



Clinical Characteristics and Outcomes of Pediatric Oncocytic Thyroid Carcinoma: A Multi-Institutional Case Series

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Background

- Differentiated thyroid carcinoma (DTC) is the most common endocrine malignancy in children, with >95% disease specific survival despite frequent nodal and pulmonary metastases at presentation.¹
- Current ATA pediatric guidelines use a risk-adapted approach to balance effective treatment with long-term morbidity.¹
- Most pediatric data is based on papillary thyroid carcinoma, while oncocytic (Hürthle cell) carcinoma is a rare, WHO-defined subtype with distinct pathologic criteria.²
- Pediatric oncocytic thyroid carcinoma is exceedingly uncommon, with only small case series reported, limiting evidence-based management and outcome data.³

Objective

- To describe the clinico-pathological features, management and outcomes of pediatric oncocytic thyroid carcinoma in a multi-institutional case series

Methods

- **Population:** we identified pediatric patients (<18 years) with histologically confirmed oncocytic thyroid carcinoma (OTC) from the Child and Adolescent Thyroid Consortium (CATC) (n=6) and OHSU institutional records (n=1)
- **Study design:** we performed a retrospective multi-institutional case series
- **Data Collection:** we extracted demographic, clinical, pathologic, treatment and outcome data, including age at diagnosis, tumor size, capsular and vascular invasion, lymph node and distant metastases, surgical management, radioactive iodine (RAI) use, recurrence and duration of follow up.
- **Comparator:** no comparator group was included due to rarity of the disease and nature of the study design
- **Outcomes:** primary outcomes were recurrence and disease status at last follow-up
- **Analysis:** we summarized variables using descriptive statistics (counts, percentages, medians, ranges)

Results

Patient	1	2	3	4	5	6	7
Age at DX	15.1	18.8	18.4	18.4	12.5	11.4	17.5
Tumor Size (mm)	28	13	30	30	25	23	74
Focality	Multifocal	Unifocal	Unifocal	Unifocal	Unifocal	Unifocal	Unifocal
Extent of tumor	Limited to thyroid	Limited to thyroid	Limited to thyroid	Limited to thyroid	Limited to thyroid	Limited to thyroid	Limited to thyroid
T stage	T2	T1b	T2	T2	T2	T3a	T3a
N stage	N1b	N0b	N0b	N0b	N0a	N0b	N0a
M stage	M1	M0	M0	M0	M0	M0	M0
Vascular/Lymphatic Invasion	Yes	No	No	Yes	Yes	Yes	Yes
Surgery type	Total thyroidectomy + ND	Total thyroidectomy	Lobectomy	Completion thyroidectomy	Completion thyroidectomy	Lobectomy	Completion thyroidectomy
RAI	Yes	No	No	Yes	Yes	No	No
Response at Last Follow-up	Structural incomplete	Excellent	Excellent	Excellent	Excellent	Indeterminate	Excellent
Follow up years	5	5.9	0.2	12.7	3.2	-	0.75

Table 1. Clinicopathological Characteristics, Treatment, and Outcomes of Seven Pediatric Patients With Oncocytic Thyroid Carcinoma.

ND = neck dissection; RAI = radioactive iodine

Summary:

- Median age: 15.8 yrs
- Median tumor size: 28 mm
- Vascular invasion: 4/7 (57%)
- RAI use: 3/7 (43%)
- Excellent response: 4/7 (57%)
- Overall survival: 100%

Thyroglobulin response:

Postoperative thyroglobulin (Tg) data available for six patients. Patients with excellent response had suppressed Tg <1 ng/mL, while patient with distant metastatic disease had persistently detectable Tg at follow up.

Discussion & Conclusions

- Pediatric OTC presented with large tumors and frequent vascular invasion but limited regional or distant metastases, demonstrating a pattern similar to the current largest published case series, in which tumors were often sizable yet lacked distant metastasis at diagnosis.³
- Early clinical outcomes were excellent, with most patients achieving an excellent response and 100% overall survival at short to intermediate-term follow up.
- Distant metastasis was the only factor associated with persistent structural disease, suggesting it may be an important predictor of incomplete response in this population
- These findings support a risk-adapted management approach similar to other pediatric differentiated thyroid cancers, while highlighting the need for multi-institutional cohorts and longer follow-up to establish pediatric specific treatment guidance.

