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Original Research Article

To assess the risk of malignancy based on the cytological examination in thyroid lesions.

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Abstract:

Background & Method: The aim of this study is to assess the risk of malignancy based on the cytological examination in thyroid lesions. Patient's details regarding history, clinical examination, ultrasound findings, thyroid function tests, clinical diagnosis, previous FNAC and histological data whenever possible will be noted. The procedure was performed without any anaesthesia by a trained pathologist in the pathology department.

Result: Cases in the Benign category were the largest (76.82%) followed by ND/UNS category (11.26%). AUS/FLUS constituted 0% cases. FN/SFN had 9.27% cases. SFM categories constituted 0.66% and cases in Malignant category 1.99%.

Conclusion: There was female predominance in the study comprising of 86.75% of cases but there was no association of malignant lesion with gender. The distribution of diagnostic categories in this institute is shifted towards Benign category comprising majority of cases (76.82%) followed by ND/UNS category 11.26% cases. AUS/FLUS, FN/SFN, SFM and Malignant category comprises 0%, 9.27%, 0.66% and 1.99% of cases. TBSRTC facilitates cyto-histological correlation for thyroid diseases. In the present study, no case diagnosed as malignant on cytology was proven to be benign in histopathology. Benign interpretation was the most common finding both on cytological and histopathological examination. Ten cases were benign and two cases were malignant both by FNA and histopathological examination.

Keywords: risk, malignancy, cytological & thyroid lesions.

Study Designed: Observational Study.

1. INTRODUCTION

Thyroid nodules are frequently encountered in clinical practice and thyroid fine needle aspiration (FNA) is one of the most commonly practiced areas in non-gynaecologic cytopathology. Fine needle aspiration cytology (FNAC) is considered as the first line investigation apart from other

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investigations like ultrasonography (USG), thyroid function tests, thyroid scan, and antibody levels for the primary evaluation of the patients. [1, 2]
Cytologic examination of fine-needle aspiration (FNA) specimens is currently the best test for preoperative detection of malignant thyroid nodules and for selecting patients with nodules for thyroid surgery or conservative management with observation[3]. The routine application of this method has reduced the number of thyroid operations for benign disease, and increased the percentage of thyroid cancers in surgical series. However, the diagnostic utility of thyroid cytology may be limited by the presence of indeterminate cytologic patterns, present in 11%–32% of cases[4]. In particular a pattern of microfollicles, high cellularity, and scant colloid suggesting a cellular lesion has been classified as suggesting a follicular neoplasm, either an adenoma or a follicular carcinoma. This pattern may also be seen in nodular goiter and in the follicular variant of papillary carcinoma. The risk of malignancy associated with indeterminate cytologic patterns ranges from 12%–27%. Because of the fear of failing to diagnose a carcinoma, surgery has been recommended for such indeterminate cytologic cases[5].

2. MATERIAL & METHOD

The present study has been conducted in pathologist section of pathology department in SRVS Medical College, Shivpuri, M.P., from Sep 2021 to Aug 2022 on 302 patients. Patient's details regarding history, clinical examination, ultrasound findings, thyroid function tests, clinical diagnosis, previous FNAC and histological data whenever possible will be noted. The procedure was performed without any anaesthesia by a trained pathologist in the pathology department. Prior to procedure, palpation was carried out to note the mobility of the thyroid during swallowing and the presence of any enlarged cervical lymph node.

Inclusion criteria
1. Age 11 to 70 years.
2. Both genders.
3. Patients presenting with thyroid swelling in any lobe of thyroid selected by clinical palpation.
4. Patients with recurrent thyroid swellings after a previous thyroid surgery.
5. Patients with already diagnosed thyroid lesion or confirmed by clinical evaluations and laboratory parameters.

Exclusion criteria
1. Patient presenting with any other neck swelling.
2. Bleeding disorder.
3. Vascular swelling.

3. RESULTS

Table 1: Distribution of cases according to the age

S. No.	Sex	Number	Percentage
1	Female	262	86.75%
2	Male	40	13.25%

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In the present study, 40 were males & 262 were females with female to male ratio of 6.55.

