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Original Research Article

Clinicopathological evaluation of thyroid swelling in patient attending Hamidia Hospital Bhopal

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ABSTRACT

Background: The prevalence of thyroid nodule ranges from 4-10% in general population. Its treatment includes either conservative management or surgical excision of gland. Fine needle aspiration cytology (FNAC) has emerged as most accepted, accurate diagnostic procedure and considered the gold standard diagnostic test in evaluation of thyroid nodule, other tests like ultrasound, nuclear scan used in conjunction with FNAC. The aim of study was to study the spectrum of diseases in thyroid swelling and accuracy of FNAC in the diagnosis.
Methods: A prospective study, with total 50 patients, was conducted during period from 2017-2019 in department of surgery, Gandhi Medical College Bhopal. All patients who underwent thyroid surgeries were selected for study. All patients underwent detailed history, clinical examination, routine investigations, thyroid function test, FNAC, ultrasonography neck and histopathological examination.
Results: Of 50 cases female to male ratio was 9.2:1, with median age group was 38.6 years. Among all, 42 (84%) were benign, 3 (6%) malignant and 5 (10%) suspicious. Of 5 suspicious lesions, only 1 (5%) case found malignant. Hemi thyroidectomy was common surgery performed, followed by subtotal/near total and total thyroidectomy.
Conclusions: Thyroid swellings are common in females occur in 3rd and 4th decade most commonly. FNAC is very useful and indispensable in the diagnosis. Most common non neoplastic and neoplastic lesion was solitary thyroid nodule and papillary carcinoma respectively.

Keywords: FNAC, Histopathological examination, Subtotal thyroidectomy, USG

INTRODUCTION

The normal thyroid gland is impalpable, situated in the anterior aspect of neck. The term ‘goiter’ describes enlargement of the thyroid gland. Goiter commonly develops as a result of biosynthetic defects, iodine deficiency, autoimmune disease, and nodular diseases. Graves' disease and Hashimoto's thyroiditis are also associated with goiter. Both benign and malignant lesions of thyroid commonly present with a nodule. Various forms of thyroid cancer are relatively common and are amenable to detection by physical examination.

The prevalence of thyroid nodule ranges from 4-10% in general adult population and from 0.2% to 1.2% in children.[1,2] Now a day due to common use of ultra sonography in the clinical practice the incidence of thyroid nodule has risen to 14-50%.[2-4] The benign lesions are more common in thyroid and less than 5% are actually malignant.[2,4] In India scenario is quite different. India has words biggest “goiter belt” in the sub Himalayan belt and average prevalence of goiter is around 40%. Though goiter is quite common, cancer of thyroid comparatively rare constituting less than 1% cancer.[5]

Lesions of thyroid are predominantly confined to females in the ratio of 5:1, this has been attributed to variation of thyroid hormones during female reproductive function and physiological events such as puberty, pregnancy and lactation.[2,5] Benign nodules can be caused by adenomas, colloid nodules, cysts, infectious nodules, lymphocytic or granulomatous thyroiditis, hyperplastic nodules and congenital anomalies.

Malignant nodules are classified as Dunhill classification

- Differentiated
  - Papillary carcinoma
  - Follicular carcinoma
  - Papillofollicular carcinoma variant of papillary carcinoma
  - Hurthle cell carcinoma behaves like follicular carcinoma
- Undifferentiated
  - Anaplastic carcinoma
- Medullary carcinoma
- Malignant lymphoma
- Secondaries in thyroid (rare)

Differentiated tumors, such as papillary thyroid cancer (PTC) or follicular thyroid cancer (FTC), are often curable, and the prognosis is good for patients identified with early stage disease. A multitude of diagnostic tests, such as CT, thyroid ultrasound, thyroid nuclear scan and fine needle aspiration cytology (FNAC) is available to the clinician for the evaluation of thyroid nodule.

FNAC is the study of cells obtained by fine needle under vaccum. Some cells with little tissue fluid are sufficient to make a morphological diagnosis. It has emerged as the most accepted, accurate diagnostic procedure which is easy, quick and cost effective and cosmetically sound.[1,6-8] The technique is particularly good for detecting PTC.

The major limitation of FNAC is that it cannot differentiate between follicular adenoma and carcinoma. In this study, much emphasis was placed on the clinical presentation of thyroid swellings and the role of pathological investigations specifically FNAC, management of thyroid swellings.

METHODS

A single institution study was done from 2017 to 2019 in the Department of Surgery, Gandhi Medical College Bhopal. All the patients who underwent thyroid surgeries were selected for the study. Xlstat software was used for data analysis.

