IJPRP

Indian Journal of Pathology: Research and Practice

Volume 7 Number 6, June 2018
DOI: http://dx.doi.org/10.21088/ijprp.2278.148X.7618.5

Original Research Article

A Study on Histopathological Patterns of Thyroid Lesions and its Cytological Correlation: An Experience of A Rural Tertiary Care Center

S. Kalyani[1], J. Kolsamma Nasrin[2], O.A. Meharaj Banu[3], S.R. Murali Prasath[4], R. Uma[5], S.R. Jayakarthiga[6]

[1]Associate Professor [2,6]Tutor, [3,5]Senior Assistant Professor, [4]Assistant Professor, Department of Pathology, Govt. Thiruvarur Medical College, Thiruvarur, Tamil Nadu 610004, India.

Corresponding Author:

J. Kolsamma Nasrin
Tutor,
Department of Pathology,
Govt. Thiruvarur Medical College,
Thiruvarur, Tamil Nadu 610004,
India.
E-mail:
nasrin.jkols@yahoo.com

(Received on 14.05.2018,
Accepted on 09.06.2018)

Abstract

Objective: Thyroid lesions are the most common endocrine problem encountered in routine clinical practice. This study describes the various spectrums of thyroid lesions in surgically resected specimen and its correlation with age, gender and cytological findings.

Materials and methods: A retrospective study of thyroid lesions were conducted in the Department of pathology, Government Thriuvarur medical college, Thiruvarur over a period of 1 year from Jan 2016 to Dec 2016. Totally 145 cases were studied which include 109 non neoplastic, 7 benign and 29 malignant cases. Pre operative FNAC evaluation was performed in patients with nodular thyroid enlargement. Out of 145 cases pre operative cytological correlation was available for 52 cases.

Results: Totally 145 surgically resected thyroid specimens were received during the study period of one year with a female: male ratio of 10.7: 1. The age group ranges from 14 years to 67 years and peak incidence was noted in 31-40 years group. Most common lesion noted was nodular goiter (54%) followed by thyroid malignancies (20%). Other lesions observed were thyroiditis (14%), follicular adenoma (5%), nodular hyperplasia with thyroiditis (6%) and toxic goiter (1%). Among the malignant tumours, the predominant lesion was papillary carcinoma (90%) followed by follicular (7%) and medullary carcinoma (3%).

Conclusion: Non neoplastic lesions are more common than neoplastic lesions with a striking female predominance. This study shows increased prevalence of thyroid lesions with a rising incidence of papillary carcinoma thyroid among the middle aged individuals.

Keywords: Thyroid lesions; FNAC; Papillary Carcinoma; Goitre

Introduction

Thyroid lesions are one of the most common endocrine problem second to diabetes [1] with greater part of them are benign in nature [2]. They are endemic in mountainous regions of the world having little iodine supply in soil and water. The prevalence and pattern of thyroid disorders depend on various factors including sex, age, ethnic and geographical patterns [3]. Most of the thyroid lesions are benign nodule and only 5% are considered to be malignant [4]. Thyroid malignancies represent 1.5% of all cancer but it is the commonest endocrine cancer accounting for 92% of all endocrine malignancies [5].

Materials and Method

A retrospective descriptive study of thyroid lesions was conducted in the Department of pathology, Government Thiruvarur medical college, Thiruvarur over a period of 1 year from Jan 2016 to Dec 2016. All the biopsy reports

were retrieved and various clinical parameters include age, gender, thyroid profiles and relevant investigations like FNAC & radiological reports were evaluated. All the biopsies were fixed in 10% buffered formalin and routinely processed for paraffin embedding and sections were stained with Haematoxylin and Eosin.

Results

A total of 145 surgically resected thyroid specimens were received during the one year study period. Resected specimens ranged from hemithyoidectomy to total thyroidectomy. The common presenting symptom is thyroid enlargement includes multinodular goiter (61%) followed by solitary nodule (28%) and diffuse symmetrical enlargement (11%). Age incidence ranged from 14-67 years with a mean age of 38 years and peak age incidence noted in the age group 31-40 years (34%) followed by 41-50 years (25%) [Chart 1]. Sex predilection was seen for females (91%) with a female: male ratio was 10.1:1 [chart 2]. Only 6% of cases were observed in age group below 20 years.

