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A clinico-pathological study of neoplastic thyroid disease

Sonali Ohri[1], Jitendra Narayan Senapati[2], Binay Mihir Kunar[2*], Jyoti Ranjan Pani[2], Ashwariya Ohri[3]
[1] Post graduate Resident, Department of General Surgery, IMS & SUM Hospital, Bhubaneswar, Odisha, India
[2] Professor, Department of General Surgery, IMS & SUM Hospital, Bhubaneswar, Odisha, India
[3] MBBS Student, Hamdard Institute of Medical Sciences, New Delhi, India

Abstract
Background: Clinically thyroid disease is of utmost importance, since in most of the cases it responds well to surgical or therapeutic management. The main objective of the study was to study the clinico-pathological pattern of thyroid neoplasm and the accuracy of FNAC in thyroid neoplasm.
Materials and methods: This was a prospective and retrospective study on 154 patients affected with neoplasms of thyroid gland, diagnosed and treated in SUM Hospital from the period of July 2018 to June 2020. All histologically proven neoplasms both benign and malignant were included in the study. The evaluation such as thyroid function test, FNAC and final histopathology were done in all cases.
Results: In this study, out of 154 cases 120 cases were benign and 34 cases were malignant. Majority of the patients were in the age range between 21-40 years and female preponderance was observed in the study. The majority of benign cases were follicular adenoma and in malignant cases papillary thyroid carcinoma (PTC) was commonly found in 79.4% of patients. In benign majority of the cases underwent hemi thyroidectomy and in malignant cases total thyroidectomy was seen in most of the patients. The diagnostic accuracy of FNAC in detecting benign tumor and malignant tumor was found to be 98.3% and 94.11%. The cervical node was higher in PTC cases.
Conclusion: The incidence of thyroid cancer was 22.1%. In benign tumor, maximum number of follicular adenoma cases was observed and in malignancy PTC was more prevalent.

Keywords: thyroid cancer, FNAC, follicular adenoma, papillary thyroid cancer

Introduction

Among the various endocrine organs, thyroid is large and orchestrates an important role in the body metabolism. The characteristic feature of thyroid tumor is that the both neoplastic and non-neoplastic pathologies can develop into diffuse or nodular enlargement. Most of the thyroid swellings are non-neoplastic, only <5 % are malignant and the non-neoplastic lesions are commonly observed in thyroid pathologies such as goitre, thyroiditis and Grave's disease [1]. According to GLOBOCAN 2018 data, thyroid cancer is responsible for 567,000 cases globally, ranked ninth according to the incidence. The global estimated prevalence of thyroid cancer in females and male is reported to be 1%–5% and 2% respectively [2]. In India, as per the Report of National Cancer Registry Programme, 2020 the incidence of thyroid cancer is 2.5 (1 in 416). The incidence in male is 1.2% (1 in 759) and in females it is 3.8% (1 in 285) respectively [3].

The malignant and non-malignant thyroid lesions are characterized with the presence of nodule. Benign thyroid nodule is highly prevalent in most of the cases, so it is imperative to identify the patients who can be benefited from surgery and thus unnecessary diagnostic surgery can be avoided in all cases. The various diagnostic modalities encompass clinica examination, measurement of thyroid hormones level, USG and fine needle aspiration cytology (FNAC). Among the various diagnostic methods, FNAC is the most superior procedure with high sensitivity and specificity and generally used as a primary screening tool for thyroid nodule diagnosis [4, 5].

However, the accuracy of FNA is depended on many contributing factors such as aspirator experience, accurate knowledge in the cytological interpretation and collection of cytological and clinical data for individual patient [6]. In this backdrop, the present study was carried out to analyse the clinico-pathological pattern of thyroid tumours in SUM Hospital over a period of 24 months.

Materials and Methods

This was a both prospective and retrospective study 154 patients affected with neoplasms of thyroid gland, diagnosed and treated in SUM Hospital from the period of July 2018 to June 2020. All histologically proven neoplasms both benign and malignant were included in the study.

