International Journal of Research in Medical Sciences
Tabassum F et al. Int J Res Med Sci. 2023 Mar;11(3):819-823
www.msjonline.org
pISSN 2320-6071 | eISSN 2320-6012

DOI: https://dx.doi.org/10.18203/2320-6012.ijrms20230566

Original Research Article

The role of the initial modality in the investigation of thyroid lesions

Farzana Tabassum[1]*, Zafor M. Masud[2], Taslima Hossain[3], Saiyeda Sinthia Karim[4]

[1]Department of Pathology, Ibrahim Medical College, Dhaka, Bangladesh
[2]Department of Oncology, Bangladesh Medical College, Dhaka, Bangladesh
[3]Department of Histopathology, National Institute of ENT and Hospital Tejgaon, Dhaka, Bangladesh
[4]Department of Pathology, Dhaka Medical College, Dhaka, Bangladesh

Received: 19 January 2023
Revised: 08 February 2023
Accepted: 09 February 2023

***Correspondence:**
Dr. Farzana Tabassum,
E-mail: farzanapatho@gmail.com

ABSTRACT

Background: Partial or complete thyroidectomies are frequently encountered via the working towards pathologist and the opportunity of neoplastic disease is of principal problem in patients with thyroid nodules. Pathological comparison of these specimens ranged from non-neoplastic lesion to exceedingly aggressive malignancy. The aim of this study is to assess the role of the initial modality in the investigation of thyroid lesions.
Methods: This is an observational study. The study used to be carried out in the admitted patient's department of histopathology, National institute of ear, nose and throat, Dhaka. Bangladesh. In Bangladesh for the duration of the period from June 2021 to May 2022.
Results: This study shows that according to 301 patients where, most of the patients in initial modality in the investigation of thyroid lesions 95 (31.56%) were 40 to 49 years and the minimum sex distribution of study 105 (34.88%) belongs to males. Non-neoplastic of goiter were 194 (64.45%), benign cyst was 43 (14.29%), DeQuervains (Subacute) thyroiditis 11 (3.65%), Lymphocytic thyroiditis were 8 (2.65%) and hashimoto thyroiditis were 3 (1.0%). And acfemalesg to neoplastic of papillary carcinoma were 30 (9.97%), Follicular neoplasm were 9 (2.99%) and Anaplastic carcinoma were 3 (1.0%).
Conclusions: Thyroid lesions are more common in female. The majority of the thyroid nodules are either non-neoplastic or benign neoplasm. Thyroid lesions present a dependable analysis and is an incredible first line technique for investigating the nature of lesion.

Keywords: Thyroidectomies, Pathologist, Thyroid nodules, Non-neoplastic, Malignancy

INTRODUCTION

Diseases of thyroid gland are amongst the most plentiful endocrine disorders worldwide second only to diabetes.[1] Thyroid disorder is being increasingly more identified with increased cognizance and is one of the continual non-communicable diseases affecting women more, even though males are no longer spared of the ailment. The occurrence and sample of thyroid problems depend on a range of elements inclusive of sex, age, ethnic and geographical patterns.[2] Thyroid issues are four times extra in females than in males.[3] They are endemic in mountainous regions, the place the soil, water and food comprise little iodine.[4] Thyroid lesions vary from non-neoplastic to neoplastic. Multinodular goiter is the most common purpose of thyroid expansion accompanied with the aid of thyroid tumors. Most of the tumors are benign in nature, however can simulate malignancy.[5] Thyroid most cancers are an exceedingly uncommon malignancy, representing only 1.5% of all cancers, however it is the most common endocrine most cancers accounting for 92%

