

Papillary Carcinoma Thyroid and Histologically Proven Associated Lesions

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Abstract

Background: Several studies all over the world have proposed the association of Papillary Thyroid Carcinoma with Hashimoto Thyroiditis, Lymphocytic Thyroiditis and Multinodular goitre. Papillary Thyroid Microcarcinoma (≤ 1 cm size lesions) which are detected incidentally on histopathological examination of thyroidectomy specimens can progress to clinically evident Papillary Thyroid Carcinoma if left untreated. In this study, we aim to determine the types of lesions associated with Papillary Carcinoma Thyroid and to study the most commonly associated lesion, age group and gender affected. **Materials and Methods:** A total of 74 cases of Papillary Thyroid Carcinoma who underwent thyroidectomy at a tertiary care hospital in Kerala were included in the study. The association between types of lesions, age group and gender were studied and the data obtained was analyzed using Chi Square test. **Results:** Mean age of the study population was 47 years and majority were females (86.5%). Out of 74 cases of Papillary Thyroid Carcinoma, 58 cases (78%) had associated lesions. The most common associated lesion with Papillary Thyroid Carcinoma was Multinodular goitre (59%), followed by Lymphocytic Thyroiditis (50%) and Hashimoto Thyroiditis (16%). Among the 74 cases, 17 cases (23%) were of Papillary Thyroid Micro carcinoma. **Conclusion:** It was found that there was significant prevalence of associated lesions with Papillary Thyroid Carcinoma. Hence all non neoplastic lesions of thyroid which are usually managed conservatively require a strict follow up to rule out the possibility of developing Papillary Thyroid Carcinoma. This will go a long way in preventing the morbidity and mortality that could arise in Papillary Thyroid Carcinoma.

Keywords: Papillary Thyroid Carcinoma, Multinodular goitre, Lymphocytic Thyroiditis, Hashimoto Thyroiditis.

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INTRODUCTION

Papillary thyroid carcinoma (PTC) is the most common type of thyroid carcinoma [1]. The incidence of malignancies is on an alarming rise globally over the past few years. Thyroid malignancies constitute about 1% of all the diagnosed malignancies. The incidence of thyroid malignancy ranges from 0.9% to 13% world wide [2]. The exposure to ionizing radiation and the availability of sensitive diagnostic test may be the reason for a worldwide increase in the thyroid carcinoma [3].

A thyroid nodule, if it is of recent origin, firm and irregular in shape, increasing in size rapidly must be viewed with caution. Patients with history of neck radiation, hoarseness of voice along with lymphadenopathy and rapidly enlarging nodule in young (<15 years) or old (>65yrs) should also be viewed with suspicion [4].

One of the common presentations of various thyroid diseases is Multi nodular goitre. Multi nodularity of goitre was earlier thought to be an indicator of probable benign disease but recently it has been discovered that thyroid malignancy especially PTC can occur even in Multinodular goiter [5].

Aim and Objectives

- To determine the type of lesions associated with papillary carcinoma thyroid
- To study the most common associated lesion, age group, gender affected.

MATERIALS AND METHODS

Type of study: Retrospective Cross sectional study

Study period: Jan 2016 to Dec 2017

Study subjects: 74 cases diagnosed as Papillary Thyroid carcinoma during the study period were selected for the study

Study setting: Department of Pathology, Pushpagiri Institute of medical sciences (PIMS), Thiruvalla, Kerala.

Sample size: 74 cases diagnosed as Papillary Thyroid carcinoma

Data Analysis

The obtained data was entered into a database management system using Microsoft access and statistical analysis was done. The association between the types of lesions, age group and gender was done using Chi square test.