The demographics such as age and sex distribution along with the clinical presentation of thyroid tumors, thyroid function test, evaluation by ultrasound, FNAC and final histopathology, postoperative complications were evaluated. Prevalence of malignancy was also evaluated.

Results

The present study encompasses both benign and malignant histologically confirmed thyroid tumors of 154 cases. It included both prospective (146 cases) and retrospective (6+2 cases). In this study, out of 154 cases 120 cases were benign and 34 cases were malignant.

Regarding age, among the benign tumor cases, majority of the patients were in age group between 21-40 years, comprising of 70% and in malignant cases 61.76 % cases were in the age group between 21-40 years. Regarding

gender female preponderance was observed in the present study, encompassing 93.5% and 85.29 % of females among the benign and malignant cases respectively.

Characteristics of benign thyroid tumour

Among the 120 benign thyroid tumors, 118 cases were follicular adenoma. Thus most common benign tumor of thyroid in our study was follicular adenoma. Further, among the follicular adenoma, 86.44% were the general follicular type which was more common.

Regarding the clinical presentations, painless lump was most common which was present in 87.5% of patients.

The FNAC analysis of 120 cases of benign thyroid tumors reveals that, 118 cases True positive and 2 cases were false negatives. The diagnostic accuracy of FNAC in detecting benign tumor was found to be 98.3% with false negative rate of 1.7% and no false positivity. All false negative patients who were diagnosed MNG underwent surgery due to clinical suspicion ad it was found to be follicular adenoma. The results were shown in table 1.

Table 1: FNAC of Benign Tumor

Total No of patients	FNAC True positives (n)	FNAC false negatives (n)
120	118	2

Based on the FNAC diagnosis and clinical impression, out of 116 patients (96.6%) underwent Hemi Thyroidectomy and 2 patients (1.66%) underwent subtotal thyroidectomy.

Regarding post-operative complications 10 patients developed hoarseness of voice and became normal after regular follow-up. No mortality was observed in none of the patients.

Characteristics of malignant thyroid tumour

Analysing the age profile with type of cancer, following facts were observed. Papillary carcinoma occurred at all age groups with peak incidence in 4th decade. Follicular carcinoma observed most commonly in 6th decade.

Based on the histopathological analysis, papillary carcinoma was commonly found in 79.4% of patients followed by follicular carcinoma in 11.76%. The results were shown in table 2.

Table 2: Type of Malignancy based on the histopathology diagnosis

Type of Malignancy	No of patients	%
Papillary Carcinoma	27	79.4
Follicular Carcinoma	4	11.76
Anaplastic Carcinoma	1	2.94
Medullary Carcinoma	1	2.94
Lymphoma	1	2.94

Regarding, the type of cancer with age incidence, papillary carcinoma was observed in all age groups with peak incidence in 4th decade. Follicular carcinoma observed most commonly in 6th decade.

The most common clinical presentation among the malignant thyroid patients was painless lump which was observed in 64.7% of patients and followed by cervical node enlargement in 35.28%. The results were shown in table 3.

Table 3: Clinical presentation of malignant thyroid tumors

Signs & Symptoms	No. of Patients	%
Painless Lump	22	64.7
Painful Lump	3	8.8
Cervical Node Enlargement	12	35.28
Lump + Dysphagia	1	2.94
Lump + Palpitation	1	2.94

FNAC was performed in all malignant thyroid patients. Results of FNAC showed that 32 cases were diagnosed as malignant, but on final HPE of other 2 patients in whom surgery was done under clinical suspicions showed the features of papillary carcinoma, thus, there were 2 False Negatives. The diagnostic accuracy of FNAC in the detection of malignant thyroid tumor was 94.11%. The results were shown in table 4.

Table 4: FNAC of Malignant Tumor

Total No of Patients	FNAC True positives (n)	False Negative (n)	False negatives (n)
34	32	-	2

Regarding the management of thyroid malignancy, majority of the patients were subjected to total thyroidectomy (17 cases), followed by total thyroidectomy and functional neck dissection in 12 cases and hemi thyroidectomy in 5 cases. The results were shown in table 5.

