

Original Research Article

Analytical study of the incidence of papillary carcinoma in thyroiditis cases and assessing the risk

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ABSTRACT

Background: The association between thyroid carcinoma and thyroiditis remains controversial in medical bibliography. Therefore, the present study was designed to investigate the incidence of papillary carcinoma in diagnosed cases of thyroiditis patients who underwent surgery and analyze the risk of carcinoma in thyroiditis patients.

Methods: Patients of both sexes, age more than 13 with symptomatic thyroid swelling and diagnosed as any sub types of thyroiditis with FNAC/USG/Antibody titer in Government Medical College, Thrissur, India. 41 females and 3 male patients were studied to assess risk of carcinoma in thyroiditis cases, analyzing the age, symptoms, clinical presentations and FNAC results.

Results: 17 out of 44 cases showed post-operative biopsy as papillary carcinoma. 15 out of 17 papillary carcinoma cases diagnosed were above 36 years, with 6 times increased risk, 95% CI = (1.142, 31.532). 10 out of 17 carcinoma cases have rapid increase in size ($p=0.00$). 82.4% of carcinoma cases have obstructive symptoms ($p=0.00$). FB sensation is more frequently seen in postoperative benign thyroiditis. 59% of the papillary carcinoma cases were diagnosed pre operatively as colloid with thyroiditis.

Conclusions: Females aged more than 36 years and all adult males with a rapid increase in size of the thyroid swelling and/or obstructive symptoms like dyspnoea/dysphagia, who's FNAC suggestive of colloid with features of thyroiditis have a high malignant potential for papillary carcinoma, and total/near total thyroidectomy may be considered as an appropriate operative treatment.

Keywords: Papillary carcinoma, Thyroidectomy, Thyroiditis

INTRODUCTION

The thyroid gland or simply, the thyroid in vertebrate anatomy is one of the largest endocrine glands. The thyroid gland is found in the neck, below (inferior to) the thyroid cartilage (which forms the laryngeal prominence, or "Adam's apple"). The isthmus (the bridge between the two lobes of the thyroid) is located inferior to the cricoid cartilage.^{1,2} The thyroid gland controls how quickly the body uses energy, makes proteins, and controls how sensitive the body is to other hormones. It participates in

these processes by producing thyroid hormones, the principal ones being triiodothyronine (T3) and thyroxine (T4). These hormones regulate the rate of metabolism and affect the growth and rate of function of many other systems in the body.

T3 and T4 are synthesized from both iodine and tyrosine. The thyroid also produces calcitonin, which plays a role in calcium homeostasis.³ Hormonal output from the thyroid is regulated by thyroid-stimulating hormone (TSH) produced by the anterior pituitary, which itself is

regulated by thyrotropin-releasing hormone (TRH) produced by the hypothalamus.

Thyroiditis includes a group of individual disorders that all cause thyroidal inflammation and, as a result, causes many different clinical presentations.⁴ Thyroiditis is a general term that refers to “inflammation of the thyroid gland”. With the help of historical information, physical examination and diagnostic tests, we can classify the type of thyroiditis and initiate appropriate treatment. Thyroiditis exists with a much higher frequency than it is diagnosed clinically.

The vast majority of primary malignancies are carcinomas derived from follicular cells. Dunhill classified them histologically as differentiated and undifferentiated; the differentiated carcinomas are further subdivided into follicular and papillary. Lymphoma makes up the remainder of primary malignancies. Metastases to the thyroid account for <5% of malignancies. Secondary disease should be considered when there is a history of malignancy, particularly kidney and breast cancer, and when the cytology of a thyroid swelling is atypical.

Direct invasion by upper aerodigestive squamous cancer is a rare but lethal event.⁵⁻⁷ Lymph node and blood-borne metastases to bone and lung occur and may be the mode of presentation. There have been few studies to assess risk of carcinoma in thyroiditis cases. This clinical study was conducted in Government Medical College, Thrissur during the period June 2009 to December 2011 to study the incidence of papillary carcinoma in diagnosed cases of Thyroiditis patients and assessing the risk analyzing the age, symptoms, clinical presentations and FNAC results.