of all endocrine malignancies. Papillary carcinoma is the most frequent thyroid malignancy observed by using follicular carcinoma, medullary carcinoma, anaplastic carcinoma and lymphoma.[6] Very hardly ever the thyroid gland can additionally be the site of metastasis. The growing incidence of thyroid carcinoma warrants the need for establishments to supply a records base of its demographic and medical profile. Diseases of the thyroid are of extremely good significance due to the fact most are amenable to clinical or surgical management. They encompass stipulations related with immoderate launch of thyroid hormones (hyperthyroidism), these related with thyroid hormone deficiency (hypothyroidism), and mass lesions of the thyroid.[7] Thyroid surgical specimens, along with partial or entire thyroidectomies are regularly encountered by means of the working towards pathologist.[8] From a medical standpoint, the opportunity of neoplastic disorder is of essential challenge in patients who existing with thyroid nodules. Fortunately, the overwhelming majority of solitary nodules of the thyroid proved to be localized, non-neoplastic conditions (e.g., nodular hyperplasia, easy cyst or foci of thyroiditis).[9] An estimated 4% of the adult population is affected via one or extra palpable thyroid nodules, most of these nodules are benign.[10] Overall, thyroid nodules are greater frequent in women, in older individuals, in these with records of radiation exposure, or these with sure diets wealthy in goitrogens or deficient in iodine.[11] The aim of this study is to assess the role of the initial modality in the investigation of thyroid lesions.

METHODS

This is an observational study. The study used to be carried out in the admitted patient's department of histopathology, national institute of ear, nose and throat (ENT), Dhaka. Bangladesh. In Bangladesh for the duration of the period from June 2021 to May 2022. A total of 301 patients were chosen at random for the study, the population including male and female patients above 20 years of age in the department of histopathology, National institute of ear, nose and throat, Dhaka. Bangladesh. The medical pediatricians, neonatologist and the surgeon were primarily involved in the decision-making process. Some cases that had inadequate cytologic findings were excluded, and the accuracy was studied in the remaining population. The choice of treatment was made by the patient after a full discussion with the multidisciplinary team consisting of pediatricians, neonatologists and pediatric endocrinologists and surgeons. The data for this study about had been accumulated from patients' medical information and radiographs. Statistical evaluation of the results used to be got via the use of a window-based computer software program devised with statistical packages for social sciences (SPSS-24).

RESULTS

Most of the patients in initial modality in the investigation of thyroid lesions 95 (31.56%) were 40 to 49 years and the minimum sex distribution of study 105(34.88%) belongs to males (Table 1). Distribution of the study according to FNAC is depicted in (Table 2).

Table 1: Demonstrate and distribute the study according to age and sex (n=301).

Parameters	N	%
Age distribution (years)		
20-29	30	9.97
30-39	85	28.23
40-49	95	31.56
50-59	68	22.59
≥60	23	7.64
Sex distribution		
Male	105	34.88
Female	196	65.12

Table 2: FNAC findings of the study (n=301).

FNAC Diagnosis	N	%
Non-neoplastic		
Goiter	194	64.45
Benign cyst	43	14.29
DeQuervains (Subacute) thyroiditis	11	3.65
Lymphocytic thyroiditis	8	2.65
Hashimoto thyroiditis	3	1.0
Neoplastic		
Papillary carcinoma	30	9.97
Follicular neoplasm	9	2.99
Anaplastic carcinoma	3	1.0

According to non-neoplastic of goiter were 194 (64.45%), Benign cyst were 43 (14.29%), DeQuervains (Subacute) thyroiditis 11 (3.65%), lymphocytic thyroiditis were 8 (2.65%) and Hashimoto thyroiditis were 3(1.0%) and according to neoplastic of papillary carcinoma were 30 (9.97%), follicular neoplasm were 9 (2.99%) and Anaplastic carcinoma were 3 (1.0%). Distribution of the study according to results of the patients of FNAC with histopathological correlation is depicted in (Table 3).

Table 3: Results of the patients of FNAC with histopathological correlation (n=301).

FNAC Diagnosis	Histolopathologic findings		Total
	Non-neoplastic	Neoplastic	
Non-neoplastic	20	3	23
Neoplastic	3	40	43
Total	23	43	66

FNAC diagnosis and histolopathologic findings corelated with each other. According to FNAC Diagnosis and histolopathologic findings of non-neoplastic and non-neoplastic were 20%, non-neoplastic and neoplastic were 3%, neoplastic and non-neoplastic were 3%, neoplastic and neoplastic were 40%. Distribution of the study

according to statistical analysis for detection of malignant lesions is depicted in (Table 4).

Table 4: Statistical analysis for detection of malignant lesions.

FNAC Diagnosis	%
Sensitivity	85.3
Specificity	92.7
PPV	7.50
NPV	14.20
Accuracy	89.0

According to FNAC diagnosis the sensitivity, specificity, PPV, NPV and Accuracy were 85.3%, 92.7, 7.50, 14.20 and 89.0 respectively.

