Follicular Variant of Papillary Thyroid Carcinoma: Increasing Rate of Diagnosis and Clinical Behavior

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ABSTRACT

Objectives: Follicular variant of papillary thyroid carcinoma (FVPTC) has a similar prognosis to conventional papillary thyroid carcinoma (CPTC). We present the largest single institution clinical experience of FVPTC with comparison to its conventional counterpart to describe changes in rate of diagnosis and clinical features.

Study Design: Retrospective chart review at an academic tertiary care hospital.

Methods: A retrospective chart review from July 2004 through June 2010 of all newly diagnosed papillary thyroid carcinomas evaluated for surgery in the head and neck clinic. FVPTC cases were compared to CPTC cases in terms of demographics, primary tumor characteristics, lymph node and distant metastases.

Results: There were 233 diagnoses of follicular variants or conventional PTCs that underwent surgery over six years. There were 107 newly diagnosed FVPTCs and 126 CPTCs. The rate of diagnosis of FVPTC increased from 1 case per month early in the study to 2.35 cases over the last two years of the study. The two groups were similar in gender distribution and multifocality. However, FVPTC tumors were smaller (1.20 vs 1.70 cm) (p=0.01) with fewer cases of extrathyroid extension (7% vs 33%) (p<0.01). They were diagnosed in older individuals (46 vs 41.5 years) (p=0.018) and had fewer lymph node metastases (21% vs 55%) (p=0.01).

Conclusions: The rate of diagnosis of FVPTC is increasing. It appears to have a favorable prognosis as CPTC, but may have fewer lymph node metastases and less aggressive clinical characteristics. Followup studies are needed to determine the reason for increase in incidence and possible differences in treatments.

INTRODUCTION

Well-differentiated thyroid cancer is a common disorder with the majority of cases being papillary thyroid carcinoma (PTC) and a minority of follicular carcinoma cases (1). PTC has distinct variants that differ in their clinical behavior, including sclerosing, tall cell, and columnar variants. More recently, much attention has been given to a more common variant that has features in both papillary and follicular. This follicular variant was first described in the 1950’s and then expanded on by Chen et al. in 1977 (2,3).

While the differences in clinical behavior between papillary thyroid cancer and follicular carcinoma is well established, there remains debate regarding the differences in clinical behavior between FVPTC and the more common conventional papillary thyroid carcinoma (CPTC). Recently a large population study described FVPTC as having a similar biological profile to the conventional variant of the PTC (4). Other single institutional studies have found similar results (5,6). In this study, we present the largest single institutional study looking at the clinicopathologic course of the FVPTC as compared to the CPTC including trends in diagnosis.

METHODS AND MATERIALS

A retrospective review was performed at a tertiary care academic hospital of patients presenting to the head and neck oncology clinic with thyroid cancer from July 2004 until June 2010. The study was approved through the Institutional Review Board. Patients were identified by ICD9 codes and diagnoses of papillary carcinoma of the thyroid were included in the study, either conventional or follicular variants. Other variants were excluded from the study. Of the study group, patients were divided into two groups: follicular variant of papillary thyroid carcinoma and conventional papillary thyroid carcinoma. Data was collected regarding patient demographics, clinical presentation, and histopathologic information. Those data points included: age at diagnosis, gender, nodal status, distant disease status, histology, size of tumor, multifocality, extrathyroid extension.

Statistical Analysis

The two groups were compared for differences demographics, clinical presentation, and histopathologic information. A Wilcoxon test was used to compare age at diagnosis and tumor size. A Pearson chi-squared analysis was used to compare all other variables.

RESULTS

The study consisted of 233 patients: 107 FVPTC and 126 CPTC.

Diagnosis of FVPTC

The rate of FVPTC diagnosis among was 45.9% in this cohort. Some specimens with multifocality had both histologic subtypes within the specimen as seen in Table One. The rate of diagnosis changed during the study interval increasing from 1 case/month during the initial four years to 2.5 cases/month during the last two years.