All patients with thyroid swelling present at Hamidia Hospital, Bhopal were included in the study, patients who did not underwent thyroid surgery were excluded from the study.

Thyroid US should not be performed as a screening test. All patients with a palpable thyroid nodule, however, should undergo US examination. US-guided FNA (US-FNA) is recommended for nodules ≥10 mm; US-FNA is suggested for nodules <10 mm only if clinical information or US features are suspicious. Total and hemi thyroidectomy were performed according to type of thyroid swelling. All the patient operated under general anaesthesia Kocher's position. After surgery specimen were send for histopathological examination. The revised guidelines for the management of thyroid nodules include recommendations regarding initial evaluation, clinical and ultrasound criteria for fine-needle aspiration biopsy, interpretation of fine-needle aspiration biopsy results, use of molecular markers, and management of benign thyroid nodules.

RESULTS

This was a study of fifty patients during the period of three years in the Gandhi Medical College and Hamidia Hospital, Bhopal who underwent thyroid surgeries.

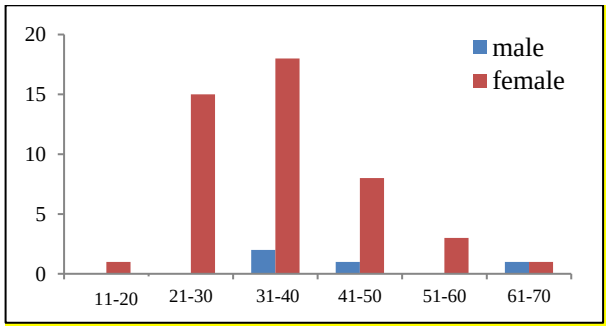

Figure 1: Age wise distribution of cases.

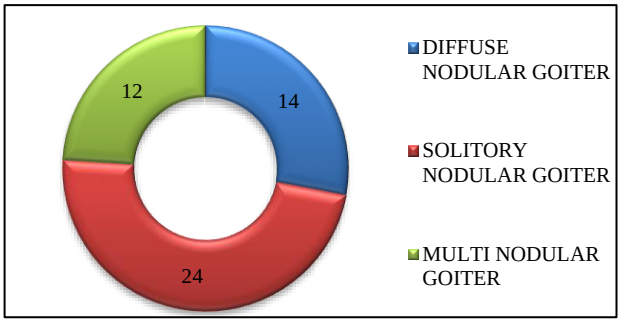

Figure 2: Clinical presentation: out of 50 patients.

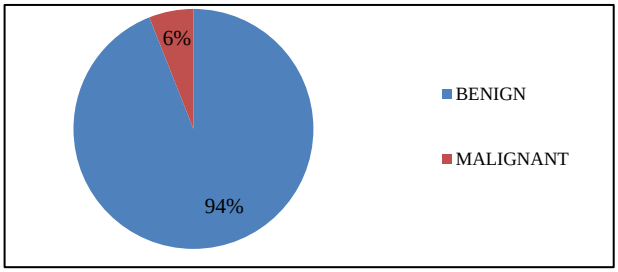

Figure 3: USG finding of thyroid swelling.

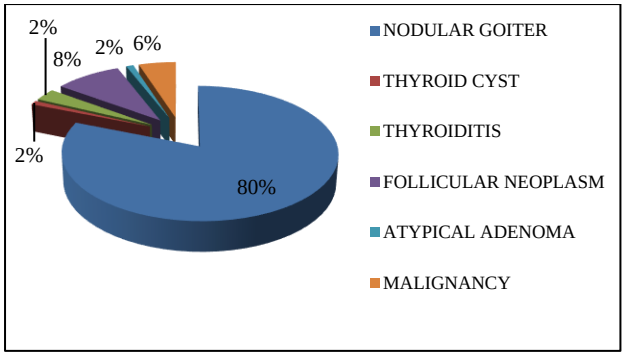

Figure 4: The FNAC results of thyroid swelling.

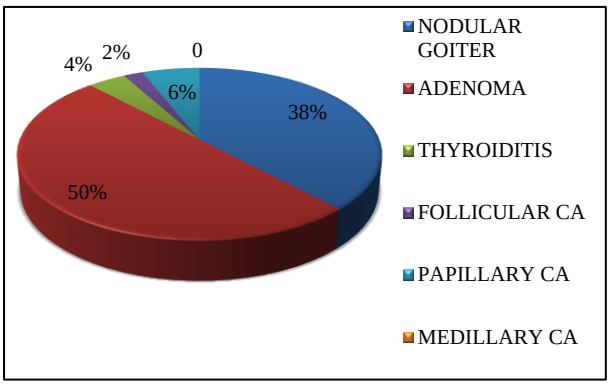

Figure 5: The biopsy results.