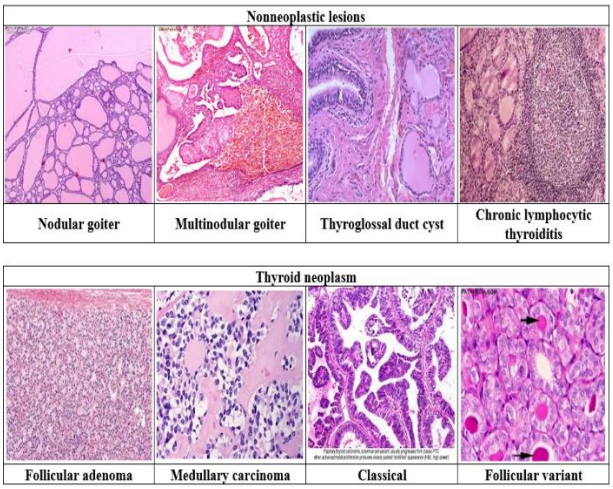

Figure 1: Histopathological evaluation.

DISCUSSION

According to WHO, 7% of the world population is struggling from clinically obvious goiter. Majority of these patients are from developing countries where the diseases is attributed to iodine deficiency.[13] Thyroid expansion can also be in the structure of multinodular, solitary or diffuse goiter. Thyroid illnesses are normally greater ordinary in females.[14] Benign neoplasms outnumber thyroid carcinomas by means of a ratio of nearly 10:1. In our study, according to non-neoplastic of goiter were 194 (64.45%), Benign cyst were 43 (14.29%), DeQuervains (Subacute) thyroiditis 11 (3.65%), lymphocytic thyroiditis were 8 (2.65%) and hashimoto thyroiditis were 3 (1.0%). According to neoplastic of papillary carcinoma were 30 (9.97%), Follicular neoplasm were 9 (2.99%) and Anaplastic carcinoma were 3 (1.0%). The burden of thyroid diseases in the general population is enormous. The epidemiology of thyroid diseases in iodine-appropriate areas offers ordinarily with sporadic goiter, thyroid autoimmune diseases, and thyroid cancer. As pronounced in North America 50% of humans in the neighborhood have microscopic nodules, 15% have palpable goiter and 3.5% have occult papillary carcinoma.[15] The incidence of Multinodular goiter (MNG) differs in accordance to the countries and looks to be extensively structured on the iodine status. Many authors proven the idea that thyroid disorder is greater usual in females.[16] The girls in our MNG collection (n=311) symbolize 81.7%, whilst in comparable learn about in Yemen they signify 92.5%. The mean age of our study (39.4 years) was once concurrent with the age in the Yemanien find out about (35.2 years). According to some published articles from distinctive countries (7-12) in order to set up the incidence of carcinoma, 7-17% of the patients operated for goiter, in the course of the histopathological examination, a sample of MNG related to carcinoma was once evidenced. In this study, according to Results of the patients of FNAC with histopathological correlation (n=301). FNAC diagnosis and histolopathologic findings corelated with each other. According to FNAC diagnosis and histolopathologic findings of non-neoplastic and non-neoplastic were 20%, Non-neoplastic and Neoplastic were 3%, neoplastic and non-neoplastic were 3%, neoplastic and neoplastic were 40%. Hashimoto thyroiditis (HT) is an autoimmune inflammatory ailment characterized through significant lymphocyte infiltration, fibrosis, and parenchymal atrophy and oxyphilic changes. HT influences about 5% of the population, is generally identified in the fourth to sixth decade of life and is about 15 instances greater frequent in women. Historically, the presence of HT used to be thinking to amplify the danger of creating thyroid lymphoma. In 1955, Dailey and colleagues suggested a multiplied affiliation between HT and PTC, however not lymphoma.[17] Since this preliminary report, the causal affiliation of the two ailments stays controversial, with a number authors reporting no affiliation between HT and PTC whilst others describe a variable frequency as excessive as 38%.[14,17,18] Sulimani et al suggested that 10 out of 81 patents with thyroid carcinoma had coexisting Hashimoto's thyroiditis documented histologically.[19] This affiliation was once currently owed to the frequent RET/PTC gene rearrangement shared between the two stipulations in close to 95% of cases.[20] This has led to the inspiration through one of these corporations to think about these instances as being affected via PTC even if no longer microscopically seen. In our study, according to FNAC Diagnosis the Sensitivity, Specificity, PPV, NPV and Accuracy were 85.3%, 92.7, 7.50, 14.20 and 89.0 respectively. The epidemiology of follicular adenoma (FA) is tough to analyze due to the fact of the lack of consistent criteria for distinguishing hyperplastic nodules and adenomas.[21] Solitary thyroid nodules occur in 4-7% of adults in iodine sufficient areas. In iodine deficient areas, the rate can increase to 50%. In our learn about as properly as internationally women are greater regularly affected than males.[22] Whereas, the chance for development to malignancy in men is surprisingly greater. Many histologic versions of FA have been recognized.[23],After exclusion of the follicular versions of different tumors, follicular carcinoma (FC) turns into rather uncommon tumor, it accounts for 10-15% of clinically evident thyroid malignancy. It is greater in women, and tends to happen in

