

Study of Cyto-Histopathology in Thyroid Lesions in South Karnataka Population

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Conflict of interest: Nil

Abstract:

Background: Thyroid lesions are quite common among endocrine disorders. Apart from FNAC, the Bethesda system for reporting thyroid cytopathology (TBSRTC) smear aspiration studies is ideal for proper diagnosis and to avoid unwanted surgery.

Method: 25 patients with thyroid lesions were studied. Apart from FNAC, TBSRTC was studied in every patient to evaluate the cyto-histopathological studies.

Results: Nodular goitres were 2 (8%), 15 (60%) AUS/FLUS, 1 (4%), 3 (12%) FN/SEN, 3 (12%) SFM, and 1 (4%) Malignant In cytological histopathology correlations, 19 (76%) were benign and 6 (24%) malignant lesions were observed.

Conclusion: In the present pragmatic study, apart from FNAC TBSRTC is an excellent reporting system for thyroid lesions to diagnose malignant or benign lesions.

Keywords: FNAC, TB SRTC, Benign Malignant, Karnataka.

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Introduction

Thyroid lesions are common among all endocrine disorders. In clinical practice, most are benign, but a significant percentage of malignant cases were also reported [1]. It is difficult to rule out or diagnose only based on clinical evaluation. Hence, it is mandatory for proper diagnosis for further treatment. Thyroid lesions are very common in surgical practice, but the proper diagnosis can be done by histopathological study.

The incidence of malignancy in thyroid goiters is 10%. It affects women more commonly than men. It is not advisable to excise the entire thyroid lesion because of the associated risks. Hence, to avoid unwanted surgery, an effective cyto-pathological screen is required [2].

In the management of thyroid lesions, fine aspiration cytology (FNAC) has been accepted in the first-line investigation, especially for solitary nodules. It is a screening tool to decide whether a patient's condition needs surgical intervention or can be managed conservatively [3].

Fine needle aspiration cytology (FNAC) is a simple, cheap, easily available, reliable, time-saving, easy-to-perform effective and almost accurate diagnostic technique for the investigation of thyroid

swelling [4]. FNAC has its limitations, like the sample adequacy technique for the sampling expectations of cytopathologists. Moreover, there are difficulties in differentiating between benign and malignant follicular neoplasms because of many overlapping cytological features. Hence, an attempt is made to evaluate the lesions of the thyroid histopathologically.

Material and Method

25 (twenty-five) patients referred to the pathology department of the Sambhram Institute of Medical Sciences and Research Center, BEML, KGF, Kolar Karnataka-563115, due to thyroid swellings were studied.

Inclusive Criteria:

All the patients referred to pathology with thyroid swellings irrespective of age and sex and who gave written consent for our study were selected for study.

Exclusion Criteria:

The patients already on treatment for thyroid swelling were excluded from the study.

Method:

Relevant clinical history was taken, and an examination was done. Pre-FNAC requirements as recommended by the committee of the NCI state of the science conference.

Bethesda was followed [5]. Every patient was subjected to FNA sampling under ultrasound guidance by one of the two authors using the Zajdela technique 4-5 times randomly in different areas [6]. The smears were prepared using conventional methods and stained with Giemsa and papanicolaou stains.

The cytological features were evaluated. The morphological criteria were given in the monograph of the TBSRTC Bethesda system for reporting thyroid cytopathology. The clinicians were informed of the implied risk of malignancy and recommended clinical management along with the report. The histo-

pathological specimens were processed according to standard methods. Sensitivity, specificity, positive predictive value, and negative predictive value were calculated using histopathology diagnosis as the gold standard. SFM and malignant were put together.

The duration of the study was from November 2022 to October 2023.

Statistical analysis: Cytological histopathological correlation with benign and malignant was classified. Cytological/histopathological diagnostic correlation was also classified by percentage. The statistical analysis was carried out in SPSS software. The ratio of males and females was 1:2.

