitamin D 25-OH were within the normal range 26 ng/mL (normal range: 20–100 ng/mL). On physical examination, the patient was alert and in no acute

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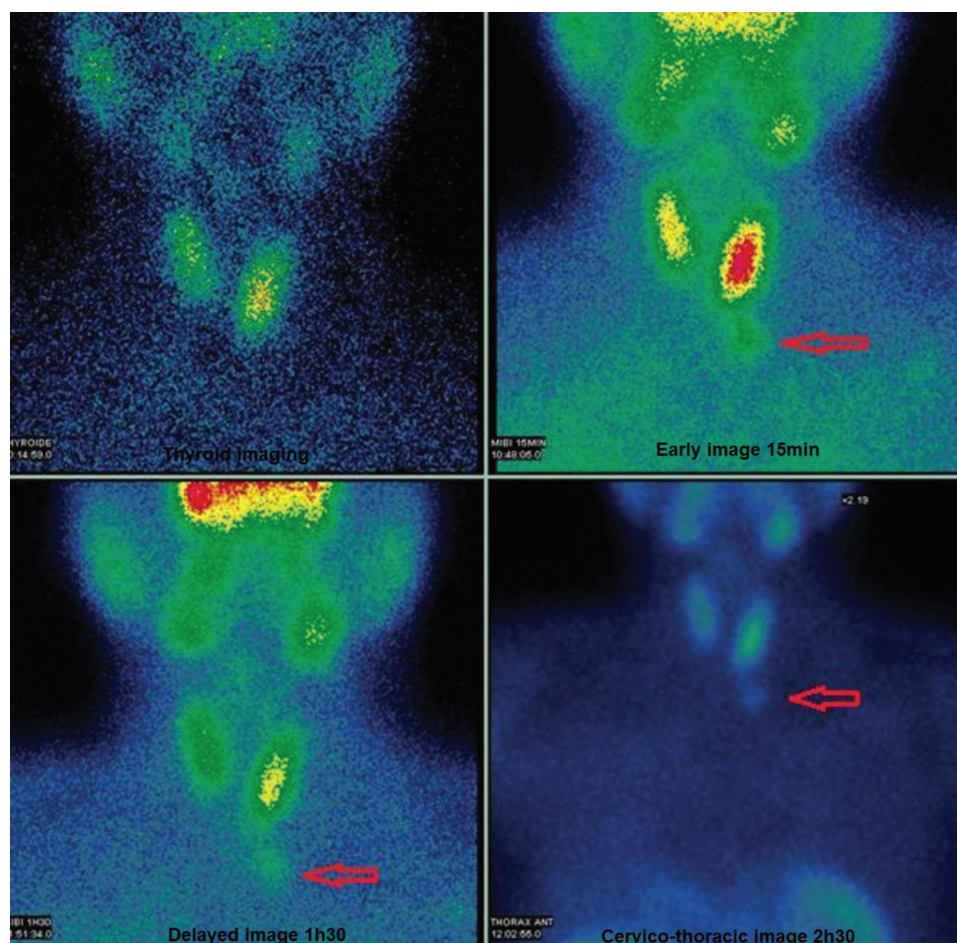


Fig. 1 MIBI-TC99m (technetium-99m sestamibi) washout scan reveals increased uptake in the lower left parathyroid with delayed washout, corresponding to the same nodule identified on ultrasonography.

distress. There were no significant abnormalities noted on the neck exam. Given the elevated PTH, primary hyperparathyroidism was suspected. A neck ultrasound was performed, which revealed a 12-mm hypoechoic mass with peripheral vascularization located near the lower pole of the left thyroid lobe. A subsequent 99m-TcMIBI (technetium-99m sestamibi) scan showed increased uptake in the same area, suggesting a lower left parathyroid adenoma (►Fig. 1, red arrows). The concordance between the ultrasound and MIBI scan findings led to the preoperative diagnosis of a left inferior parathyroid adenoma.

The patient underwent surgical exploration to excise the suspected parathyroid adenoma. However, during the procedure, no other pathological parathyroid glands were identified. To our surprise, the histopathological analysis of the excised tissue revealed a lymph node formation with multiple monomorphous epithelioid granulomas without necrosis (►Fig. 2). This histological appearance was highly suggestive of sarcoidosis rather than a parathyroid adenoma. Following the diagnosis of sarcoidosis, the patient was referred for further evaluation and management of sarcoidosis.

Discussion

Hypercalcemia is most often linked to malignancies and primary hyperparathyroidism, with the latter commonly

caused by a solitary parathyroid adenoma.^{1,2} The initial diagnostic approach for primary hyperparathyroidism typically includes neck ultrasound and 99m-TcMIBI scanning. While MIBI scans are generally effective in identifying hyperfunctioning parathyroid glands, with sensitivity ranging from 71 to 93% and specificity around 90%, they are not without limitations.^{3,4} When combined with single-photon emission computed tomography imaging, these scans have improved sensitivity (92–97%) and specificity (96–99%) for identifying solitary adenomas.^{5,6} However, it is important to note that MIBI uptake can occur in other tissues, such as hyperactive thyroid nodules, blood vessels, the esophagus, the longus colli muscle, and enlarged lymph nodes, which can lead to false-positive results.⁷ In this case, although the MIBI scan was positive and ultrasound suggested a parathyroid adenoma, the histopathological findings after surgery revealed sarcoidosis, a rare cause of hypercalcemia.