Table 5: Management of Malignant Tumours

Type of Surgery	Number of patients
Total Thyroidectomy	17
Total Thyroidectomy + Functional Neck Dissection	12
Hemi Thyroidectomy	5

Among the 34 malignant cases, the cervical node involvement was seen in 10 cases of papillary carcinoma. The results were shown in table 6.

Table 6: Cervical Node involvement in Thyroid Neoplasm

Type of Cancer	Cervical Node involvement (n)
Papillary	10
Follicular	-
Medullary	1
Lymphoma	1

Patient diagnosed to have medullary carcinoma of thyroid was screened for multiple endocrine neoplasms in the follow-up found to be normal. Follow-up of other patients treated for other thyroid cancer is regular and follow-up period ranges from 6 months to 2 years. In our study, 80% came for follow-up. Irrespective of the cancer type of surgery done, there was no recurrence of the tumor till date.

Discussion

The present study was done to evaluate the clinico pathological pattern of thyroid neoplasms. In this study 154 cases of thyroid lesions were evaluated of 120 cases (77.92%) were benign and 34 cases were malignant. Similar to our report in a study conducted by Munjal *et al* [7]. Among the 80 cases, 77.5% are benign. Majority of the patients in benign and malignant category, belong to the age range between 21-40 years, similarly in a study done by

Akshatha *et al*. majority of the cases are in the age range between 20-50 years. Female preponderance is observed in our study and it is most common in the case of thyroid disease. Similarly mounting studies, displayed female preponderance in the thyroid tumors [9, 10].

In our study histopathology analysis of benign cases reveals the majority of follicular adenoma type of tumor. Tohidi *et al*., [11] in his 8 year analytical study showed that follicular adenoma is the most commonly observed condition among the malignant cases.

In our study, histopathology analysis of malignant cases reveals that the papillary carcinoma is the most commonly found pathology. Similarly in Kartha *et al*. [12] and Munjal *et al*.[7] study the papillary carcinoma is the most commonly observed malignancy among the thyroid cases. Recently, s study done by Galuppini *et al*. there was marked increase in papillary carcinoma prevalence from 1992-2017 (55% - 85%).

In our study, the major indication for benign tumor is hemi thyroidectomy which performed in 96.6% of patients. Our report is in accordance with the study done by Munjal *et al*. where 51.2% underwent hemi thyroidectomy as a part of surgical treatment. Meanwhile for malignant cases the major surgical intervention is total thyroidectomy in 50% of the patients. Previous reports highlights that total thyroidectomy is the best surgical modality in malignant cases with thyroid nodules of > 1cm and intermediate large nodules with size larger than 4cm and also in cases with previous family history of thyroid cancer [14].

In our study, the diagnostic accuracy of FNAC for benign and malignant tumors is 98.3% and 94.11% respectively. Similar to our findings, Luck *et al* [15] and Sharma *et al* [4]. Reported a diagnostic accuracy of 95.65% and 90% respectively.

In 10 cases of papillary thyroid carcinoma, we have observed cervical node involvement. 80–Around 85% of PTC are designated to be papillary thyroid carcinoma (PTC). The incidence range of cervical node metastasis in PTC is around 40-90% [16]. The high recurrence rate in PTC is mainly due to the high risk cervical lymph node metastasis [17].

Conclusion

The incidence of thyroid cancer is 22.1% in our hospital among the patient with thyroid neoplasm. PTC is more prevalent among the study subjects. In our study FNAC provides marked diagnostic accuracy in the identification of thyroid carcinoma.