patients in the fifth decade.[24, 25] FC represents 5.1% of the malignant instances in our study with female to male ratio 2.3: 1. The age used to be extra than that encountered in PTC (mean 41 years). Thyroid amplification in the form of solitary, histopathologist. multinodular or diffuse goiter is mysteriously frequent surgical problem and affect approximately one-third of adult world population.[26] Today thyroidectomy is a routine process because of the introduction of safe anesthesia, antiseptics, fine surgical instruments and developments of new techniques, offering the chances of treatment to many patients. These results are maintained with 7-9 10 some local studies as well as studies from Yemen and East Africa whereas some other local studies reported a significantly high incidence of thyroid malignancies, observed in about 26% to 36.6% of 12-14 patients respectively.[27]

Limitations

The present study was conducted in a very short period due to time constraints and funding limitations. The small sample size was also a limitation of the present study.

CONCLUSION

In conclusion, thyroid lesions are relatively a common disease in Bangladesh. Thyroid lesions are more common in female. Thyroid lesions present a dependable analysis and is an incredible first line technique for investigating the nature of lesion. The majority of the thyroid nodules are either non-neoplastic or benign neoplasm.

Recommendations

This study can serve as a pilot to much larger research involving multiple centers that can provide a nationwide picture, validate regression models proposed in this study for future use and emphasize points to ensure better management and adherence.

ACKNOWLEDGEMENTS

Authors would like to thank all their colleagues for supporting the current study.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: The study was approved by the Institutional Ethics Committee