RESULTS

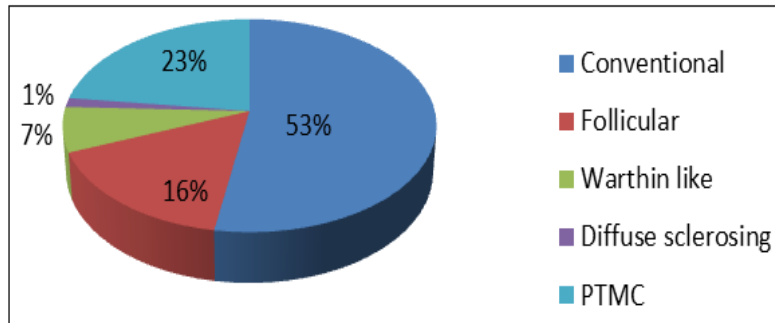
The mean (SD) age of the 74 cases of Papillary Thyroid Carcinoma was 47.0 (13.0) years, the age ranging from 20 to 85 yrs. Majority of the patients were females (86.5%).

Age and gender distribution of patients

Characteristics	No. of cases	Percentage
Age in years		
<30	8	10.8
30-39	10	13.5
40-49	23	31.1
50-59	23	31.1
> 60	10	13.5
Gender		
Male	10	13.5
Female	64	86.5

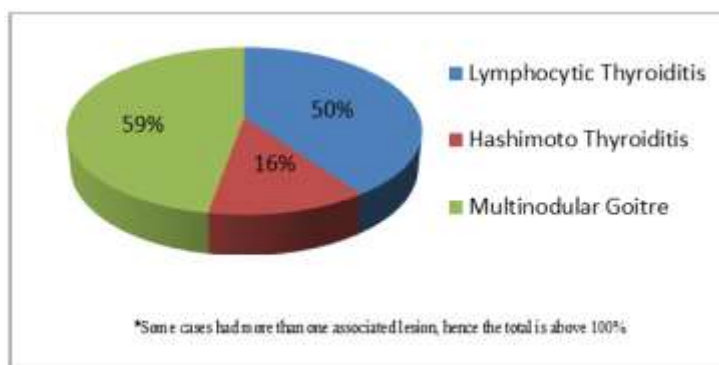
The variants of Papillary Thyroid Carcinoma observed in our study were Conventional, Papillary Thyroid Microcarcinoma (PTMC), Follicular, Warthin like and Diffuse Sclerosing types. The most common

variant of PTC was the Conventional type (53%), followed by Papillary Thyroid Micro Carcinoma (PTMC) (23%). The diffuse sclerosing variant was found to be the least common (1%).



Associated lesions were seen in 58 cases (78%). The most common associated lesion was

Multinodular goitre (59%) followed by Lymphocytic thyroiditis (50%) and Hashimoto Thyroiditis (16%).



A trend analysis of associated lesions according to age showed that as the age increases there

was a significant increase in the incidence of associated lesions ($p=0.002$).

DISCUSSION

Papillary Thyroid carcinoma constitute around 57% to 89 % of all thyroid malignancies [6, 7]. The incidence of thyroid diseases based on multiple studies done across the world is found to be more in females from the 4th decade onwards. This is comparable to our study in which 87% were females and the common age group affected was 40-60 years [8].

The WHO has defined a Papillary thyroid microcarcinoma as one which measures ≤ 1 cm in greatest diameter. Recent studies have suggested that such lesions progress to clinically evident disease if it is left untreated and these lesions must be treated like papillary thyroid carcinoma [9].

In our study 23% of the cases had PTMC. This was similar to a study done by Anulekha et al which showed 17% cases of PTMC [10]. A prospective analytical study done on the thyroidectomy specimens by Palo *et al.*, showed that out of 116 cases of MNG, 28 cases (24%) had associated malignancy, out of which Papillary thyroid carcinoma was the commonest malignancy observed. The variants of PTC observed were classic, follicular and papillary thyroid microcarcinoma [11]. In a study conducted by Jain *et al.*, MNG has been associated with significant risk of malignancy, as Papillary Thyroid Microcarcinoma (PTMC) is often an incidental finding in such patients [12].