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Conflict of interest: None to Declare

References

1. Sukumaran R, Kattoor J, Pillai KR, Ramadas PT, Nayak N, Somanathan T, *et al*. Fine Needle Aspiration Cytology of Thyroid Lesions and its Correlation with Histopathology in a Series of 248 Patients. Indian J Surg Oncol. 2014; 5(3):237-41.
2. Goodarzi E, Moslem A, Feizhadad H, Jarrahi AM, Adineh HA, Sohrabivafa M *et al*. Epidemiology, incidence and mortality of thyroid cancer and their relationship with the human development index in the world: an ecology study in 2018. Advances in Human Biology. 2019; 9(2):162.
3. Mathur P, Sathishkumar K, Chaturvedi M, Das P, Sudarshan KL, Santhappan S *et al*. ICMR-NCDIR-NCRP Investigator Group. Cancer Statistics, 2020: Report from National Cancer Registry Programme, India. JCO Glob Oncol. 2020; 6:1063-1075.
4. Sharma R, Verma N, Kaushal V, Sharma DR, Sharma D. Diagnostic accuracy of fine-needle aspiration cytology of thyroid gland lesions: A study of 200 cases in Himalayan belt. J Can Res Ther. 2017; 13:451-5.
5. Bagga PK, Mahajan NC. Fine needle aspiration cytology of thyroid swellings: How useful and accurate is it?. Indian J Cancer. 2010; 47:437-42.
6. Handa U, Garg S, Mohan H, Nagarkar N. Role of fine needle aspiration cytology in diagnosis and management of thyroid lesions: A study on 434 patients. J Cytol. 2008; 25(1):13.
7. Munjal M, Tuli N, Rishi P, Singh H, Talwar S, Sharma S, *et al*. Profile of thyroid lesions presenting at a tertiary care health centre of North India: 2-year pilot study (2018-2019). Int J Community Med Public Health. 2020; 7:1717-20.
8. Akshatha N, Patil S, Bommanahalli BP. Clinical and cytological spectrum of thyroid lesions and the role of fine needle aspiration cytology in its diagnosis at a tertiary care hospital. Trop J Path Micro. 2019; 5(8):523-528.d.
9. Thomas T, Sreedharan S, Khadilkar UN, Deviprasad D, Kamath MP, Bhojwani KM, *et al*. Clinical, biochemical & cytomorphologic study on Hashimoto's thyroiditis. Indian J Med Res. 2014; 140(6):729-35.
10. Unnikrishnan AG, Menon UV. Thyroid disorders in India: An epidemiological perspective. Indian J Endocrinol Metab. 2011; 15(6):78.
11. Tohidi M. Thyroid CA in Children and Adolescents – Hormones (Athens) Pazaitiou – Panaviotou. K. 2005; 4(4):213-20.
12. Kartha PP, Sadasivan S. Spectrum of thyroid lesion and its clinicopathological correlation--a two year study from a tertiary care centre. J Med Sci Clin Res. 2017; 5(7):25615-2.
13. Galuppini F, Pennelli G, Rugge M. The rising incidence of papillary thyroid cancer: More cancers or more assessments?. Indian J Cancer. 2019; 56:183-4.
14. Vassiliou I, Tympa A, Arkadopoulos N, Nikolakopoulos F, Petropoulou T, Smyrniotis V. Total thyroidectomy as the single surgical option for benign and malignant thyroid disease: a surgical challenge. Arch Med Sci. 2013; 9(1):74-8.
15. Luck CP, Srirangaramasamy J, Balamurugan M, Arumugam B, Padmavathy A, Revathy R. Evaluation of diagnostic accuracy of FNAC and correlation with histopathology in thyroid lesions. Trop J Path Micro. 2017; 3(2):96-101.
16. Lundgren CI, Hall P, Dickman PW, Zedenius J. Clinically significant prognostic factors for differentiated thyroid carcinoma: a population-based, nested case-control study. Cancer. 2006; 106(3):524-31.
17. Moo TA, McGill J, Allendorf J, Lee J, Fahey T 3rd, Zarnegar R. Impact of prophylactic central neck lymph node dissection on early recurrence in papillary thyroid carcinoma. World J Surg. 2010; 34(6):1187-91.