METHODS

The present study was conducted after the institutional ethical clearance and informed consent from all the patients. 44 patients with thyroid swelling and diagnosed as thyroiditis by FNAC,USG, Anti microsomal antibody titer and underwent surgery for some symptoms like Foreign body sensation, neck pain, rapid increase in size, obstructive symptoms, gradual increase in size were taken for the study. The post-operative papillary carcinoma cases were analyzed with age of the patient, sex of the patient, symptoms of the patients, Clinical diagnosis of the patients, FNAC results and compared with that of post-operative biopsy remained as thyroiditis.

Prospective and retrospective data pertaining to the clinical features and investigations and post-operative biopsy results were collected from case records and the biopsy registers. Symptoms, Signs, examination findings are collected using appropriate scoring system. Thyroiditis Patients of both sexes in the age group more than 13 operated for various reasons in Government Medical College, Thrissur, India were included. Patient

with Symptomatic Thyroid swelling with swollen thyroid gland, Rapid increase in size of the swelling, Neck pain with turning head/swallowing, foreign body sensation in the throat and Obstructive symptoms diagnosed as thyroiditis with FNAC/USG/Antibody titre were included. Patient with asymptomatic thyroid swelling and diagnosed as thyroiditis, Patients >60years age with Diabetes or Hypertension were excluded from the study.

Statistical analysis

The data collected was analyzed using appropriate statistical methods. Chi square test was used to find out the statistical significance. P value less than 0.05 was considered significant.

RESULTS

17 out of 44 cases showed post-operative biopsy as papillary carcinoma (Table 1). The post-operative papillary carcinoma cases were analyzed with age of the patient, sex of the patient, symptoms of the patients, Clinical diagnosis of the patients, FNAC results and compared with that of remaining 27 cases with post-operative biopsy remained as thyroiditis.

Table 1: Distribution of patients as per the severity of the disease.

Total thyroiditis in which surgery done	Papillary carcinoma (Carcinoma)	Thyroiditis (Benign)
44	17 (38.63%)	27 (61.37%)

Table 2: Age wise risk comparison in the recruited patients.

		Total cases		Total
		Benign	Carcinoma	
Age	35 & Below	12	2	14
	36 & Above	15	15	30
Total		27	17	44

41 out of 44 patients were females and in 14 of the female’s post-operative biopsy results came as papillary carcinoma.³ out of 3 male thyroiditis patients were papillary carcinoma. All post-operative thyroiditis cases were females. 15 out of 17 papillary carcinoma cases diagnosed were above 36 yrs and majority of the cases were between 36-45years. Total patients below 35 yrs were 14 and 12 out of 14 cases were benign thyroiditis (Table 2 and 3).

10 out of 17 cases diagnosed as papillary carcinoma were presented with rapid increase in size of the swelling. All female patients with post-operative thyroiditis were free of this symptom (Table 4). 17out of 27 benign Thyroiditis have gradual increase in size of the swelling and 15 out of 17 papillary carcinoma cases were devoid of this

symptom. 14 out of 17 carcinoma cases were presented with obstructive symptoms like dyspnoea, dysphagia. But

25 out of 27 benign thyroiditis did not have this symptom at the time of surgery (Table 6).

Table 3: Statistics showing the comparison of age wise risk of papillary carcinoma.

Chi-Square Tests					
	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	5.135 a	1	0.023		
Continuity Correction b	3.739	1	0.053		
Likelihood Ratio	5.632	1	0.018		
Fisher's Exact Test				.044	.024
N of Valid Cases b	44				

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 5.41. b. Computed only for a 2x2 table

Table 4: Cross tabulation of rapid increase in size of carcinoma or benign in the recruited patients.

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	20.554 ^a	1	0.000		
Continuity correction ^b	17.341	1	0.000		
Likelihood ratio	24.130	1	0.000		
Fisher's exact test				0.000	0.000
N of Valid Cases ^b	44				

a. 1 cells (25.0%) have expected count less than 5. The minimum expected count is 3.86; b. Computed only for a 2x2 table

Table 5: Cross-tabulation of FNAC – carcinoma (papillary carcinoma) and benign (thyroiditis).

		Total cases		Total	
		Benign	Carcinoma		
FNAC	Colloid+thyroiditis	Count	4	9	13
		% within CARC_BENI	14.8%	52.9%	29.5%
	Hashimotos thyroiditis	Count	7	3	10
		% within CARC_BENI	25.9%	17.6%	22.7%
	Lymphocytic thyroiditis	Count	16	5	21
		% within CARC_BENI	59.3%	29.4%	47.7%
Total	Count	27	17	44	
	% within CARC_BENI	100.0%	100.0%	100.0%	

Table 6: Cross tabulation of obstructive symptoms in carcinoma and benign thyroiditis in the recruited patients.