Observation and Results

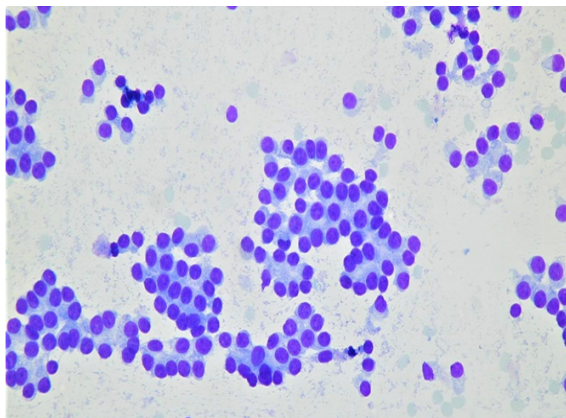


Figure 1: Benign follicular thyroid nodule

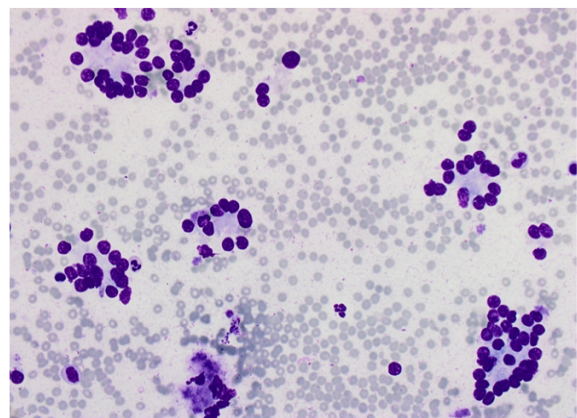


Figure 2: Follicular neoplasm of the thyroid gland

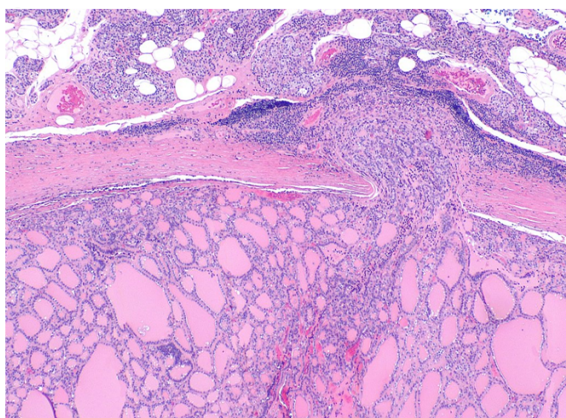


Figure 3: Follicular thyroid cancer

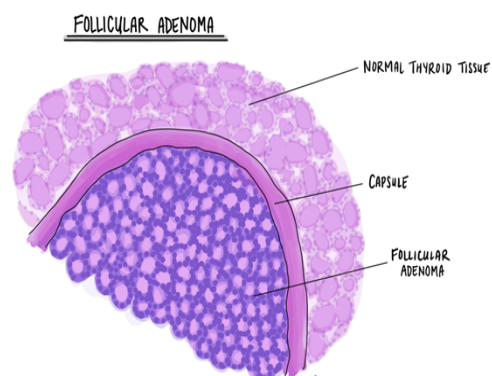


Figure 4: Follicular Adenoma

Table 1: Cytological histo-pathological diagnosis correlation –

2 = ND/UNS (8%) 2 nodular goiters, 15 (60%) Benign It has 10 (40%) nodular goitre, 2 (8%) follicular adenoma, 2 (8%) papillary thyroid, 1 (4%) thyroid carcinoma, 3 (12%) FN/SFN- 2 (8%) follicular adenoma, 1 (4%) papillary thyroid carcinoma, 3 (12%) SFM, 1 (4%) lymphocytic thyroiditis, 1 (4%) papillary thyroid carcinoma, 1

(4%) follicular adenoma, 1 (4%) malignant, 1 (4%) papillary thyroid carcinoma

Table 2: Cytological/histopathological correlation with benign and malignant cases -

ND/UNS had 2 benign, Benign 14–12 were benign and 2 were malignant; AUS/FLUS 2 were benign and 1 was malignant. In N.SFN 3 were benign, 1 was malignant, and 2 were malignant. Total benign were 19 (76%) and 6 were malignant.