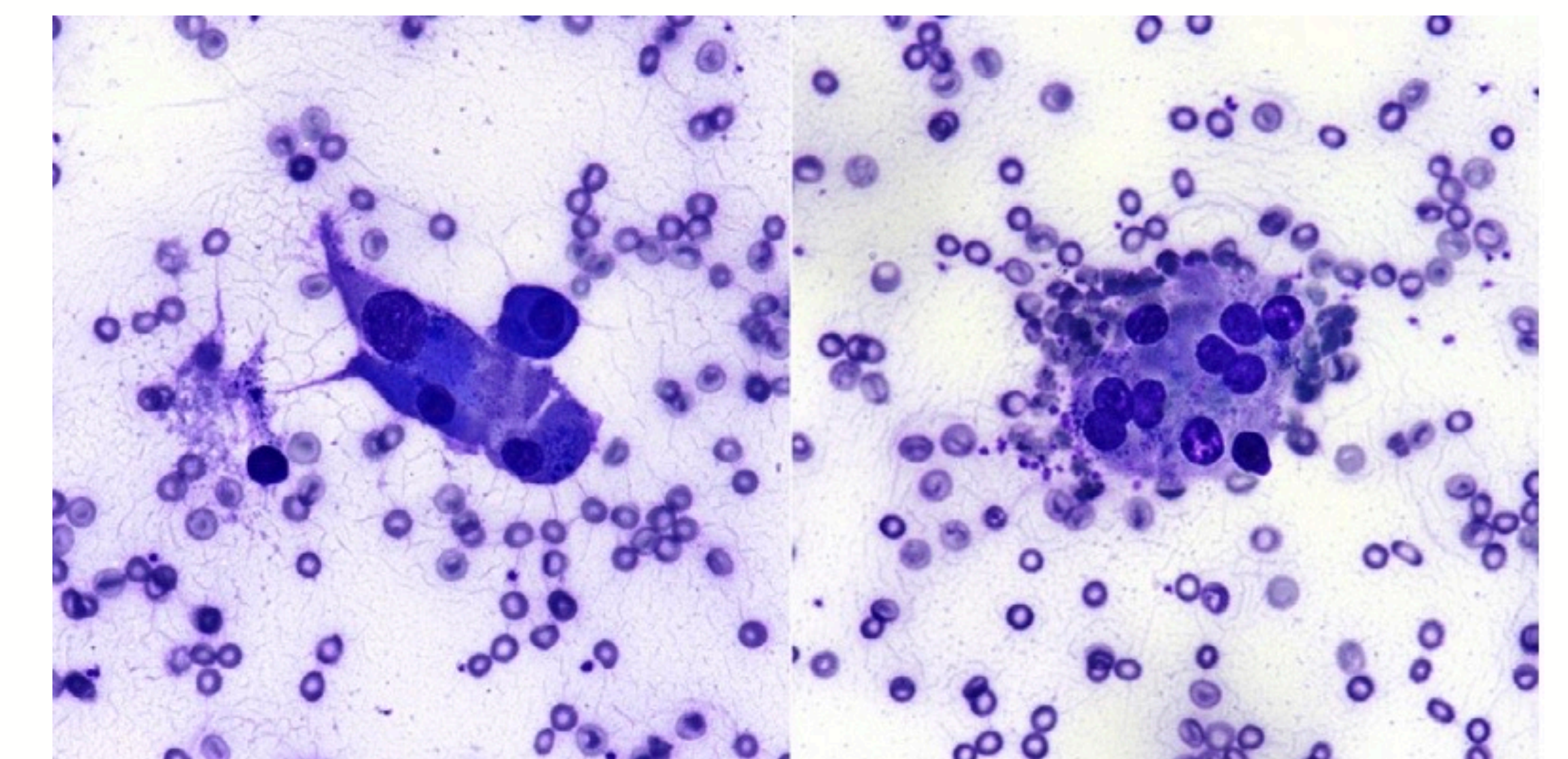


Figure 1. Oncocytic cells with prominent nucleoli and abundant granular cytoplasm.³

References

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