VOLUME - 13, ISSUE - 02, FEBRUARY - 2024 • PRINT ISSN No. 2277 - 8160 • DOI : 10.36106/gjra

Original Research Paper

General Surgery

MANAGEMENT OUTCOMES AND DETERMINANTS OF PAPILLARY MICROCARCINOMA THYROID

Dr. Azim Khan* MRCSEd, DNB General Surgery, Assistant Professor, KMCT Medical College and Hospital, Kerala, India *Corresponding Author

Dr Mubashir D MBBS, MS, DNB General Surgery, FMAS, DMAS, Associate Professor, KMCT Medical College and Hospital, Kerala, India

Dr. Sobin Sunny MBBS, MS, DNB General Surgery, FMAS, DMAS, Associate Professor, KMCT Medical College and Hospital, Kerala, India

ABSTRACT

Background Papillary microcarcinoma thyroid (PMCT) accounts for around 85% of the thyroid malignancies. Most of the autopsy series did not reveal differences in incidence with respect to gender, age, thyroid size, or multifocality. With advances in ultrasonography and fine-needle aspiration biopsies, especially in mass screening programs, PMCT can be diagnosed before surgery. This study was conducted with the aim of understanding the determinants of PMCT. **Methods** A cross-sectional observational study was conducted at a surgery department. All patients diagnosed with PMCT in thyroidectomy specimen from 2003 to 2019 were studied. The case sheets and histopathology reports were retrieved from the computerised filing system. The case sheets and histopathology reports were retrieved from the computerised filing system. **Results** Out of the 140 cases studied there were 111 (79.0%) incidental cases and 29 (21.0%) non incidental cases of PMCT. Females were associated with higher chance of having incidental PMCT. Smaller size lesions were more associated with incidental PMCT. **Conclusion** Patients with the associated clinical risk factors should be observed carefully and periodically followed up. This can help in recognizing the occurrence of frank malignancy, the outcome of the disease and planning the appropriate timely management.

KEYWORDS :

INTRODUCTION

Among the endocrine malignant tumours, thyroid carcinoma is the most common with around 586,000 cases reported worldwide during 2020. Papillary microcarcinoma thyroid (PMCT) accounts for around 85% of these thyroid malignancies. Papillary thyroid cancer is defined as a malignant epithelial tumour showing evidence of follicular cell differentiation, typically with papillary and follicular structures as well as characteristic nuclear changes (ground glass, large size, pale, irregular outline with deep grooves, and pseudo inclusions) [1]. Extrathyroidal extension involves invasion of trachea, oesophagus, recurrent laryngeal nerve, strap muscles and skin [2].

Papillary and follicular thyroid cancers arise from follicular epithelium. Both these cancers have the abilities including TSH response, thyroglobulin production and iodide concentration. The distinguishing factors between these two include their histopathological appearances and typical patterns of progression. PMCT can be lethal because small numbers of patients develop locoregional (LR) recurrences and distant metastases [3–6].

In autopsy studies, the incidence of small PMCT varied from 1.0% to 35.6% [7–10]. Most of the autopsy series did not reveal differences in incidence with respect to gender, age, thyroid size, or multifocality [11,12]. With advances in ultrasonography and fine-needle aspiration biopsies, especially in mass screening programs, PMCT can be diagnosed before surgery [13,14]. This study was conducted with the aim of understanding the determinants of PMCT.

MATERIALS AND METHODS

This was a cross-sectional observational study conducted at both inpatient wards and outpatient department of surgery in a tertiary care hospital in India. The study was initiated following the approval of the institutional scientific and ethical committee. Informed written consent was obtained prior to the initiation of the study. All those patients who were diagnosed with PMCT on histopathology were included in the study. Cases with insufficient clinical details were excluded from the study.

All patients diagnosed with PMCT in thyroidectomy specimen from 2003 to 2019, who gave consent were included in this study. The case sheets and histopathology reports were retrieved from the computerised filing system, and their contact details were collected for follow up. Records were studied to obtain data on the patients. Numerical variables were expressed as either mean and standard deviation or median with interquartile range. Categorical variables were expressed as frequency and percentages. The baseline variables were summarised as frequency percentage tables. The main outcome variables were expressed as proportion. Chi square or fishers exact were the tests of association used in the study. A p value of <0.05 was considered statistically significant.

RESULTS

Out of the 140 cases studied there were 111 (79.0%) incidental cases and 29 (21.0%) non incidental cases of PMCT. The most common procedure done in our hospital was thyroidectomy with or without lymph node dissection, in up to 97.0% cases. Hemithyroidectomy constitutes treatment option for 2.0% cases and completion thyroidectomy for 1.0% cases. Postoperative thyroid supplements were given for 68.0% cases. Radioactive scans were used for further evaluation and radioactive iodine therapies were given accordingly for 30.0% cases (Table 1).

