





**Texas Children's
Hospital**

Myths and Monsters: The Pediatric Thyroid



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1



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Objectives

- Understand the epidemiology of pediatric thyroid cancer
- Recognize a thyroid nodule and effectively counsel a patient and refer to the Thyroid Program
- Appreciate the challenges and barriers for a patient with thyroid cancer

2

Monster: The incidence of PTC in children is increasing

- Pediatric thyroid cancer is 0.7% of all childhood cancer
- Female preponderance with peak incidence 15-19 years old

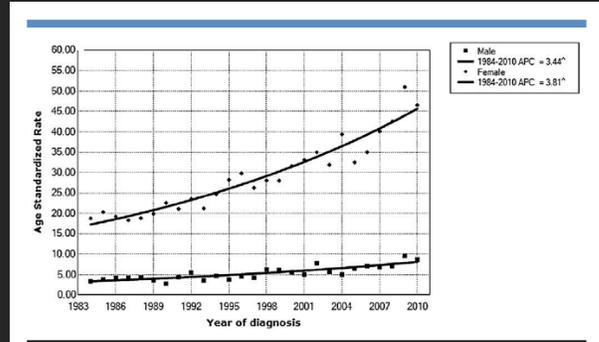


Figure. Trends in age-standardized incidence rates of differentiated thyroid carcinoma in children, adolescents, and young adults (SEER 9, 1984-2010).

Vergamini et al.



3

Myth: The incidence of PTC in children is increasing due to increased detection

- Increased incidence of tumors of all sizes
- Follicular thyroid cancer is uncommon (<10%) and medullary and undifferentiated is very rare

Table II. Number and percentage of cases of differentiated thyroid cancer according to age group and tumor size, SEER 9 registries, 1984-2010

Age group, y	Tumor size, cm, n (%)				Total
	<0.5	0.5-0.9	1.0-1.9	≥2.0	
0-9	0 (0.0)	3 (13.0)	4 (17.4)	16 (69.6)	23
10-14	9 (5.3)	11 (6.4)	36 (21.1)	115 (67.2)	171
15-19	43 (5.8)	46 (6.2)	219 (29.7)	430 (58.3)	738
20-24	109 (5.9)	162 (8.7)	558 (29.9)	1034 (55.5)	1863
25-29	327 (10.0)	361 (11.0)	949 (29.0)	1633 (50.0)	3270

χ^2 78.98; $P < .001$.

Vergamini et al.

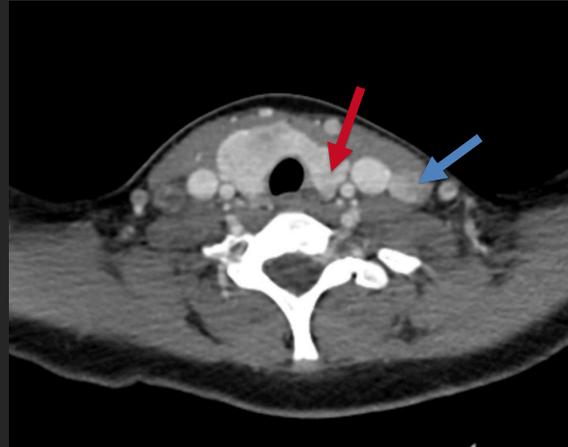


4

Myth: Pediatric thyroid cancer is the same as adult thyroid cancer

Children are more likely than adults to present with:

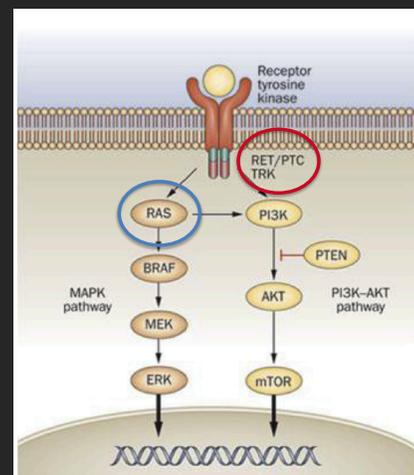
- More advanced locoregional disease (up to 80% present with cervical lymphadenopathy)
- Pulmonary metastases



5

Monster: Genetic alterations affect the aggressiveness of pediatric thyroid cancer

- Pediatric thyroid cancer is more commonly due to alterations in RAS and RET/PTC
- This affects treatment options, including use of I-131 and targeted therapies

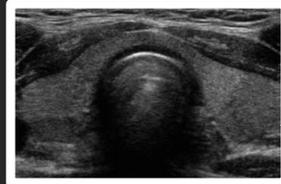


6

Monster: What do you do when you detect a thyroid nodule?