Studies have shown that the incidence of Papillary Thyroid Carcinoma in MNG is around 50-60% [13, 14] which is similar to our study which showed an incidence of 59%.

There is a unique association of PTC with Lymphocytic Thyroiditis. Our study showed that PTC was associated with LT in 50% of cases, which was similar to previous studies done by De Manzini [15]. There are studies which suggest that Lymphocytic Thyroiditis is a precursor of PTC [16].

In a study conducted by Dobrinja *et al.*, it was found that presence of Lymphocytic Thyroiditis (LT) with a lower grade of Papillary Thyroid Carcinoma was more common in female patients [3]. Another study done by Jun Soo Jeong *et al.*, it was found that patients with Lymphocytic Thyroiditis were younger, predominantly female, had small tumor size and lower extrathyroidal extension rate at the time of surgery, which are the most important and well-known prognostic variables for thyroid cancer mortality. Although coexistent Lymphocytic Thyroiditis in Papillary carcinoma thyroid patients reduced the risk of recurrence, especially in patients with lymph node metastasis at the time of surgery, LT was not an independent predictive factor for recurrence [4]. The possible association between Lymphocytic Thyroiditis

& Papillary Thyroid carcinoma needs to be further evaluated with larger and more extensive studies and this will definitely help in preventing the morbidity and mortality due to Papillary Thyroid Carcinoma.

Hashimoto Thyroiditis is one of the most common inflammatory thyroid disease and the typical cause of hypothyroidism [17-19]. A link between cancer and chronic inflammation was well recognized as early as 1863 by Rudolf Virchow. Malignant transformation in the thyroid gland could be caused either by cellular mediators produced by chronic inflammatory cells or by elevated levels of TSH that stimulate follicular epithelial proliferation. In our study 16% of cases had associated HT which was similar to a study done by Christina et al which showed 18.9% [20]. However this relationship has to be further established by larger studies owing to the limitation attributed to our cross sectional study.

Lee *et al.*, in a meta analysis which included 38 eligible studies, histologically proven Hashimoto Thyroiditis (HT) was identified in 23.2% of all Papillary Thyroid Carcinomas [5]. In another systematic review and meta-analysis conducted by Resende de Paiva *et al.*, found a relative risk of Hashimoto Thyroiditis among papillary thyroid cancer of 2.36, and that of Papillary thyroid cancer among Hashimoto Thyroiditis of 1.40. The female:male (F:M) ratio was 4.8:1 for PTC patients [20]. In a retrospective study conducted by Nadeef *et al.*, Multinodular goiter (MNG) was seen associated with papillary carcinoma thyroid in 50% of cases [8].

CONCLUSION

Present study shows that there is a significant association between non neoplastic lesions of thyroid like Multinodular goitre, Lymphocytic Thyroiditis & Hashimoto Thyroiditis with Papillary thyroid Carcinoma. Females in the third to fourth decade were most affected and the most common lesion was Multinodular goitre. Hence all such patients who have been managed conservatively, definitely requires close follow up for the possible occurrence of malignancy by doing ultrasound studies and clinical evaluation.

REFERENCES

1. Individual registry-leading site graphs. (last accessed on 2018 Dec 28) Available from http://www.ncrpindia.org/all_ncrp_reports/trend_report_1982_2010/all_content/all_pdf/individual_registry_site_graphs.pdf.
2. Schlumberger, M. J., & Torlantino, M. (2000). Papillary and follicular thyroid carcinoma. *Best Practice & Research Clinical Endocrinology & Metabolism*, 14(4), 601-613.
3. Dobrinja, C., Makovac, P., Pastoricchio, M., Mis, T. C., Bernardi, S., Fabris, B., ... & de Manzini, N. (2016). Coexistence of chronic lymphocytic