REFERENCES

1. Kochupillai N. Clinical endocrinology in India. Curr Sci. 2000;79(8):1061-7.
2. Bayliss RIS, Tunbridge WMG. Thyroid disease: the facts. USA: Oxford University Press; 1998
3. Mackenzie EJ, Mortimer RH. Thyroid nodules and thyroid cancer. Med J Aus. 2004;180(5):242-7.
4. Orlov D. Thyroid nodules. Am Fam Physician. 2000; 67(3):559-66.
5. Elahi S, Manzoor-ul-Hassan A, Syed Z, Nazeer L, Nagra S, Hyder S. A study of goiter among female adolescents referred to centre for nuclear medicine, Lahore. Pak J Med Sci. 2005;21(1):56-62.
6. Hussain N, Anwar M, Nadia N, Ali Z. Pattern of surgically treated thyroid diseases in Karachi. Biomedica. 2005;21(1):18-20.
7. Darwish AH, Al Sindi KA, El Kafsi J, Bacantab M. Pattern of thyroid diseases-a histopathological study. Bahrain Med Bull. 2006;28(4):1-6.
8. Sushel C, Khanzada TW, Zulfikar I. Histopathological pattern of diagnoses in patients undergoing thyroid operations. Rawal Med J. 2009;34(1):1-7.
9. Maitra A, Abbas AK. Endocrine system. In: Robbins and Cotran pathologic basis of disease. USA: Elsevier; 2002.
10. Faquin WC. The thyroid gland: recurring problems in histologic and cytologic evaluation. Arch Pathol Lab Med. 2008;132(4):622-32.
11. Rossi ED, Raffaelli M, Mule' A, Miraglia A, Lombardi CP, Vecchio FM, Fadda G. Simultaneous immunohistochemical expression of HBME-1 and galectin-3 differentiates papillary carcinomas from hyperfunctioning lesions of the thyroid. Histopathology. 2006;48(7):795-800.
12. Wang C, Crapo LM. The epidemiology of thyroid disease and implications for screening. Endocrinol Metab Clin North Am. 1997;26(1):189-218.
13. Morganti S, Ceda GP, Saccani M, Milli B, Ugolotti D, Prampolini R, Maggio M, Valenti G, Ceresini G. Thyroid disease in the elderly: sex-related differences in clinical expression. J Endocrinol Invest. 2005; 28(11):101-4.
14. Al-Hureibi KA, Abdulmughni YA, Al-Hureibi MA, Al-Hureibi YA, Ghafoor MA. The epidemiology, pathology, and management of goitre in Yemen. Ann Saudi Med. 2004;24(2):119-23.
15. Cole WH, Watne AL. Incidence of carcinoma of the thyroid in nodular goiter. In: surgical oncology. New York: John Wiley & Sons, Inc; 2002:7(2);61-3.
16. Koh KB, Chang KW. Carcinoma in multinodular goitre. Br J Surg. 1992;79(3):266-7.
17. Mathai V, Idikula J, Fenn AS, Nair A. Do long-standing nodular goitres result in malignancies? Aust N Z J Surg. 1994;64(3):180-2.
18. Gandolfi PP, Frisina A, Raffa M, Renda F, Rocchetti O, Ruggeri C, Tombolini A. The incidence of thyroid carcinoma in multinodular goiter: retrospective analysis. Acta Biomed. 2004;75(2):114-7.
19. Sachmechi I, Miller E, Varatharajah R, Chernys A, Carroll Z, Kissin E, Rosner F. Thyroid carcinoma in single cold nodules and in cold nodules of multinodular goiters. Endocr Pract. 2000;6(1):5-7.
20. Gandolfi PP, Frisina A, Raffa M, Renda F, Rocchetti O, Ruggeri C, Tombolini A. The incidence of thyroid carcinoma in multinodular goiter: retrospective analysis. Acta Biomed. 2004;75(2):114-7.
21. Saeed MI, Hassan AA, Butt ME, Baniyaseen KA, Siddiqui MI, Bogari NM, Al-Allaf FA, Taher MM. Pattern of Thyroid Lesions in Western Region of Saudi

Arabia: A Retrospective Analysis and Literature Review. J Clin Med Res. 2018;10(2):106-16.
22. Cipolla C, Sandonato L, Graceffa G, Fricano S, Torcivia A, Vieni S, Latteri S, Latteri MA. Hashimoto thyroiditis coexistent with papillary thyroid carcinoma. Am Surg. 2005;71(10):874-8.
23. Dailey ME, Lindsay S, Skahen R. Relation of thyroid neoplasms to Hashimoto disease of the thyroid gland. AMA Arch Surg. 1955;70(2):291-7.
24. Larson SD, Jackson LN, Riall TS, Uchida T, Thomas RP, Qiu S, Evers BM. Increased incidence of well-differentiated thyroid cancer associated with Hashimoto thyroiditis and the role of the PI3k/Akt pathway. J Am Coll Surg. 2007;204(5):764-73.
25. Sulimani RA. Thyroid cancer coexisting with Hashimoto's thyroiditis at King Khalid University Hospital, Saudi Arabia. East Afr Med J. 1996;73(11): 767-8.
26. Singh B, Shaha AR, Trivedi H, Carew JF, Poluri A, Shah JP. Coexistent Hashimoto's thyroiditis with papillary thyroid carcinoma: impact on presentation, management, and outcome. Surgery. 1999;126(6): 1070-7.
27. Sheils O, Smyth P, Finn S, Sweeney EC. RET/PTC rearrangements in Hashimoto's thyroiditis. Int J Surg Pathol. 2002;10(2):167-8.

Cite this article as: Tabassum F, Masud ZM, Hossain T, Karim SS. The role of the initial modality in the investigation of thyroid lesions. Int J Res Med Sci 2023;11:819-23.