Of the total 145 cases non neoplastic lesion constitutes 75% followed by malignant lesion (20%) and benign 5%. [Chart 3] Most common non neoplastic lesion was nodular goiter (54%) followed by thyroiditis (14%) Figure 1). Carcinoma accounts for 29 cases (20%) with highest incidence seen in the age group 31-40 years followed closely by 41-50 years. The frequency of carcinomas among male and females were 38% and 17% respectively [Table 2]. Among the 29 malignant tumours, the predominant lesion was papillary carcinoma (90%) (Figure 2) followed by follicular (7%) (Figure 3) and medullary carcinoma (3%).

Most common histopathological type papillary carcinoma observed was conventional type (55%) (Figure 4) followed by its variants (19%). Among the variants follicular type constitutes (14%) followed by microcarcinoma, macrofollicular variant [Table 3] and oncocytic variant (4% each) (Figure 5). About 5 cases were associated with Hashimotos thyroiditis (19%).

Preoperative cytological evaluation was available for 52 (37%) cases. Cytological diagnosis includes Benign (81%), Suspicious follicular neoplasm (4%) and malignancy (15%). (Table 4)

Fig. 1: Gross appearance of Hashimoto thyroiditis

Table 1: Histopathological types of thyroid lesions

Diagnosis	No of cases	Percentage
Nodular goiter (MNG + Adenomatous goiter)	78	54%
Nodular hyperplasia with thyroiditis	8	6%
Toxic goiter	2	1%
Hashimotos thyroiditis	21	14%
Follicular adenoma	7	5%
Papillary carcinoma – conventional type	14	10%
Papillary carcinoma associated with Hashimotos thyroiditis	5	3%
Papillary carcinoma variants	7	5%
Follicular carcinoma	2	1%
Medullary carcinoma	1	1%

Table 2: Sex wise distribution of Thyroid Carcinomas

	N	%
Male	5/13	38%
Female	24/132	18%

Table 3: Histopathological types of Papillary carcinoma

Conventional type	14	55%
Conventional associated with hashimoto thyroiditis	5	19%
Follicular variant	4	14%
Macrofollicular variant	1	4%
Oncocytic ariant	1	4%
Microcarcinoma variant	1	4%

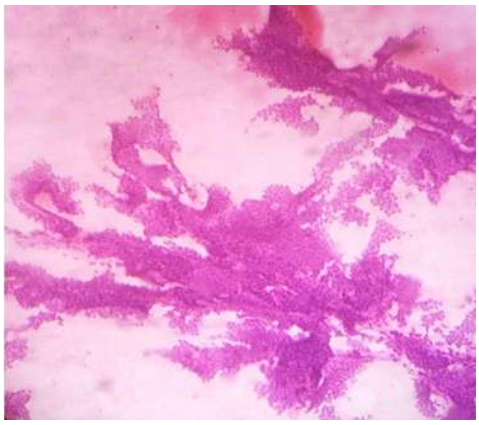

Fig. 2: FNAC of Papillary carcinoma of Thyroid

Fig. 3: Gross- Follicular Carcinoma of Thyroid

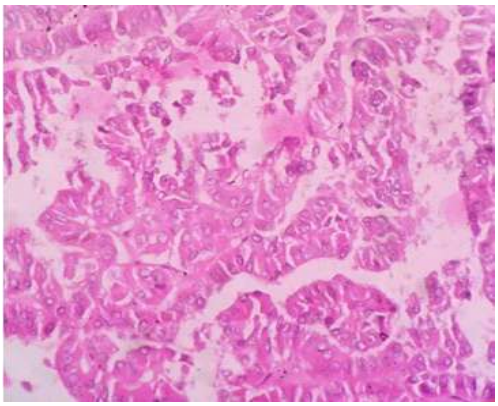

Fig. 4: Papillary carcinoma thyroid

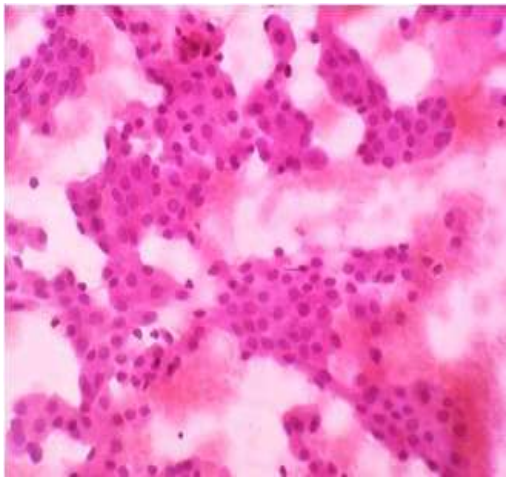

Fig. 5: Oncocytic variant of Papillary carcinoma Thyroid

Table 4: Preoperative Cytological distribution of thyroid lesions

FNAC diagnosis	N	%
Benign	42	81%
Suspicious follicular lesion	2	4%
Malignancy	8	15%