- thyroiditis and papillary thyroid carcinoma. Impact on presentation, management, and outcome. *International Journal of Surgery*, 28, S70-S74.
4. Jeong, J. S., Kim, H. K., Lee, C. R., Park, S., Park, J. H., Kang, S. W., ... & Park, C. S. (2012). Coexistence of chronic lymphocytic thyroiditis with papillary thyroid carcinoma: clinical manifestation and prognostic outcome. *Journal of Korean Medical Science*, 27(8), 883-889.
5. Lee, J. H., Kim, Y., Choi, J. W., & Kim, Y. S. (2013). The association between papillary thyroid carcinoma and histologically proven Hashimoto's thyroiditis: a meta-analysis. *European Journal of Endocrinology*, 168(3), 343-349.
6. Shah, S. H., Muzaffar, S., Soomro, I. N., & Hasan, S. H. (1999). Morphological pattern and frequency of thyroid tumors. *J Pak Med Assoc*, 49(6), 131-133.
7. Mulaudzi, T. V., Ramdial, P. K., Madiba, T. E., & Callaghan, R. A. (2001). Thyroid carcinoma at King Edward VIII Hospital, Durban, South Africa. *East African medical journal*, 78(5), 242-245.
8. Nadeem, K., Akhtar, N., & Tarar, J. M. (2013). Thyroid Malignancy In Multi Nodular Goiter. *The Professional Medical Journal*, 20(04), 587-590.
9. Yang, R. H., Hu, L. X., Chang, C. Y., & Chu, Y. K. (2011). Multinodular goiter, concomitant microcarcinoma and lymphocytic thyroiditis manifesting as thyroid autonomy. *核子醫學雜誌*, 24(1), 22-24.
10. Anulekha, M. J., Jacob, P. M., Regi, O. R., & Sheila, N. (2014). Our experience with papillary thyroid microcarcinoma. *Indian Journal of Endocrinology Metab*, 18: 410-413.
11. Palo, S., & Mishra, D. (2016). Prevalence of malignancy in multinodular goiter and solitary thyroid nodule: a histopathological audit. *Int J Res Med Sci*, 4(6), 2319-2323.
12. Jain, A., Alam, K., Maheshwari, V., Rabindranath, D., Narula, V., Khan, A. A., & Khan, R. (2016). Papillary microcarcinoma in clinically benign thyroidology. *Thyroid Research and Practice*, 13(1), 15-18.
13. Goitre, M. N. (2012). The incidence of malignancy in multi-nodular goitre: a prospective study at a tertiary academic centre. *Journal of clinical and diagnostic research*, 6(2), 267-270.
14. ul Haq, R. N., Khan, B. A., & Chaudhry, I. A. (2009). Prevalence of malignancy in goitre—a review of 718 thyroidectomies. *Journal of Ayub Medical College Abbottabad*, 21(4), 134-136.
15. De Manzini, N. (2015). Coexistence of Chronic Lymphocytic Thyroiditis and Papillary Thyroid Carcinoma. Impact on presentation, management and outcome. *International Journal Surgery*, SI743-9191(15)01449-1.
16. Okayasu, I., Fujiwara, M., Hara, Y., Tanaka, Y., & Rose, N. R. (1995). Association of chronic lymphocytic thyroiditis and thyroid papillary carcinoma. A study of surgical cases among Japanese, and white and African Americans. *Cancer*, 76(11), 2312-2318.
17. Kumar, V., & Aster, J. C. (2012). Robbins Basic Pathology. 9th ed. Philadelphia, USA: Elsevier Saunders, 928.
18. Vanderpump, M. P. (2011). The epidemiology of thyroid disease. *British medical bulletin*, 99(1), 39-51.
19. Jankovic, B., Le, K. T., & Hershman, J. M. (2013). Hashimoto's thyroiditis and papillary thyroid carcinoma: is there a correlation?. *The Journal of Clinical Endocrinology & Metabolism*, 98(2), 474-482.
20. Resende de Paiva, C., Grønhoj, C., Feldt-Rasmussen, U., & von Buchwald, C. (2017). Association between Hashimoto's thyroiditis and thyroid cancer in 64,628 patients. *Frontiers in oncology*, 7, 53.