Central Neck Nodes in Tall-cell Variant of Papillary Thyroid Cancer

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ABSTRACT

Objective Recent American Thyroid Association (ATA) guidelines suggest a role for prophylactic central neck dissection in patients with papillary thyroid cancer (PTC). No studies directly address this subject in patients with tall-cell variant (TCV) of PTC. We sought to determine the risk of metastasis to the central compartment in patients with TCV.

Methods A retrospective review was performed of all cases of papillary thyroid cancer undergoing primary surgical therapy with central neck dissection (CND) at our institution from 2007-2010. Charts were reviewed for demographic data, and pathology was reviewed for tumor histology, size, multi-focality, CND positivity, and extra-thyroidal extension (ETE).

Results 63 patients with PTC underwent primary surgical therapy with CND, 5 of which had TCV. Five of the TCV patients had positive nodes (50%), whereas only 18 of the 53 classical PTC had positive nodes (34%). TCV tumors were significantly larger than PTC tumors (1.8 cm versus 1.2 cm, p<0.005). In both groups, a larger tumor size correlated with a significantly higher incidence of positive CND (p<0.05 for TCV, and p<0.01 for PTC). In the PTC group, ETE correlated with significantly higher incidence of positive CND (p<0.05 for TCV, and p=0.01 for PTC).

Conclusions Central compartment metastases occurred in 50% of TCV and 34% of classical PTC. This may be due to the fact that TCV tumors presented with a significantly larger size, when metastases were already present. The findings of this study support the ATA recommendation for CND in patients with TCV.

BACKGROUND

Tall-cell Variant

- Tall-cell variant (TCV) is known to be a more aggressive pathologic entity of classical papillary thyroid carcinoma (PTC) 1. 2
- Most authors believe this is secondary to an older age at presentation and the higher incidence of extra-thyroidal extension (ETE) 3, 4
- However, recent literature suggests that the histology alone may portend a poorer prognosis. 3
- The histology is characterized by papillary thyroid cancer cells, with characteristic intranuclear inclusions and nuclear grooves.
- However, TCV cells are more than twice as tall as they are wide (see Figure 2)
- In addition, >50% of the cells must be tall in order to make the diagnosis. 3
- The literature suggests cutoffs ranging from 30-70%, perhaps accounting for the wide variety of reported incidence.

RESULTS

CND (p=0.001). Patients' age and tumor multi-focality did not correlate with increased positive CND in either group.

METHODS

A retrospective review was performed of all cases of papillary thyroid CA undergoing primary surgical therapy at our institution from 2007-2010.
- Two surgeons routinely perform a central neck dissection (CND) in every patient with pre-operative or intra-operative diagnosis of PTC or TCV. All other surgeons' cases were excluded
- For these two surgeons, CND is not performed at a separate procedure if the diagnosis of PTC or TCV is made only on permanent sections rather than pre-operatively or intra-operatively. These cases were therefore also excluded.
- Charts were reviewed for demographic data, and pathology was reviewed for tumor histology, size, multi-focality, CND positivity, and ETE.

CONCLUSIONS

- Central compartment metastases in this series occurred more often in TCV than in classical PTC.
- Given that CND is now recommended for advanced primary tumors for PTCT, the findings of this study support CND for advanced TCV, which is known to be a more aggressive variant of PTC.

REFERENCES

6. Marique C, Pfister DG, Gandhi P. The tall cell variant of papillary thyroid carcinoma: a clinicopathologic study of 13 cases. Thyroid 2007;17:345-8

Figure 1: Papillary carcinoma of thyroid, composed of tumor cells with abundant pink cytoplasm (low power)

Figure 2: Row of tall columnar tumor cells (cells are more than twice as tall as they are wide) with numerous intranuclear pseudoinclusions (black arrow) and nuclear grooves (yellow arrowheads) (high power)

PTC tumors presented with a significantly larger size than PTC tumors. This finding is consistent with other published reports showing a higher stage or tumor size at presentation.1, 2
- Central compartment metastases occurred in 50% of TCV and 34% of classical PTC in this series. This may be due to the fact that TCV tumors presented with a significantly larger size, when metastases were already present.

- ATA 2009 guidelines #27 suggest that “Prophylactic central compartment neck dissection (ipsilateral or bilateral) may be performed in patients with papillary thyroid carcinoma with clinically uninvolved central neck lymph nodes, especially for advanced primary tumors (T3 or T4).” Recommendation rating: C (Recommendations based on expert opinion)

DISCUSSION

Figure 2 (blue arrow) and nuclear grooves (yellow arrowheads) (high power)