

A Giant Cystic Ectopic Parathyroid Adenoma of the Anterior Mediastinum Mimicking a Mediastinal Tumor: A Diagnostic Challenge

Irida Pano¹, Vasileios Leivaditis², Chrysa Andrikopoulou³, Elias Liolis⁴, Christos Sachpekidis⁵, Dimitrios Apostolopoulos⁶, Vasiliki Androutsopoulou⁷, Konstantinos Nikolakopoulos⁸, Ioannis Panagiotopoulos⁹, Artemisia Papadima¹⁰, Zafeiria Papathanassiou¹¹, Efstratios Koletsis¹², Francesk Mulita¹³

¹Department of Clinical Subject, University of Medicine Tirana, Tirana, Albania

²Department of Cardiothoracic and Vascular Surgery, Westpfalz Klinikum, Kaiserslautern, Germany

³Department of Surgery, General Hospital of Aigio, Aigio, Greece

⁴Department of Oncology, General University Hospital of Patras, Patras, Greece

⁵Department of Nuclear Medicine, School of Medicine, Democritus University of Thrace, Alexandroupolis, Greece

⁶Department of Nuclear Medicine, General University Hospital of Patras, Patras, Greece

⁷Department of Cardiothoracic Surgery, Faculty of Medicine, University of Thessaly, Biopolis, Larissa, Greece

⁸Department of Vascular Surgery, General University Hospital of Patras, Patras, Greece

⁹Department of Cardiac Surgery, Hippokration General Hospital of Athens, Greece

¹⁰Department of Anesthesiology, Hippokration General Hospital of Athens, Greece

¹¹Department of Radiology, General University Hospital of Patras, Patras, Greece

¹²Department of Cardiothoracic Surgery, General University Hospital of Patras, Patras, Greece

¹³Second Department of Surgery, Medical School, Democritus University of Thrace, Alexandroupolis, Greece

Abstract

Background: Ectopic parathyroid adenomas represent an uncommon but clinically significant cause of primary hyperparathyroidism, particularly when located in the mediastinum. Their diagnosis may be challenging, especially in the presence of concomitant thyroid pathology, which can obscure imaging interpretation and lead to misleading localization studies.

Case Presentation: We report the case of a 63-year-old man who presented with persistent hoarseness and was found to have marked hypercalcemia and elevated parathormone levels consistent with primary hyperparathyroidism. Neck ultrasonography demonstrated multinodular goiter, while

dual-tracer technetium-99m pertechnetate and technetium-99m sestamibi scintigraphy with SPECT/CT suggested a functional thyroid adenoma and raised suspicion for a possible parathyroid lesion within the thyroid gland. Fine-needle aspiration with parathormone washout did not confirm an intrathyroidal parathyroid origin. Subsequent cross-sectional imaging revealed a large cystic mass in the anterior superior mediastinum compressing adjacent structures. After medical stabilization with cinacalcet, the patient underwent surgical excision through a right axillary thoracotomy. Intraoperative and biochemical findings confirmed the lesion as the source of excessive parathormone secretion. Histopathological and immunohistochemical examination established the diagnosis of a cystic ectopic parathyroid adenoma. Postoperatively, serum calcium and parathormone levels normalized, and the patient remained free of biochemical evidence of recurrent disease during the available follow-up period.

Conclusion: This case highlights the diagnostic complexity of mediastinal ectopic parathyroid adenomas, particularly in patients with coexisting multinodular goiter and inconclusive scintigraphic findings. Clinicians should maintain a high index of suspicion for ectopic parathyroid tissue in cases of

unexplained hyperparathyroidism with negative or discordant cervical imaging, as accurate localization is critical for definitive surgical management.

Keywords: primary hyperparathyroidism, ectopic parathyroid adenoma, mediastinal mass, sestamibi scan, multinodular goiter; SPECT/CT