Aberrant thymus and parathyroid gland presenting as a recurrent lateral neck mass: A case report

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Abstract
We report an interesting case of a recurrent left lateral neck mass in a 6-year-old boy. When the tumor failed to disappear after a course of antibiotic therapy, it was excised. Histologic study revealed that the encapsulated mass contained a parathyroid gland embedded within a histologically normal thymus. The presence of thymic and parathyroid tissue within a single capsule supports the idea that these two structures have a common embryologic origin. The combination of thymic and parathyroid tissue in a neck mass in a patient so young is rarely reported.

Introduction
The third branchial pouch gives rise to the thymus and the inferior parathyroid glands, and these structures follow a common route during embryogenesis through part of the neck to their final location. Therefore, it is not unusual to find thymic tissue in the cervical area or parathyroid gland tissue in the mediastinum. On the other hand, it is rare to see an ectopic parathyroid gland adjacent to or embedded within ectopic cervical thymic tissue. We report a case of parathyroid gland tissue embedded within an ectopic cervical thymus. Only a few such cases have been reported in the English-language literature.1-3

Case report
A 6-year-old boy presented with a left-sided neck mass of 3 weeks’ duration. He had experienced three similar episodes during the previous 2 years, and he had responded to oral antibiotics on each occasion.

On physical examination, a 3 × 4-cm left anterolateral cervical mass was identified near the thyroid cartilage. The mass was immobile and mildly tender. No hepatomegaly or splenomegaly was noted, and the patient was afebrile. Clinically, the patient was diagnosed as having either tuberculous lymphadenitis or an infected branchial cleft cyst, and he was started on a course of antibiotics.

One week later the mass had shrunken, but it was still present. Because of the persistent nature of the mass, an excisional biopsy was performed. The mass was located medial to the carotid artery and firmly attached to the thyroid gland. On gross examination, the excised mass was well-demarcated, nodular, gray, soft-tissue mass that measured 1 cm in diameter. It was fixed in 10% buffered formalin and embedded in paraffin. A section stained with hematoxylin and eosin (H&E) was prepared and studied.

Microscopically, the mass was an encapsulated nodule that contained both thymic and parathyroid tissue, which appeared as well-demarcated entities within the same capsule (figure, A). The thymic tissue appeared as a single lobule divided by fine, fibrous septa, and the parathyroid tissue was made up entirely of chief cells. Both the periphery and the center of the nodule contained a dense population of lymphocytes and typical Hassall’s corpuscles (figure, B). The histology of both tissues was consistent with the normal histology of the thymus and the parathyroid gland.

Discussion
The thymus is derived from the third branchial pouch, and during embryogenesis it descends from the pharyngeal wall along the carotid sheath into the anterosuperior mediastinum. The inferior parathyroid glands arise from the same branchial pouch, and they traverse the same route in parts of the cervical area. During thymic migration, small fragments of thymus may separate from the body of the organ and attach themselves to a postnatal site along this route. Parathyroid tissue may be seen close to or embedded within the thymus as a result of their common origin and path of descent.1-4 Thymic cysts may also adhere to surrounding structures, such as a carotid artery, jugular vein, or nearby nerves.4 In our patient, a small amount of thymic tissue attached itself to the carotid artery.

Our patient presented with an anterolateral neck mass on
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The differential diagnosis in such cases includes thyroglossal duct cyst, branchial cleft cyst, thymic cyst, cervical tuberculosis lymphadenopathy, benign tumors (e.g., dermoid, epidermoid, hemangioma, and lymphangioma), and malignant tumors (lymphoproliferative disorders and soft-tissue sarcoma). We initially suspected an infected branchial cleft cyst or tuberculous lymphadenitis, and we were surprised when histology revealed thymic and parathyroid tissue. Only a few cases of cervical thymic ectopia associated with ectopic parathyroid have been reported in the literature, and in most of these cases, patients were asymptomatic and presented with a cervical mass.

Most thymic cysts are located on the left side, as occurred in our patient. Our case was unusual in that the size of the cyst diminished significantly between the time of presentation and the time of surgery. Most thymic cysts do not fluctuate in size. When fluctuation does occur, it is caused by fluid accumulation, hemorrhage, or thymic hyperplasia secondary to infections or vaccination. No case of recurrence has been reported following the removal of a cervical thymic cyst by blunt dissection.

Despite its rarity, thymic cyst should be included in the differential diagnosis of cervical masses in children.

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References