Although rare, sarcoid granulomas involving the parathyroid glands present a significant diagnostic challenge, especially in cases where hypercalcemia (elevated serum calcium) is noted, but PTH levels remain either normal or insufficiently suppressed. This absence of typical PTH suppression, commonly observed in primary hyperparathyroidism, complicates the differential diagnosis. In contrast to hyperparathyroidism, sarcoidosis-induced hypercalcemia results from the increased

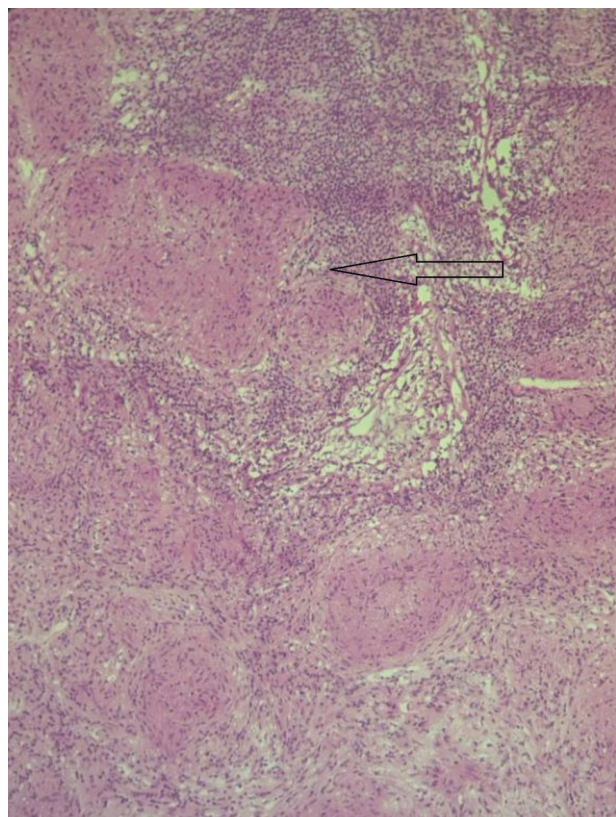


Fig. 2 Histological analysis of the excised lymph node showing monomorphous epithelioid granulomas without necrosis (black arrow). A histological appearance highly suggestive of sarcoidosis.

production of 1,25-dihydroxyvitamin D by granulomas, which enhances calcium absorption rather than from elevated PTH levels.⁸

Sarcoidosis, a systemic inflammatory condition marked by granulomatous lesions, is a known cause of hypercalcemia in certain patients, often in those with cervical lymph node involvement. The mechanism behind this involves granulomas producing excessive amounts of 1,25-dihydroxyvitamin D, leading to enhanced intestinal calcium absorption, and consequently hypercalcemia, despite normal or low PTH levels.^{9,10} In the present case, the initial diagnosis of primary hyperparathyroidism was considered due to elevated PTH levels and imaging findings suggestive of a parathyroid adenoma. However, the identification of granulomatous lesions in a lymph node, coupled with the absence of parathyroid abnormalities, ultimately led to the diagnosis of sarcoidosis.

Further complicating diagnosis, a few case reports describe the coexistence of sarcoidosis and parathyroid adenomas, which can blur the clinical picture. The simultaneous presence of both conditions increases the risk of misattributing the cause of hypercalcemia to a single source. As a result, distinguishing between these overlapping conditions is crucial and underscores the need for thorough diagnostic evaluations.¹¹

This report underscores the importance of considering alternative diagnoses like sarcoidosis, even when imaging

studies suggest a parathyroid adenoma, in the differential diagnosis of hypercalcemia. It stands apart from previously documented cases due to the severity of hypercalcemia, the involvement of additional organs, unique histopathological findings, and the delay in diagnosis. These distinguishing features provide a broader perspective on the less frequently observed manifestations of sarcoidosis and its association with hypercalcemia.¹² A comprehensive comparison with existing literature would not only clarify diagnostic complexities but also enhance understanding of the clinical variations and implications of sarcoidosis-related hypercalcemia.

Conclusion

Hypercalcemia is commonly associated with primary hyperparathyroidism, yet sarcoidosis must also be considered, particularly when imaging suggests a parathyroid adenoma. In this case, hypercalcemia was initially misattributed to primary hyperparathyroidism, but histopathological analysis ultimately revealed sarcoidosis. This case emphasizes the importance of broadening the differential diagnosis and underscores the critical role of comprehensive diagnostic assessment, including histopathological examination, in accurately identifying the underlying cause of hypercalcemia.

Conflict of Interest

None declared.

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