Table 1: Cytological histo-pathological diagnosis correlation

Cyto-pathology categorization	No. of cases where surgical specimen received (25)	Percentage (%)	Histo-pathological diagnosis	No. of Cases (45)
NB/UNS (No) 2	2	8%	Nodular goitre	< 8
Benign 15	15	60%	Nodular gain Follicular adenomas	= 10
AUS/FLU”S	1	4%	Papillary carcinoma	2
FN/SFN n=3	3	12%	Follicular adenine papillary thyroid carcinoma	1
SFN N=3	3	12%	Lymphocytic thyroiditis, papillary thyroid	1
Malignant 1	1	4%	Papillary thyroid carcinoma	1

ND/UNS – Non diagnostic / un-Satisfactory, AUS/FLUS – atypia of FN/SFN=Follicular Neoplasm/Suspended for a follicular neoplasm and SFM-Suspected for malignancy, n=total number of cases

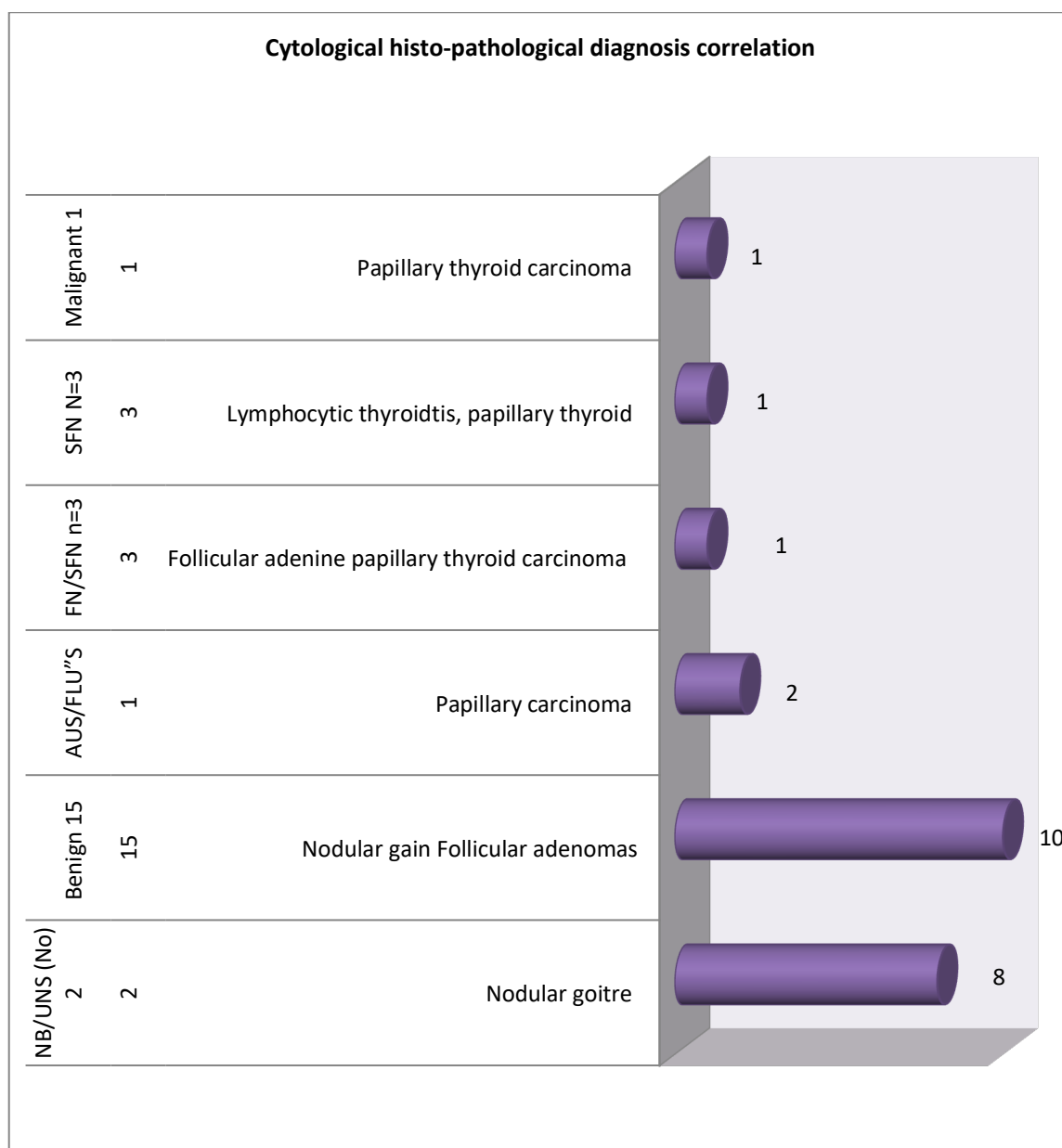


Figure 5: Cytological histo-pathological diagnosis correlation

Table 2: Cytological / histo-pathological correlation with benign and malignant cases