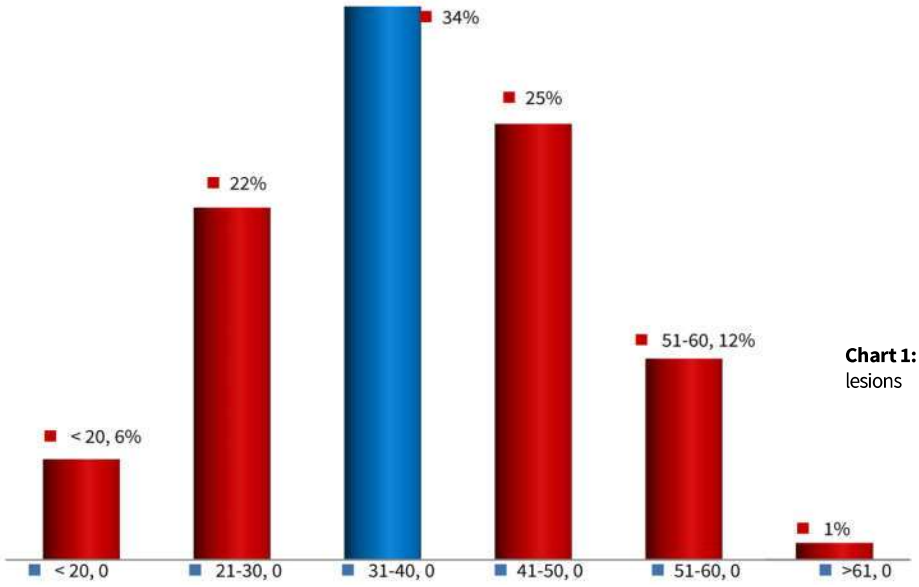

Chart 1: Age wise distribution of thyroid lesions

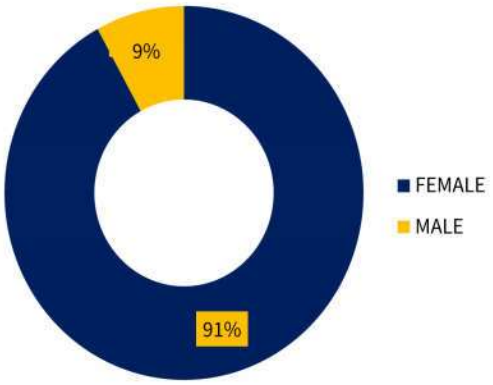

Chart 2: Sex wise distribution of thyroid lesions

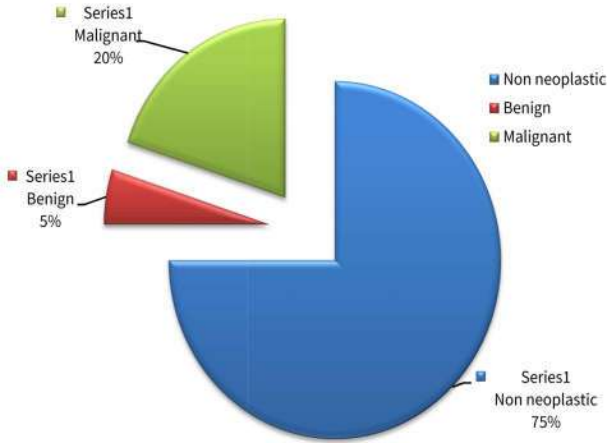

Chart 3: Histopathological categorization

About 41 (78.8%) cases were correlated and 11 (21.2%) cases were not correlated with histopathological diagnosis. About 6 cases of papillary carcinoma, 2 cases of follicular adenoma were reported in cytology as nodular goiter. 1 case of follicular carcinoma reported as granulomatous thyroiditis in cytology, and 2 cases of nodular colloid goiter were reported as papillary carcinoma in cytology. Overall malignancy rate after thyroidectomy was 15/52 cases (28%).

Discussion

Thyroid lesions are the most common endocrine disease encountered worldwide. Majority of the patients are from developing countries due to the increased prevalence of iodine deficiency. Clinical presentation of thyroid disease may be in the form of multinodular, solitary or diffuse enlargement [6].

