Adenochondroma of the Thyroid in a 3-Year-Old Female: A Case Report

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Abstract
Follicular adenomas are the most common benign thyroid neoplasm but are unusual in children. However, other rare degenerative lesions and those of developmental origin can also present as thyroid masses. This article reports the first described pediatric thyroid adenochondroma. A 3-year-old female presented with a hard mass in the right lobe of her thyroid with non-diagnostic imaging and cytology findings. She underwent a right thyroid lobectomy uneventfully. Final histopathology examination confirmed an adenochondroma. To the best of our knowledge, an adenochondroma of the thyroid gland in a child has not been previously reported in literature. Though a rare and benign entity, thyroid adenochondromas present clinically with many features concerning for malignancy. Therefore, these lesions should be considered in the differential diagnosis of pediatric thyroid masses.

Keywords
adenoma, thyroid, pediatrics, thyroidectomy

Introduction
Follicular adenomas account for over 90% of benign tumors of the thyroid gland.1 They can undergo changes within the lesion, the most frequent being hemorrhage. This can then lead to metaplastic changes within the tumor, which can include hyalinization and rarely calcification. An adenochondroma is an extremely rare entity characterized by mature cartilage arising from thyroid stromal elements. The lesion has been described in adults as an incidental finding.2 It has not been previously reported in a pediatric patient.

Case Report
A 3-year-old Caucasian female was referred to the pediatric otolaryngology service with a history of recurrent ear infections and an enlarging right thyroid mass of 3 months duration. There was no history of fatigue, elevated levels of activity, palpitations, constipation, diarrhea, or dry skin. She did not have any difficulty in feeding, breathing, or change in voice. There was no family history of thyroid disease. Examination revealed absence of hoarseness and stridor. The right lobe of the thyroid was enlarged and firm to hard in consistency. It was diffuse, partially mobile and nontender. It did not appear to be adherent to surrounding structures. There was no palpable cervical lymphadenopathy. The rest of the head and neck examination was unremarkable other than for bilateral otitis media with effusion. Her thyroid function tests were within normal limits. A thyroid ultrasound (US) showed a large, heterogeneously hypoechoic multilobulated nodule with internal vascularity measuring 2.8 × 1.7 × 1.5 cm. The left lobe of the thyroid and isthmus were normal.

A fine needle aspiration (FNA) performed the same day showed polymorphous lymphoid cells with few fragments of metachromatic chondroid matrix. There was concern that this was not the tissue from the lesion but adjacent airway cartilage. Magnetic resonance image scanning with contrast (Figure 1) showed a 3.1 × 1.3 × 2.3 cm heterogeneously enhancing mass

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in the right lobe of the thyroid without cervical adenopathy. A chondroid tumor was suspected. Based on the radiologists’ recommendation and uncertain diagnosis, a computerized tomographic (CT) scan of the neck was performed which showed an irregularly enhancing right thyroid mass abutting on the right carotid artery, internal jugular vein, and trachea without compression of these structures (Figure 2). In view of the inconclusive FNA with a persistent right thyroid mass, a right thyroid lobectomy was recommended. She underwent a direct laryngoscopy that confirmed normal vocal fold movements, tracheobronchoscopy, right hemithyroidectomy, and bilateral tympanostomy tube placement. Frozen section examination of the specimen revealed a cartilaginous lesion with no features suspicious for malignancy. Grossly, the mass was firm, white-tan, well-circumscribed, and measured 2.0 cm in greatest dimension. The tumor was completely confined to the right lobe of the gland and surrounded by its capsule. Histologically, the mass was composed of well-circumscribed lobules of mature cartilage with surrounding and intervening, unremarkable thyroid tissue (Figure 3A and B). The final pathology report was consistent with an adenochondroma. Her postoperative course was uneventful and she remains free of residual and recurrent disease 10 months after surgery.

Discussion

Thyroid masses in children should be treated with a high index of suspicion in view of the increased incidence of malignancy. The differential diagnosis should include hamartomas, branchial anomalies, and metastasis from other primary pediatric tumors. The patient presented here had an enlarging thyroid mass with many clinical features of malignancy. Imaging was not very helpful in arriving at a diagnosis but confirmed that the lesion was within the gland without local tissue destruction or lymphadenopathy. In view of the nondiagnostic cytology report and the consequences of delaying surgery for a potentially malignant lesion, the decision was made to proceed with a thyroid lobectomy to be extended if an adverse frozen section diagnosis was received. Adenochondromas of the thyroid gland can have degeneration of the cartilage mimicking cystic changes, but true cyst formation is not present. Bone metaplasia within an adenoma has been reported in the past and is considered a very rare entity. Hamartomas and branchial lesions can appear similar on gross examination and have to be differentiated from adenochondromas based on their histological appearance. Hamartomas have a white-tan to grey appearance with a firm cartilaginous cut surface without cystic change or hemorrhage. Like adenochondromas, hamartomas are benign lesions characterized by mature hyaline cartilage. However, the tissue is native to the neoplastic site and has abnormal, disordered formation. Brachial cleft/pouch cysts consist of smooth-walled masses containing watery or mucoid cystic contents. Occasionally, they can have heterotopic cartilage found within the thyroid and clinically present with an asymptomatic, anterolateral neck prominence. Branchial cleft cysts are usually lined by squamous epithelium whereas those arising from the branchial pouches have respiratory epithelium.

The majority of data regarding thyroid masses in the pediatric population is retrospective. Ultrasound studies have demonstrated that the prevalence of nodules in children ranges from 0.2% to 5.1%. When compared to adults where the incidence of malignancy in thyroid nodules is around 5%, a similar diagnosis is seen in up to 25% of nodules in children. Therefore, it is important to perform a detailed work up in a child presenting with a thyroid nodule. A malignant lesion may present as a discrete thyroid nodule or regional lymphadenopathy without an associated palpable nodule. The physician must evaluate the neck clinically and radiologically for presence of associated lymphadenopathy, compressive symptoms and also dysfunction of the gland. Thyroid function tests and a neck US are an initial part of the diagnostic workup. Guidelines on FNA biopsy (FNAB) of thyroid masses in children are different from adults. Because thyroid volume changes with age, a guideline based on nodule size is not applicable in children unlike adults. Euthyroid
and hypothyroid patients whose nodules demonstrate high risk features on US in the context of certain risk factors qualify for an FNAB. All pediatric FNAB’s are generally performed with US guidance. Risk factors that are important to consider are family history of thyroid disease, history of radiation exposure, and genetic syndromes that predispose to endocrine malignancy. Surgical resection is recommended for malignancy and benign lesions where the tumor is growing or causing compressive symptoms. The diagnosis of adenochondroma in our patient, which we believe is the first report in pediatric literature, did not require any further intervention. These unusual benign lesions should be kept in mind when a young child presents with a mass in the thyroid gland.

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