Clinical and Histological Characteristics of Oncocytic Thyroid Carcinomas

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Abstract

Introduction

Oncocytic thyroid carcinomas, which can be categorized as oncocytic variants of follicular or papillary carcinomas, comprise 3-7% of all differentiated thyroid carcinomas. Historically, oncocytic follicular carcinomas have been thought to have a more aggressive course than other differentiated thyroid cancers, with increased lymph node and distant metastases, late recurrence, and decreased uptake of radioactive iodine. The low incidence of oncocytic thyroid carcinomas compared to other thyroid cancers has precluded its comprehensive characterization.

Methods

Patients in the study underwent thyroidectomy between January 1990 and December 2012 at a single tertiary care referral center. Inclusion criteria included histologically confirmed oncocytic variants of follicular thyroid carcinoma (FTC) or papillary thyroid carcinomas (PTC) with adequate preoperative and postoperative records available. In total, 77 patients were included in the study. Forty-six patients (59.7%) were diagnosed with oncocytic variants of FTC while 31 patients (40.3%) were diagnosed with oncocytic variants of FTC. The median follow-up times of PTC and FTC cohorts were 26.9 and 57.0 months respectively.

Results

The average age at presentation of patients with oncocytic variants of FTC and PTC was 51.1 and 56.6 years, respectively (p = 0.10). The percentage of women with oncocytic variants of FTC was 76%, compared to 55% in FTC (p = 0.05). FTC tumors were larger than PTC tumors at presentation, with a mean of 3.8 cm compared to 1.7 cm (p < 0.0001). FTC variants were more aggressive histologically with 58.1% and 61.3% of samples exhibiting capsular and vascular invasion respectively. This is in contrast to 8.7% and 10.9% of capsular and vascular invasion in FTC samples (p < 0.001). There was no significant difference between the groups in regards to additional tumors present or extrathyroidal spread. Nodal disease was present in 28.3% of FTC cases compared to 3.2% of FTC cases (p = 0.005). At last follow-up, one patient in the FTC group had recurrence compared to no patients in the PTC group.

Conclusions

Oncocytic variants of follicular thyroid cancer were significantly larger and more aggressive at presentation compared to oncocytic variants of papillary thyroid cancer, but were less common overall. Recurrence rates were low for both groups.

Patient Population

Subject Selection

- 282 patients identified in the Surgical Pathology database
- Excluded patients:
  - 7 treated at outside hospitals
  - 1 with no oncocytic pathology
  - 96 without follow-up documentation available
  - 101 with a diagnosis other than oncocytic carcinoma
  - 77 met inclusion/exclusion criteria
  - 46 (59.7%) oncocytic variants of FTC
  - 31 (40.3%) oncocytic variants of FTC

Demographic Data

<table>
<thead>
<tr>
<th>Sex</th>
<th>Oncocytic Variant of FTC</th>
<th>Oncocytic Variant of PTC</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>14 (45.2%)</td>
<td>11 (23.9%)</td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>17 (54.8%)</td>
<td>35 (76.1%)</td>
<td>0.05</td>
</tr>
<tr>
<td>Age at diagnosis (± SD)</td>
<td>56.6 ± 15.6</td>
<td>51.1 ± 13.6</td>
<td>0.100</td>
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</tbody>
</table>

Discussion

Oncocytic variants of FTC are significantly larger and more aggressive at presentation than other thyroid cancers. Oncocytic variants of FTC are more common than variants of FTC. Recurrence rates are low in both groups.

Conclusions

Oncocytic variants of FTC are significantly clinically and histologically more aggressive than variants of PTC. Surgeons should carefully distinguish between oncocytic variants of FTC and oncocytic variants of PTC, as terminology has changed over the past several years. More research needed to better understand the biology of oncocytic variants of FTC and PTC and how they compare to conventional FTC and PTCs.

References