Table 1: Cytologic findings.

Type	Number	Percentage
Benign	42	84
Malignant	3	6
Suspicious	5	10
Total	50	100

Table 2: Percentage of malignancy in suspicious lesions.

Type	Number	Percentage
Benign	4	80
Malignant	1	20
Total	5	100

The 5 patients in suspicious category in Table 1 include 3 follicular neoplasms: 1 atypical adenoma; 1 hyperplastic goiter. The study showed one false positive, one patient with atypical adenoma had papillary ca as her biopsy report - one false negative. The study values are given in Table 3. Applying these values, the results were sensitivity 75%, specificity 97.82%, false negative 25%, false positive 2.2%, Yield 8%.

Table 3: Study findings.

Diagnosis	True positive	False positive	False negative	True negative
No	3	1	1	45

Table 4: Type of surgeries.

Type	Number
Hemi thyroidectomy	32
Subtotal thyroidectomy	14
Total thyroidectomy	4

On comparing the clinical presentation with final diagnosis, there were major differences. Although the carcinoma cases had high specificity, the benign lesions showed high variability. 12 cases presented with MNG had their final diagnosis as follows 6 adenoma; 3 colloid goiter; 1 thyroiditis; and only 2 MNG. Other variations noted were 2 goiter cases had their final diagnosis as adenoma. 3 adenoma cases had their final diagnosis as goiter. 1 thyroiditis case had their final diagnosis as goiter.

DISCUSSION

In the present study FNAC results were broadly categorized into three groups benign, malignant and suspicious. Out of 50 cases 42 (84%) were benign; 3 (6%) malignant; 5 (10%) suspicious. The reported rate of benign cytological results ranged from 51 to 90%, rate of malignant cytological findings ranged from 1% to 16%, rate of suspicious results ranged from 4% to 23% and the rate of non-diagnostic results varied from 1.6% to 31%. The results also fall within the reported range.

The sensitivity rate in given series ranged from 75% to 98% with the exception of 55% in the study by Morgan et al in Australia, the results with a sensitivity of 75%.[16] The specificity rates varied from 73% to 98.9% with the exception of Holleman et al, who reported the specificity rate as low as 52%.[6] Our results were comparable to the series with specificity rate of 97.82%. Analysis of the series revealed an overall positive predictive value (PPV) ranging from 34% to 98% which implies presence of malignancy. A negative predictive value (NPV) i.e. negative for malignancy in the above series ranged from 67.4% to 98.7%. Our results are comparable with a PPV of 75% and a NPV of 98%.

Table 5: Comparison of certain series.

Series	Year	Sensitivity	Specificity	PPV	NPV	DA
Settakorn et al	2001	90.4	85.7	83.3	93.7	92.5
Morgan et al	2003	55	73	70	67.4	67.2
Mahar et al	2006	98	70	91	93	91

Continued.

Series	Year	Sensitivity	Specificity	PPV	NPV	DA
Haberal et al	2009	92.6	91.6	83.5	96.5	91.9
Moosa et al	2010	77.7	98.9	87.5	97.8	
Gupta et al	2010	80	86.6	80	86.6	13.3
Wahid et al	2011	88.1	77.5	80.4	86.1	82.9
Pandey et al	2012	57.1	90	70.6	83.3	90.3
Sinna et al	2012	92.8	94.2	94.9	91.8	93.6
Asli et al	2014	87.1	64.6	76.1	79.5	77.3
Present study	2019	75	97.82	75	98	96

CONCLUSION

Of the fifty patients who underwent thyroid surgeries, 92% were female and 8% were male, with a striking female preponderance. The average of age of female patients is 36.24 years, and average age of male patients is 39.2 years. The commonest presentation is solitary nodule (48%) and the commonest pathological finding is adenoma (50%). Of the malignant pathological findings, one follicular carcinoma (2%, 25% among malignancy) is detected and the predominant carcinoma is papillary carcinoma (6%, 75% among malignancy).

FNAC in our study has high specificity. Hence malignant lesions are diagnosed fairly accurately. However, its sensitivity is relatively low. Interpretation of negative result has to be made with caution to reduce the false negative rate.

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Conflict of interest: None declared
Ethical approval: The study was approved by the Institutional Ethics Committee

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