YES

- Blood work:
TSH, T4, T3
- Thyroid ultrasound



POSSIBLE

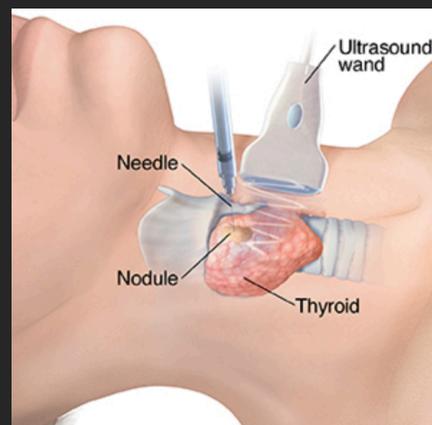
- Calcitonin
- Thyroid uptake scan

Refer to Thyroid Program

7

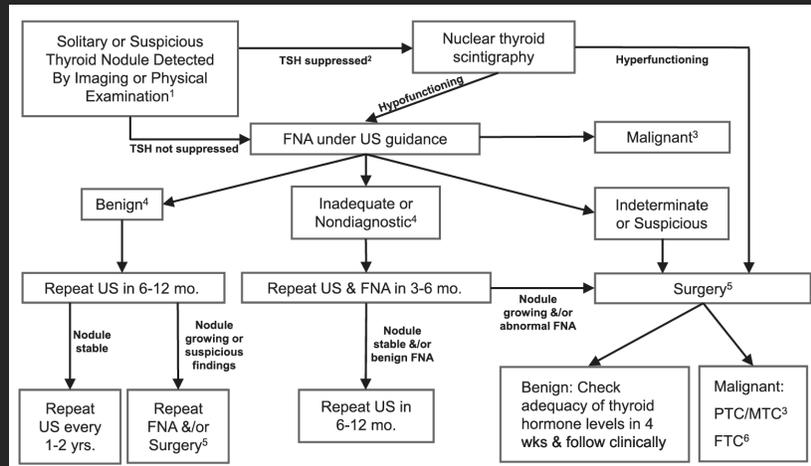
Myth: All pediatric thyroid nodules need a biopsy and surgery

- Fine needle aspiration (FNA) may be performed on some nodules:
 - Hypoechoic
 - Irregular margins
 - Increased blood flow
 - Microcalcifications
- Risk of malignancy in a pediatric thyroid nodule is 25% (compared to 5-10% in adults)



8

Myth: All pediatric thyroid nodules need a biopsy and surgery



Francis et al.



9

Monster: Do the right surgery the first time

Appropriate pre-operative evaluation with multidisciplinary team:

- Endocrinology
- Oncology
- Radiology
- Thyroid surgeon (more than 30 pediatric thyroid surgeries per year!)



10

Myth: “You’re lucky, it’s just thyroid cancer”

- Thyroid cancer has excellent outcomes – *98% survival at 40 years*
- Patients suffer from post traumatic stress burden from cancer
- Surveillance continues for a lifetime
 - Thyroid ultrasound
 - Thyroglobulin levels
 - Relapse rate is 15-40%
 - Risk for second malignancies after I-131



11

Summary

- The incidence of pediatric thyroid cancer IS increasing
- NOT all thyroid nodules need a biopsy and surgery, but ALL patients should be referred to the thyroid program
- Thyroid surgery SHOULD be done by surgeons performing more than 30 pediatric thyroid surgeries per year
- Thyroid cancer is very treatable but the emotional challenges of a cancer diagnosis should not be minimized. Thyroid cancer is a LIFELONG diagnosis

12

Thank you!

