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THYROID FOLLICULAR CARCINOMA IN A 3.5-YEAR-OLD BOY : A RARE CASE IN PEDIATRIC PRACTICE

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ABSTRACT: The incidence of follicular thyroid cancer (FTC) varies in different countries and is more common in women increasing with age in general population. There is lack of similar data concerning paediatric population. FTA is difficult to diagnose by fine-needle aspiration, thus any follicular thyroid tumor need to be excised for further identification of its malignant or benign character. Overwhelming majority of FTC cases are asymptomatic and euthyroid, which exacerbate the early diagnosis and clinical manifestation of thyroid nodules. Therefore they are detected by routine physical examination without clinical signs of thyroid dysfunction. USG examination is useful for monitoring nodule size and for the fine-needle aspiration (FNA) of nodules and cysts, but not for identifying of cancers. We present a case report of a 3.5 years old child with swelling of the left lateral-anterior aspect of the neck without clinical complaints that was first noticed about 4 months before. There was no family history of any cancers, nor a history of exposure to radiation. TSH and free T4 levels, as well as autoantibodies against thyroid gland were measured and found to be in normal ranges. A nodule of 4.2cm in diameter by USG examination, and follicular neoplasm by ultrasound-guided FNA has been revealed. Surgical excision – lobectomy was performed with further histology of the tumor. The final pathohistological diagnosis was follicular carcinoma, which is very rare state in children. Postoperatively the boy was not administrated levothyroxine suppressive therapy to escape unnecessary side effects from excess of hormone intake. He is under intensive monitoring up to now. After 5 years of monitoring no other nodule development was dated, euthyroidism clearly remain, lymphadenopathy of neck is absent.

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1.INTRODUCTION

Nodular thyroid disease is common in adults, occurring in about 3-12%, depending on population study [3]. The incidence of thyroid cancer is 9/100 000 per year. It is more common (approximately twice common) in women than in men and increases with age. Typically nodules are widely varied in size [4, 5]. Thyroid nodules seem to be rare disorders in children and adolescents, although thyroid cancers are extremely rare in the pattern of thyroid pathologies, especially at ages younger than 5 years [6, 9]. Thyroid cancers occur in 0.5-3.0% of all pediatric malignancies [1, 14]. One of the most difficulties in nodular thyroid disease is the absence of any clinical signs, such as pain of the anterior surface of the neck, high temperature, skin rash or discomfort in that region. The main clinical feature, that could be evident in late stages of enlarged nodule, is partial enlargement of thyroid gland and cosmetic asymmetry of the neck, which can be visible ad oculus. As in thyroid nodule development pathogenesis none of metabolic disorders is involved, the hormonal balance mostly remains normal. As it is supposed, TSH has two directions of its action: to release thyroid hormone secretion and to stimulate the growth of thyroid functional unit, leading to follicles and its cells enlargement [7]. Although TSH is the dominant hormonal regulator of thyroid gland growth and function, a variety of other growth factors and substances, most produced locally in the thyroid gland, also influence on those processes. These include insulin-like growth factor 1 (IGF-1), epidermal growth factor, transforming growth factor- β (TGF- β), endothelins, and different other cytokines. Histologically most of nodules are polyclonal with a hyperplastic response to these intrathyroidly produced growth factors and cytokines. TSH, which is usually not increased, seems to play a permissive or contributory role. The quantitative and qualitative roles of these factors are not well understood yet, but they all are important in selected diseases – autoimmune disorders, acromegaly, nodular goiter, etc. For example, it is shown that increased levels of growth hormone and IGF-1 are associated with goiter and predisposition to multinodular goiter. Further investigations should be done for revelation of etiologic and pathogenic factors, which result in nodule development processes and their invasion, as well as genetic and environmental predisposing factors [10]. Ultrasonography

(USG) increasingly is used for visualizing of thyroid gland, which represents a common non-invasive and informative method for nodule revelation in thyroid gland. In addition to detecting thyroid nodules and/or cysts, USG examination also is useful for monitoring nodule size and for the fine-needle aspiration (FNA) of nodules and cysts. For the histological diagnosis it is not used to use the American Joint Committee on Cancer (AJCC) designated staging system based on TNM classification in pediatric population, because it takes into account signs of only adults, but not children. From the malignant thyroid neoplasms, the highest prevalence has papillary carcinomas (80-90%), then follicular carcinomas (5-10%), which are known as well-differentiated carcinomas. Follicular thyroid cancer (FTC) is supposed to be more common in iodine-deficient regions. It is difficult to diagnose the FTC by FNA because the distinction between benign and malignant follicular neoplasms is based on evidence of invasive growth into vessels, nerves, or adjacent tissues.

Case report

The following case details a nonaggressive presentation of pediatric thyroid cancer in a 3.5 years old child. A 3.5 years old boy presented with 4 months history of swelling in left lateral-anterior aspect of the neck, which gradually progressed in size. No family history of thyroid cancer was mentioned. The child was asymptomatic and euthyroid. A nodule of thyroid gland was detected in routine physical examination after mother noticed an enlargement and asymmetry in the neck. None of below mentioned complaints were observed: difficulty swallowing, respiratory distress (compression of trachea), venous congestion, pain etc. Follicular neoplasm has been revealed by ultrasound-guided FNA. To distinguish the malignant or benign character of it, surgical excision was indicated. The decision of making lobectomy, but not total thyroidectomy in child was based on facts that the survival rates are similar for lobectomy and near-total thyroidectomy; moreover, lobectomy is associated with a lower risk of postoperative hypoparathyroidism and injury of recurrent laryngeal nerve, especially in children [11, 12]. Post-operative monitoring. As most thyroid tumors are still TSH responsive, levothyroxine suppression of TSH is a corner stone of thyroid cancer postoperative treatment [2, 13]. Although the therapeutic benefit of TSH suppression is shown, there are no prospective studies that provide the optimal suppression level and duration and benefits of this kind of therapy in children [8, 15]. Therefore the child was not administrated levothyroxine therapy to escape unnecessary side effects from intake of excess thyroid hormones, such as atrial tachycardia and fibrillation, osteopenia, anxiety and other manifestations of thyrotoxicosis. He was suspected to be at low risk of recurrence, so he has been undergone to intensive monitoring with periodical measurements of TSH, free T4 levels, USG examination. After 5 years of monitoring no other nodule development was dated, euthyroidism clearly remain, lymphadenopathy of neck is absent.

CONCLUSION

The incidence of thyroid cancer in pediatric population is generally low. Although the presentation in pediatric thyroid cancer is more aggressive, the prognosis is excellent. Total thyroidectomy or partial lobectomy with dissection of involved neck nodes is the treatment recommended. The patient has to be kept under regular follow up by endocrinologist.

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