Table 2: Distribution of cases according to TBSRTC diagnostic categories

S. No.	Diagnostic category	Number	Percentage
1	Non diagnostic	34	11.26
2	Benign	232	76.82
3	Atypia of Undetermined significance	00	00
4	Suspicious of Follicular neoplasm	28	9.27
5	Suspicious for malignancy	02	0.66
6	Malignant	06	1.99
	Total	302	100

In the present study, cases in the Benign category were the largest (76.82%) followed by ND/UNS category (11.26%). AUS/FLUS constituted 0% cases. FN/SFN had 9.27% cases. SFM categories constituted 0.66% and cases in Malignant category 1.99%.

Table 3: Cytological/histopathological correlation with benign and malignant cases

S. No.	Cytodiagnosis	Benign Histodiagnosis	Malignant Histodiagnosis
1	ND/UNS (n=02)	02	00
2	Benign(n=18)	18	00
3	AUS/FLUS(n=00)	00	00
4	FN/SFN(n=08)	06	02
5	SFM(n=00)	00	00
6	Malignant(n=04)	00	04

In our study we found 26 cases of Benign & cases are 06 on histopathological correlation.
ND/UNS = nondiagnostic/unsatisfactory, AUS/FLUS = atypia of undetermined significance/follicular lesion of undetermined significance, FN/SFN = follicular neoplasm/suspected for a follicular neoplasm, and SFM = suspected for malignancy. TBSRTC = The Bethesta System for reporting Thyroid Cytopathology.
Risk of malignancy calculated in this study was found to be 0.0% in ND, Benign, AUS and SFM categories due to certain limitations like less number of cases involved in this short duration of study. Also close follow up of each and every patients were not possible as not all the patients were operated in the same institute and many of them were treated by conservative managements. Risk of malignancy for SFN was found to be 7.14% and it was 100% in case of malignant lesion.

4. DISCUSSION

The age group studied ranged from 11 to 70 years of age with mean age of 37.46 yrs. Maximum cases were found in group 21-40 yrs of age. Females comprised of 262 cases (86.75%) and males

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comprised of 40 cases (13.25%) with female: male ratio of 6.55. Similar female predominance was noted by Unnikrishnan et al [6].

Long standing history of midline neck swelling, mainly diffuse and nodular in few cases, was the main presenting symptom. Less common complain were pain in the neck region, dysphagia and rarely hoarseness of voice and cough. Non-aspiration technique was mainly practiced as aspiration technique is associated with low cellularity and more blood. Similar suggestions by different studies like

Maurya et al [7] also recommend the non-aspiration technique better for thyroid lesion evaluation by FNAC. In the present study, cases in the Benign category were the largest (76.82%) followed by ND/UNS category (11.26%). AUS/FLUS constituted 0% cases. FN/SFN had 9.27% cases. SFM categories constituted 0.66% and cases in Malignant category 1.99%.

False positive rates were increased by 50% (from 0.0% to 50.0%) and false negative rates were increased by 2.9% (from 7.1% to 10%) in the present study when SFN category was considered as malignant. FPR results were uncommon and it was 0%in our study (when SFN category was excluded), which was consistent with other reports that cite FPR results ranging from 0 - 9%. [8-9] Non diagnostic category could be benign or malignant. When excluded for statistical purpose, false negative rates were increased.

5. CONCLUSION

There was female predominance in the study comprising of 86.75% of cases but there was no association of malignant lesion with gender. The distribution of diagnostic categories in this institute is shifted towards Benign category comprising majority of cases (76.82%) followed by ND/UNS category 11.26% cases. AUS/FLUS, FN/SFN, SFM and Malignant category comprises 0%, 9.27%, 0.66% and 1.99% of cases. TBSRTC facilitates cyto-histological correlation for thyroid diseases. In the present study, no case diagnosed as malignant on cytology was proven to be benign in histopathology. Benign interpretation was the most common finding both on cytological and histopathological examination. Ten cases were benign and two cases were malignant both by FNA and histopathological examination.

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