Table 1: Management and outcome of the study population

Variables		N = 140	
		Frequency	Percentage
Surgery done	Total thyroidectomy	92	66%
	Near total	17	12%
	Subtotal	17	12%
	Total thyroidectomy with lymph node Dissection	11	7%
	Left hemithyroidectomy	1	1%
	Right hemithyroidectomy	1	1%
	Completion thyroidectomy	1	1%
Adjuvant treatment	Thyroid supplements	95	68%
	Thyroid supplements and radioactive iodine	43	30%
	Observe	1	1%
	No active treatment	1	1%

Definitive surgery later performed	Nil	138	98%
	Redo thyroidectomy	1	1%
	Hemi to total thyroidectomy	1	1%
Recurrence among followed up 76 cases	Recurrence	2	2.6%
	No recurrence	74	97.4%

The patients were telephoned and followed up to enquire about recurrence. Follow up was done only as an extension of the study, and 76 cases were available for follow up. Recurrence occurred in 2 cases and in the remaining 74 patients (97.3%) none of them showed sign of relapse after definitive treatment at thyroid bed or cervical lymph node level and did not have any symptoms of complications from thyroid surgery or that of the disease itself and did not need any further surgical interventions as initial surgery was satisfactory.

In the follow up of the 76 cases, 56 of them were incidental while 20 of them were non incidental cases. Only one non incidental and one incidental case had recurrence among those 76 cases. In both of them recurrence was detected in thyroid bed within one year of follow up and both of them had associated thyroid malignancy.

Considering the determinants of incidental diagnosis among the various risk factors of study participants, it was found that, there was no statistically significant association between age group and incidental diagnosis of PMCT among the study participants. Females were associated with higher chance of having incidental PMCT and this was statistically significant. Presence of malignant features in the thyroid such as invasion into neighbouring structures was associated with higher chance of having non incidental diagnosis and this was statistically significant. Lymph node involvement with enlargement or invasion was associated more with non-incidental PMCT and this was statistically significant. There was no significant association between unifocal/multifocal and diagnosis of incidental PMCT. Smaller size lesions were more associated with incidental PMCT, and this was statistically significant. Hyperthyroid status was more associated with incidental PMCT diagnosis (Table 2).

Table 2: Determinants of papillary microcarcinoma thyroid

Risk factors	Categories	Incidental	Non incidental	p
		n (%)	n (%)	value
Age Group*	Age <45	68(77.3)	20(22.7)	0.45
	Age >45	43(82.7)	9(17.3)	
Gender#	Males	22(66.7)	11(33.3)	0.04
	Females	89(83.2)	18(16.8)	
Malignant features*	Present	3(33.3)	6(66.7)	<0.001
	Absent	108(82.4)	23(17.6)	
Node involvement*	Present	3(25)	9(75)	<0.001
	Absent	108(84.4)	20(15.6)	
Focality*	Multifocality	22(75.9)	7(24.1)	0.61
	Unifocality	89(80.2)	22(19.8)	
Size of largest lesion#	Small Size	81(88)	11(12)	<0.001
	Large Size	30(62.5)	18(37.5)	
Thyroid status*	Euthyroid	85(77.9)	24(22.1)	0.03
	Hypo Thyroid	5(55.6)	4(44.4)	
	Hyper Thyroid	21(95.5)	1(4.5)	

DISCUSSION

The most common procedure done in the study centre was thyroidectomy with or without lymph node dissection. The current trend in the management of PMCT is more of a conservative approach [15]. The most important clinico-pathological factors affecting prognosis in thyroid malignancies were selected and analysed in the incidental and non-incidental PMCT. Studies have reported that incidental PMCT is common in individuals less than 45 years of age. But in this study, there was no significant difference in the incidence of PMCT with respect to age of the individual. Females had a higher chance of developing incidental PMCT. AlSaif A, in his study conducted in middle east region also found that females had higher chance of development of PMCT [16].

Presence of malignant features were more associated with non-incidental diagnosis of PMCT. Lymph node involvement was associated with non-incidental PMCT diagnosis. Though multifocality is a risk for incidental PMCT diagnosis no such finding was obtained in our study [17]. Small size lesion is more prone to be incidentally diagnosed as obtained in our study. Hyperthyroid status is more associated with incidental PMCT diagnosis compared to non-incidental PMCT status. Similar findings were observed by Slijepcevic et al., in their study [18]. Lombardi et al., in their study concluded that incidental diagnosis itself is an independent risk factor for thyroid malignancy among others like tumour size for extracapsular spread (ECS) [19]. Also, ECS is an independent risk factor for lymph node metastasis at diagnosis and has high recurrence rate [19,20].

These clinicopathologic characters associated with incidental PMCT gives an idea to the clinician that there could be a hidden PMCT in thyroid lesion which could be detected incidentally after thyroidectomy or completion thyroidectomy for patients undergoing conservative thyroid surgeries or following medical management of the thyroid pathology. And hence patients with these above-mentioned risk factors should be evaluated and treated aggressively for early detection and avoidance of metastatic complications.