In this study, the peak incidence of thyroid lesions are seen in the age group 31-40 years (34%) with mean age of presentation was 38 years in concordance with studies conducted by Joseph et al (7). The overall distribution thyroid lesions in this study were 75% non neoplastic, 5% benign and 20% malignant similar to studies conducted by Hussain et al [8], Joseph et al [7] and Rahman et al [9]. Compared to other studies, the present study showed higher female predilection with female: male ratio noted was10.1:1. Female: male ratio noted in previous studies were 3.4:1 (Chukudebelu et al)[10], 4.5:1 (Tsegaye et al) [11]. Various reports from the United States of America, Saudi Arabia and Pakistan, which recorded female to male ratios of 7:1, 6.2:1 and 4.5:1, respectively [12,13,14]. The commonest non neoplastic lesion observed in this study was simple nodular goiter (54%) similar to studies by Tsegaye et al [11] Ijomone et al in Nigeria reported 59.4% [15], Misiakos et al in Greece (54.9%) [16] Joseph et al (71.5%) [7]. Among the non neoplastic lesions, the second commonest pathology observed was thyroiditis (14%) in concordance with studies by Joseph et al (22.97%) [7] and Sherine I Salama et al (7.6%) [18]. Other studies reported low incidence of thyroiditis were Rahman et al in Bangaladesh (2.7%) [9], Raphael solomon et al in Nigeria (0.4%) [17], Misiakos et al in Greece (3.8%) [16]. Thyroiditis was noted as an associated finding in 6% of nodular goiter compared to a study by Joseph et al [7] showed 17.6% of multinodular goiters.

In this study neoplastic lesions constituted 25%, within the neoplastic lesions malignancy (20%) predominates over benign adenomas (5%) concordant with studies by Abdulkader Albasri et al. [19] and Joseph et al [7]. This study showed low incidence of benign follicular adenoma (5%) similar to studies Abdulkader Albasri et al(8.6%) [19] and Joseph et al (3.3%) [7] and discordant to studies by Ijomone EA et al (52.4%) [15], Raphael solomon et al in Nigeria (52.2%) [17]. Thyroid adenoma (5%) was the only benign lesion observed in this study. Papillary carcinoma was the most common malignant lesion accounting 90% of malignant lesions and 17.9% of all thyroid lesions which is similar to findings by Abdulkader Albasri et al [19], Chukudebelu et al [10], Ariyibi et al [20] and Ashwini K et al [24]. In contrast to most other studies, Olurin et al [21], Omran et al [22] found that follicular carcinoma was the commonest malignant neoplasm. The probable explanation was wide prevalence of iodine deficiency or partly by the miss interpretation of the follicular variant of papillary carcinoma as follicular carcinoma in earlier classification of thyroid neoplasms. The peak age incidence of papillary carcinoma was 3rd and 4th decade similar to studies by Ariyibi et al [20], Joseph et al [7] and in contrast to study by Abdullah H. Darwish et al [23], he observed most of the papillary carcinoma were diagnosed more than 60 years. Most recent studies have reported incidence of thyroid malignancy in Hashimoto thyroiditis was 29.4% [25]. We observed coexistent papillary carcinoma and Hashimoto thyroiditis in 5

cases (19%). Follicular variant (14%) was the most common variant observed among the papillary carcinoma and one case in each variant includes microcarcinoma, macrofollicular and oncocytic variant consistent with study by Sherine I Salama et al [18]. Incidence of other malignancies observed were 2 cases of follicular carcinoma and 1 case of medullary carcinoma. In this study cytological correlation was performed in 52 cases. About 78.8% of cases correlated and 21.1% not correlated with histopathology. In our study, 9 patients with false negative and 2 cases with false positive diagnoses were reported among malignant cases. The overall incidence of malignancy was increased from 15% to 25% after thyroidectomy.

Conclusion

In our study nodular goiter was the most common histopathological lesion followed by thyroiditi. Malignant neoplasms were more common than benign neoplasms. Papillary carcinoma was the most common malignant neoplasm. This study show increased prevalence of thyroid lesions with a rising incidence of papillary carcinoma thyroid among the middle aged individuals. Improved imaging techniques and correct FNA diagnoses may facilitate early diagnosis of malignant thyroid lesions.

