Follicular Adenoma of the Thyroid Gland in Children

C. Festen¹, B. J. Otten², C. A. van de Kna³

¹Pediatric Surgical Center, ²Department of Pediatrics and ³Department of Pathology, University Hospital Nijmegen, The Netherlands

Summary

Follicular adenoma is the most frequent cause of a solitary thyroid nodule in children. We reviewed our own patient material and the literature and discuss etiology, available diagnostic methods, differential diagnosis, natural course and clinical management. In spite of the fact that the great majority of solitary thyroid nodules are benign, the treatment strategy is completely dominated by the risk for malignancy.

Key words

Thyroid - Adenoma - Child

Introduction

Surgery does not play an important role in the treatment of diseases of the thyroid gland in children. Besides remnants of the thyroglossal duct and an exceptional case of goitre, which does not regress adequately on medical treatment, a solitary thyroid nodule is the most frequent indication for surgery. The interest in solitary thyroid nodules is dominated by the risk for malignancy. Nevertheless, only a small proportion of solitary nodules turn out to be malignant and the majority are benign lesions. In the group of benign lesions, which present as a solitary nodule, more than half are follicular adenomas. Reviewing the literature on follicular adenoma, it is striking that hardly anything is known about follicular adenomas, especially in children. Based on our patient material and the available literature we discuss the etiology, diagnostic methods, differential diagnosis, clinical course and management.

Material and methods

In the period from January 1976 till January 1992 in the Pediatric Surgical Center and the Department of Pediatrics 5 patients were seen with a solitary thyroid nodule which, after excision and histologic examination, proved to be a follicular adenoma (Table 1). Age ranged from 11 months till 18 years. There were 4 girls and 1 boy. Three adenomas were in the left and two in the right thyroid lobe. The mother and a niece of one of the girls (Case 2) and the father of the boy (Case 1) were treated in the past also for a thyroid nodule. The mother of another girl (Case 5) was treated for hyperthyroidism. T₄ and basic TSH values were normal in all patients. In the boy (Case 1) a slight hyperresponse to TRH stimulation was found, suggesting subclinical hypothyroidism. In the boy and two girls (Cases 1, 2, 5) normal values for thyreoglobuline and low molecular weight iodinated material were found, making an inborn error of thyroid hormone synthesis unlikely. Thyroid scanning showed a cold nodule in all. A fine needle aspiration in one of the girls (Case 5) revealed follicular cells, without signs of malignancy.

With the exception of Case 4 who, had a subtotal thyroid lobectomy, in all the others a total thyroid lobectomy was performed. There were no postoperative complications. Three patients (Cases 1, 2, 5) on histologic examination were shown to have two nodules in the resected lobe. Two patients, one boy and one girl (Cases 1 and 2) after respectively 10 and 24 months presented with a second node on the other side and underwent a total thyroid lobectomy on that side. After the first operation the boy (Case 1) had an elevated basic TSH, but all the other patients had normal values for thyroid function tests.

No patient received thyroid suppression therapy.

Discussion

Although solitary thyroid nodules in children are much less common than in adults (12), there is a considerably higher risk of malignancy (20). In the literature the reported...
Potential to become a contaminant. This is an example of the concept of the potential risk of a contaminant. The risk is primarily due to the exposure of the contaminant to humans. The exposure can be via inhalation, dermal contact, or ingestion. The potential risk can be assessed using various models and methods. The risk assessment process involves identifying the exposure route, the dose, and the effect on human health. The potential risk can be expressed as a risk assessment value, which is a function of the exposure and the effect. The risk assessment value can be used to prioritize the risk management strategies.
The surgical literature unanimously advises operative excision. Because of the risk of malignancy and the limited value of frozen-section diagnosis during operation (19), enucleation as was proposed (1) does not seem a wise option. At least a subtotal thyroid lobectomy should be done, which gives the opportunity of studying the node with its environment. To avoid a later reoperation a total thyroid lobectomy seems preferable. Although thyroid suppression preoperatively is controversial (8), several authors recommend postoperative suppression therapy as recurrence prophylaxis (1, 21). The mean recurrence rate after benign lesions of the thyroid is reported to be 3% (1). Although some authors advised suppression therapy as a routine, others only do so in case of an elevated TSH-level (21). In accordance with the literature in our patients follicular adenomas were found predominantly in girls and diagnosis was made around puberty. However, we saw one girl 11 months of age. Three adenomas were left-sided and two on the right. In three patients histologic examination two nodes were identified in the resected thyroid lobe. All the nodes were cold on scanning. Four patients had a total thyroid lobectomy and one patient a subtotal thyroid lobectomy. There were no postoperative complications.

Our patients did not receive suppression therapy. Two patients developed a second adenoma in the other thyroid lobe, respectively ten and twenty-four months after the first operation. In one of them there was an elevated TSH level postoperatively; in all the others we found normal values.

Conclusions

Although most solitary thyroid nodules are benign, there is a definite risk for malignancy. With the exception of clear signs of malignancy, like irregular hard consistency, definitive adherence to the trachea, cervical lymphnodes or a lesion of the recurrent laryngeal nerve, it is as a rule impossible to make a clinical distinction between benign and malignant lesions. Thyroid function tests are mostly normal with exception of elevated calcitonin levels in medullary carcinoma. Ultrasoundography is of limited value except in case of cysts. If scintigraphy with \( ^{99m} \text{Tc} \)-pertechnetate indicates a cold nodule, the scanning is repeated with iodide 123. Although both warm and hot nodules are described in carcininoma, especially cold nodes have a higher risk for malignancy. FNA is an inexpensive and specific method with \( ^{123} \text{I} \) and \( ^{99m} \text{Te} \)-scintigraphy can establish the nature of the node. Because of the risk of malignancy a total thyroid lobectomy should preferentially be done in spite of a greater chance of complications (7), because the complication rate is significantly higher when on the same side a reoperation is necessary. Postoperative thyroid suppression therapy is controversial but seems worthwhile when TSH-levels are elevated. Autonomous hot thyroid nodules in children deserve operation merely because of the risk for thyrotoxicosis (2).

References


C. Festen et al

Professor of Pediatric Surgery
Pediatric Surgical Center University Hospital Nijmegen
PO-Box 9101
6500 HB Nijmegen
The Netherlands