CONCLUSION

To clearly assess the outcome of hidden PMCT that might otherwise would have diagnosed if thyroidectomy was done (incidental PMCT), patients with the associated clinical risk factors (determinants of PMCT) should be observed carefully and periodically followed up. This can help in recognizing the occurrence of frank malignancy, the outcome of the disease and planning the appropriate timely management.

REFERENCES

1. Hedinger C, Dillwyn Williams E, Sobin LH. The WHO histological classification of thyroid tumors: A commentary on the second edition. Cancer. 1989;63(5):908–11.
2. More SJ, Gupta S. Retrospective Evaluation of Papillary Thyroid Carcinoma : Clinicopathological Features. Int J Sci Res [Internet]. 2016;5(3):358–60. Available from: www.waent.org
3. Hay ID, Grant CS, van Heerden JA, Goellner JR, Ebersold JR, Bergstralh EJ. Papillary thyroid microcarcinoma: a study of 535 cases observed in a 50-year period. Surgery. 1992 Dec;112(6):1139–46; discussion 1146-7.
4. Baudin E, Travagli JP, Ropers J, Mancusi F, Bruno-Bossio G, Caillou B, et al. Microcarcinoma of the thyroid gland: the Gustave-Roussy Institute experience. Cancer. 1998 Aug 1;83(3):553–9.
5. Yamashita H, Noguchi S, Murakami N, Toda M, Uchino S, Watanabe S, et al. Extracapsular invasion of lymph node metastasis. A good indicator of disease recurrence and poor prognosis in patients with thyroid microcarcinoma. Cancer. 1999 Sep 1;86(5):842–9.
6. Furlan JC, Bedard Y, Rosen IB. Biologic basis for the treatment of microscopic, occult well-differentiated thyroid cancer. Surgery. 2001 Dec;130(6):1050–4.
7. Bisi H, Fernandes VS, de Camargo RY, Koch L, Abdo AH, de Brito T. The prevalence of unsuspected thyroid pathology in 300 sequential autopsies, with special reference to the incidental carcinoma. Cancer. 1989 Nov 1;64(9):1888–93.
8. Yamamoto Y, Maeda T, Izumi K, Otsuka H. Occult papillary carcinoma of the thyroid. A study of 408 autopsy cases. Cancer. 1990 Mar 1;65(5):1173–9.
9. Bramley MD, Harrison BJ. Papillary microcarcinoma of the thyroid gland. Br J Surg. 1996 Dec;83(12):1674–83.
10. Harach HR, Franssila KO, Wasenius VM. Occult papillary carcinoma of the thyroid. A "normal" finding in Finland. A systematic autopsy study. Cancer. 1985 Aug 1;56(3):531–8.
11. Kasai N, Sakamoto A. New subgrouping of small thyroid carcinomas. Cancer. 1987 Oct 15;60(8):1767–70.
12. Bondeson L, Ljungberg O. Occult thyroid carcinoma at autopsy in Malmö, Sweden. Cancer. 1981 Jan 15;47(2):319–23.
13. Yang GCH, LiVolsi VA, Baloch ZW. Thyroid microcarcinoma: fine-needle aspiration diagnosis and histologic follow-up. Int J Surg Pathol. 2002 Apr;10(2):133–9.
14. Chung WY, Chang HS, Kim EK, Park CS. Ultrasonographic mass screening for thyroid carcinoma: a study in women scheduled to undergo a breast examination. Surg Today. 2001;31(9):763–7.
15. Bernet V. Approach to the Patient with Incidental Papillary Microcarcinoma. J Clin Endocrinol Metab. 2010 Aug 1;95(8):3586–92.
16. AlSaif A. The epidemic of papillary thyroid microcarcinoma: An overview. Journal of Health Specialties. 2016;4(1):24.
17. Vasileiadis I, Karatzas T, Vasileiadis D, Kapetanakis S, Charitoudis G, Karakostas E, et al. Clinical and pathological characteristics of incidental and nonincidental papillary thyroid microcarcinoma in 339 patients. Head Neck. 2014 Apr;36(4):564–70.
18. Slijepcevic N, Zivaljevic V, Marinkovic J, Sipetic S, Diklic A, Paunovic I. Retrospective evaluation of the incidental finding of 403 papillary thyroid microcarcinomas in 2466 patients undergoing thyroid surgery for presumed benign thyroid disease. BMC Cancer. 2015 Apr 30;15:330.
19. Lombardi CP, Bellantone R, De Crea C, Paladino NC, Fadda G, Salvatori M, et al. Papillary thyroid microcarcinoma: extrathyroidal extension, lymph node metastases, and risk factors for recurrence in a high prevalence of goiter area. World J Surg. 2010 Jun;34(6):1214–21.
20. Pedrazzini L, Baroli A, Marzoli L, Guglielmi R, Papini E. Cancer recurrence in papillary thyroid microcarcinoma: a multivariate analysis on 231 patients with a 12-year follow-up. Minerva Endocrinol. 2013 Sep;38(3):269–79.