Demographics

The two groups were similar both gender distribution, but differed in age at diagnosis. The FVPTC group included 77 females (72%) as compare to 89 females (71%) in the CPTC group. Age at diagnosis was 46.0 years in the FVPTC and 41.5 years in the CPTC (p<0.01). Results are included in Table One.

Histopathologic Reports

Group comparisons are included in Table Two. The groups were similar in incidence of multifocality and distant metastatic disease. However, significant differences did exist. CPTCs were more likely to have lymph node metastases, 55 % versus 21 % (p<0.01). This was true in both central and lateral neck compartments. Tumor size in the FVPTC group were smaller, 1.2 cm versus 1.7 cm (p = 0.01) and CPTC patients had a higher incidence of extrathyroid extension, 33 % versus 7 %, (p<0.01).

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<th></th>
<th>N</th>
<th>Age (years)</th>
<th>Gender (female)</th>
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<tbody>
<tr>
<td>FVPTC (Total)</td>
<td>107</td>
<td>46.0</td>
<td>72 %</td>
</tr>
<tr>
<td>FVPTC and CPTC</td>
<td>23</td>
<td>46.0</td>
<td>65 %</td>
</tr>
<tr>
<td>FVPTC Only</td>
<td>84</td>
<td>46.0</td>
<td>74 %</td>
</tr>
<tr>
<td>CPTC</td>
<td>126</td>
<td>41.5</td>
<td>71 %</td>
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<td></td>
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<td>P=0.018*</td>
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<td>P=0.082*</td>
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</table>

Table One: Demographic comparison of follicular variant (FVPTC) and conventional papillary thyroid carcinoma (CPTC). For the FVPTC group, some thyroid specimens were multifocal with both FVPTC and CPTC as noted above.

METHODS AND MATERIALS

A retrospective review was performed at a tertiary care academic hospital of patients presenting to the head and neck oncology clinic with thyroid cancer from July 2004 until June 2010. The study was approved through the Institutional Review Board. Patients were identified by ICD9 codes and diagnoses of papillary carcinoma of the thyroid were included in the study, either conventional or follicular variants. Other variants were excluded from the study. Of the study group, patients were divided into two groups: follicular variant of papillary thyroid carcinoma and conventional papillary thyroid carcinoma. Data was collected regarding patient demographics, clinical presentation, and histopathologic information. Those data points included: age at diagnosis, gender, nodal status, distant disease status, histology, size of tumor, multifocality, extrathyroid extension.

Statistical Analysis

The two groups were compared for differences demographics, clinical presentation, and histopathologic information. A Wilcoxon test was used to compare age at diagnosis and tumor size. A Pearson chi-squared analysis was used to compare all other variables.

DISCUSSION

FVPTC is the most common histologic subtype of PTC, and the diagnosis is being seen with increasing frequency. This current study highlighted the increasing rate of diagnosis within the past six years. The rate of diagnosis more than doubled during that time.

When making a distinction between histologic subtypes, it is important to document differences in biologic behavior. In a large population study, Liu and Bhattacharyya have shown that survival does not differ between the two subtypes while extent of nodal involvement does (4). Others have shown similar comparisons between the two groups in single institution studies including lower rates of invasiveness (5.6). The current study highlights some other important differences between the two groups. Like others, there was a decrease incidence of nodal metastases with FVPTC. This was true when evaluated for both lateral and central compartment disease. Also, FVPTC had less extrathyroid extension. However, we also found differences in size of tumors, with FVPTC having smaller tumors. We also showed these tumors being diagnosed in an older age by 4.5 years at an average age of 46 years. This is a group of patients that frequently have prophylactic neck dissections being performed. With an increasing frequency of central neck dissections being performed, it is important to realize that patients with FVPTC are unlikely to benefit from a neck dissection.

CONCLUSIONS

FVPTC is a common histologic subtype of papillary thyroid carcinoma that is being recognized more frequently. While survival outcomes are similar to CPTC, it is less likely to have extrathyroid extension or nodal involvement and may present with a smaller tumor size.

REFERENCES


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