



Case report

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Unexpected Finding: A Case Report of Aberrant Cervical Thymus

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Received Date: April 30, 2024

Published Date: May 06, 2024

Abstract

The spectrum of etiologies of neck masses presents diagnostic challenges for pediatrics. In this article, the case of an asymptomatic neck tumor in a 5-year-old boy with an abnormal cervical thymus is presented. With its detailed insights and non-invasive treatments, ultrasonography is becoming an important diagnostic tool. Moreover, unique ultrasonography features facilitate the diagnosis of a malformed cervical thymus, minimizing the need for histological validation. This case emphasizes the importance of considering an abnormal cervical thymus in asymptomatic pediatric neck masses and highlights the significance of its recognition in clinical practice.

Keywords: Aberrant thymus; Cervical mass; Ultrasound

Introduction

Neck masses are a common challenge in pediatric care and require a comprehensive understanding of their diverse etiologies and diagnostic approaches [1]. These masses can stem from various causes, including neoplasms, branchial abnormalities, and lymphadenopathy, all of which are commonly considered in the differential diagnosis [2]. Additionally, rare underlying factors such as an atypical cervical thymus may contribute to the presentation of neck masses. Aberrant cervical thymus typically manifests along the descending thymic pathway extending from the mandibular angle to the superior mediastinum and is often identified as an incidental finding due to its infrequent symptomatic presentation [1,3,4]. Ultrasonography (US) is often a valuable tool for establishing the diagnosis, especially since symptoms, such as dyspnea and dysphagia are rare due to the limited invasion of the thymus into adjacent structures [2,3].

Case Presentation

A 5-year-old boy with a history of atopic eczema and urinary tract infections had been under the care of a general pediatric since he was six months old. No significant antenatal, perinatal or neonatal complications were reported. At 15 months of age, bilateral centimeter cervical adenopathies were noted during the examination, with no associated symptoms. Despite clinical surveillance, these adenopathies persisted at the age of 18 months. A cervical ultrasound was then performed, which revealed a 14-millimeter nodule in the cervico-thoracic transition below the lower pole of the left thyroid lobe and anterolateral to the esophagus. These findings were consistent with an aberrant thymus. The child's condition has not changed and he remains asymptomatic.

Discussion

According to embryology, the thymus develops around the fifth week of pregnancy on each side of the third and fourth pharyngeal pouches. The lower parathyroid and thymic glands, respectively, begin to form from the dorsal and ventral wings of the third pharyngeal pouch. After that, the gland migrates medially and caudally after separation from the pharyngeal wall. The thymopharyngeal duct or tract guides the thymus and inferior parathyroid gland throughout this descent. The thymus expands upwards and eventually disappears as it moves towards the thorax. During this descent, the primordial thymic tissue may become lodge in the neck, resulting in the formation of a cervical mass [4,5]. Following the descent, the thymus sits in the anterior mediastinum between the thoracic inlet, the parietal pericardium, and the sternum. In patients with an undescended thymus, less than half of the thymus is present in the chest [6]. While the majority of these cases are asymptomatic, possible symptoms include dyspnea, dysphagia, torticollis and latero-cervical masses that are mobilized during the Valsalva maneuver [2].

According to our research, US seems to be the most straightforward and useful imaging technique for identifying abnormal cervical thymus. The US has advantages over other imaging techniques, as it does not require ionizing radiation, contrast agents or sedation. Moreover, sonographic diagnosis is simple since it can show the internal architecture of an aberrant cervical thymus that has the same echo pattern as the thymus in its normal position [3].

Based on the comparison between ultrasound and histological findings of thymic anatomy, the authors concluded that the numerous echogenic linear structures within the thymus represent connective tissue septa and accompanying blood vessels. In addition, they noted that the ultrasound features of the thymic tissue are distinctive enough to diagnose an aberrant cervical thymus, potentially preventing the need for histological sampling to confirm the diagnosis [7].

Ectopic thymic carcinomas and thymomas have been reported in the literature, but compared to children, adults are more likely to develop malignant tumors. Additionally, the available data is insufficient to suggest that ectopic thymic tissue has a higher rate of malignant transformation than normal thymic tissue [7,8]. There is no evidence in the literature that immune system changes are

associated with the existence of an abnormal thymus.

Conclusion

In conclusion, while evaluating asymptomatic neck masses, it is important to consider an abnormal cervical thymus, particularly in pediatric patients. The presence along the thymic descent pathway and the distinctive ultrasound characteristics contribute to the diagnosis of an aberrant cervical thymus. The case highlights how common asymptomatic characteristics are in cases of aberrant thymus, emphasizing the need for an extensive assessment in order to make an appropriate diagnosis.

Unexpected Finding

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Acknowledgment

None.

Conflict of Interest

The authors have no conflicts of interest relevant to this article.

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