Refrences

1. Kochupillai N.Clinical endocrinology in India.CurrSci, 2000;79:1061-7.
2. Burguera B,Gharib H. Thyroid incidentalomas. prevalance, diagnosis,significance and management.Endocrinol metab clin north am, 2000;29;187-203.
3. Mackenzie EJ, Mortimer RH. Thyroid nodule and thyroid cancer.MedJAust. 2004;180;242-7.
4. Darwish AH,AlSindiKA, El Kafsi J, Bacantab M.Pttern of thyroid disease-A histopathological study.Bahrain Medical Bulletin. 2006;28;1-6.
5. SushelC, Khanzada TW, Zulfikar I,SamadA. Histopathological pattern of diagnoses in patients undergoing thyroid operations.Rawal Med j; 2009;34;14-6.
6. Elahi S, Manzoor-ul-Hassan A, Syed Z, Nazeer L, Nagara SA, Hder SW. Astudy of goiter among female adolescents refrred to centre for nuclear medicine, Lahore. PakJ MedSci 2005;21;56-61.
7. Joseph E, Varghese A, Celine TM, Anna M, Usha P; Int journal of research in medical science; Astudy on histopathological pattern of thyroid lesions in a tertiary care hospital, Int j Res in Med sci, 2016 Dec;4(12);5252-5255.
8. Hussain N, Anwar. M, Naia N, Ali Z. Pttern of surgically treated thyroid diseases in Karachi. Biomedicall; 2005;21:18-20.
9. Rahman M A, Gogoi M, Goswami A; Thyroid nodule, int j contemporary Med research, 2017 June;4(6).
10. Chukudebelu O,Dias A,Timon C; Changing trends in thyroidectomy, ir med j 2012 jun;105(6);167-9.
11. Tsegaya B, Ergete W. Histopathological pattern of thyroid diseaas.East AfrMed J 2003;80:525-8.
12. Galofr JC, Lomvardias S, Davies TF. Evalauation and treatment of thyroid nodulesa clinical guide. MT. SinaiJ Med 2008;75:299-311.
13. Bouq YA, Fazilli FM, Gaffar HA. A current pattern of surgically treated thyroid diseases in the medinah region of Saudi Arabia.JK-practioner 2006;13;9-14.
14. Bukhari U,Saqid S.Histopathological audit of goiter; Astudy of 998 thyroid lesion. Pak J Med Sci 2008;24;442-6.
15. Ijomone EA, Duduyemi BM, Udoye E, Nwosu SO; Histopathological review of thyroid diseases in southern Nigeria-a ten year retrospective study, journal of medicine & medical sciences 2014 June;5(6):127-32.
16. Misiakos E, Margari N, Meristoudis C, Machairas N, Schizas D, Petropoulos K, Spathis A, Karakitsos P, Machairas A; World JCLin cases. 2016;4(2);38-48.
17. Raphael S, Yawale L, Mohammed AZ, Histopathological pattern of thyroid lesion in Kano, Nigeria: A 10 year retrospective review (2002-2011).NigerJ Basic clinSci 2015;12:55-60.
18. Sherine I, Layala s, Mohamed H, Jaudah A; Histopathological pattern of thyroid lesions in western region of Saudi Arabia; The new Egyptian journal of med; 2009 June;40(6):580-85.
19. Abdulkader A, Zeinab S, Akbar SH, Ahmed A; Histopathological patterns of thyroid disease in AlMadinah region of saudia Arabia, asian pacific journal of cancer prevention, 2015;15:3133-37.
20. Ariyibi O, Duduyemi BM, Akang E, Oluwasola O; Histopathological patterns of throid Neoplasms in Ibadan Nigeria: atwenty year retrospective study;int journal Tropical disease &health, 2013;3(2);148-56.
21. Olurin EO, Itrayemi SO, Oluwasanii JO, Ajayi OO. The pattern of throid gland diseases in Ibadan, Nigeria. Niger MedJ 1973;3;58-65.
22. Omran M, Ahmed ME. Carcinomaof thyroid in Khartoum. east Afr Med J, 1993;70(3);159-62.
23. Abulla H, Khalid A, Jihene El; Pattern of thyroid diseases-A histopathological study; Bahrain medical bulletin, 2006 Dec;28(4):1-6.
24. Ashwini K, Anitha B, Letha P. Pttern of thyroid disorder in thyroidectomy specimen.int J Med scie Pub Health. 2014:3;1446-8.
25. Anand A, Ranjan S, Jitendra K, NUzhat H, Abhinav arun. Papillary Thyroid Cancer and Hashimoto's Thyroiditis: An Association Less Understood. Indian J SurgOncol. 2014 sep;5(3);199-204.