		Total cases		Total	
		Benign	Carcinoma		
Obstructive Symptoms	0	Count	25	3	28
		% within CARC_BENI	92.6%	17.6%	63.6%
	1	Count	2	14	16
		% within CARC_BENI	7.4%	82.4%	36.4%
Total	Count	27	17	44	
	% within CARC_BENI	100.0%	100.0%	100.0%	

Foreign body sensation in the throat was present only in 3 of the papillary carcinoma cases, but 12 out of 15 cases presented with this symptom were benign thyroiditis. Majority of the post-operative papillary carcinoma cases

(14/17) were free of this symptom. 9/17 papillary carcinoma patients were diagnosed colloid+Thyroiditis pre operatively by FNAC.16/27 cases diagnosed as lymphocytic thyroiditis were benign after surgery. 9/13

cases of colloid+Thyroiditis were papillary carcinoma after surgery (Table 5).

DISCUSSION

Thyroiditis cases whose biopsy results came as Papillary Carcinoma were termed carcinoma and the rest were termed benign 14 out of 17 (82.4%) patients, positive for carcinoma, were females the 3 out of 3 male patients were positive for papillary carcinoma. All patients (100%) remained thyroiditis after surgery was females. There is a definite risk for papillary carcinoma in male patients with pre-operative diagnosis as thyroiditis.

Carcinoma Cases had 6 times more odds of exposure compared to controls with 95% CI = (1.142, 31.532). Patients with >36years has 6 times risk for papillary carcinoma than the patients with 35 yrs or less. 10 out of 17 carcinoma cases have the symptom, rapid increase in size with $p=0.00$. There is a significant chance of carcinoma in thyroiditis patients with rapid increase in size of the swelling. 14 out of 17 carcinoma cases (82.4%) have obstructive symptoms, with $p=0.00$. 25/27 patients of post-operative Thyroiditis cases were free of the obstructive symptom.

There is a significant chance of papillary carcinoma in thyroiditis patients with obstructive symptoms. i.e., the risk for papillary carcinoma increases in thyroiditis patients with obstructive symptoms like dyspnoea, dysphagia.⁸⁻¹² 7/17 papillary carcinoma patients had both rapid increase in size and obstructive symptoms. The risk for carcinoma increases if both symptoms were present in thyroiditis patients.

Foreign body sensation is not frequently seen in papillary carcinoma cases. Moreover the possibility for benign thyroiditis is more in patients with this symptom. 59 % (10/17) of the papillary carcinoma cases were diagnosed pre operatively as colloid with thyroiditis i.e., aspirated colloid material and there was lymphocytic infiltration suggestive of thyroiditis. There is a significant possibility of papillary carcinoma in patients with FNAC as colloid with thyroiditis, the early features of thyroiditis.¹³⁻¹⁸

Hemi/subtotal thyroidectomies patients with postoperative papillary carcinoma may require completion thyroidectomy depending on the risk 6 out of 12 surgeries in the age group 36-45 (hemi/subtotal Thyroidectomy) were inadequate as far as papillary carcinoma is concerned.¹⁹⁻²¹

The incidence of papillary carcinoma in benign operatively resected thyroiditis cases are 38.63%. Even though papillary carcinoma was more encountered above 36years aged females, males are at 100% risk along with the associated symptoms. Papillary carcinoma is commonly seen in thyroiditis cases with obstructive symptoms like dyspnoea, dysphagia with rapid increase in size of the swelling rather than a long standing

gradually increasing thyroid. If the FNAC shows colloid aspirate along with features of early thyroiditis, there is a definite risk of papillary carcinoma and it should be treated with total/near total thyroidectomy.²²⁻²⁵

CONCLUSION

From the present study it is concluded that females aged more than 36yrs and all adult males with a rapid increase in size of the thyroid swelling and/or obstructive symptoms like dyspnoea/dysphagia, whose FNAC suggestive of colloid with features of thyroiditis have a high malignant potential for papillary carcinoma, and total/near total thyroidectomy may be considered as an appropriate operative treatment.

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