Cyto-diagnosis	Histological diagnosis	
	Benign	Malignant
ND/UNS (n=2)	2	0
Benign (n=14)	12	2
AUS/FLUS (n=3)	2	1
Fn/SFN (n=3)	3	1
Malignant (n=0)	0	0

ND/UNS – Non diagnostic / Un-satisfactory, AUS/FLUS – atypia of undetermined significance follicular lesion of under terminated significance, FN/SFN – Follicular neoplasm and SFN – Suspected for malignancy

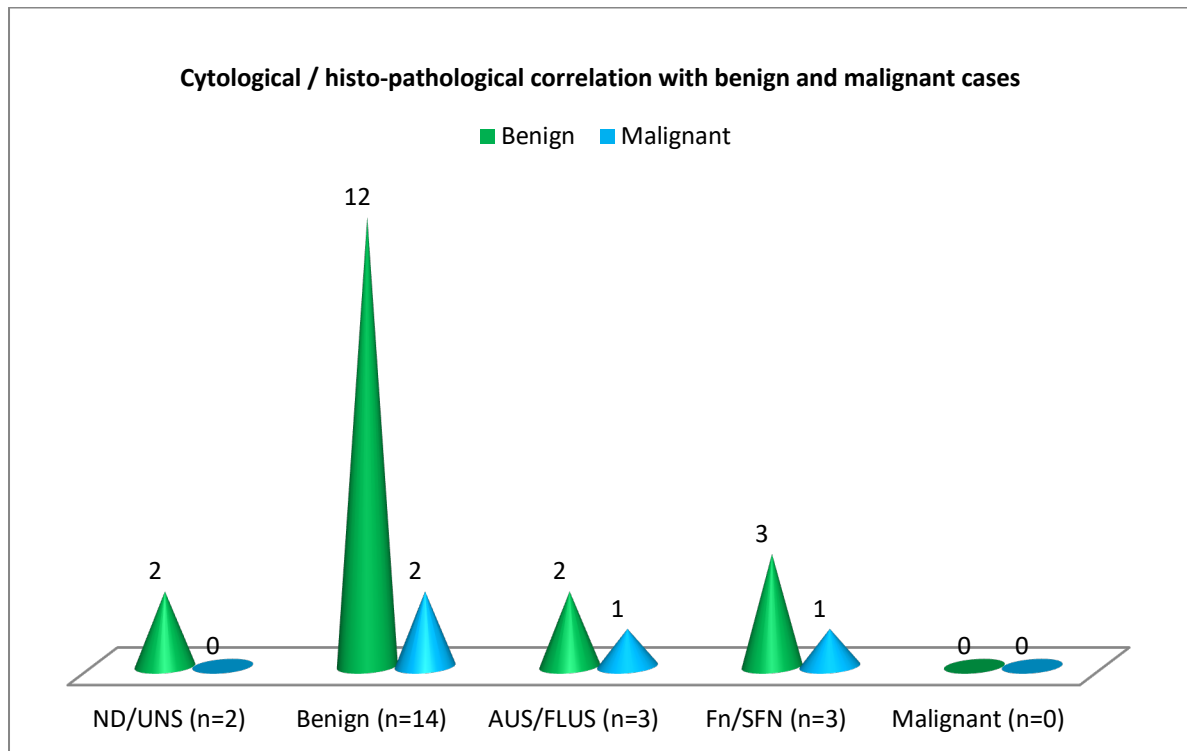


Figure 6: Cytological / histo-pathological correlation with benign and malignant cases

Discussion

Present study of cyto-histopathological in thyroid lesion in South Karnataka population. The cytological histo-pathological diagnosis correlation was 2 (8%) ND/UNS, 15 (60%) Benign, 1 (4%) AUS/FLUS, 3 (12%) FN/SFN, 3 (12%) SFM, and 1 (4%) malignant (Table 1). In cytological/histopathological correlation with benign and malignant cases, ND/UNC-2 (benign) In cyto diagnosis – 12 Benign and 2 Malignant AUS/FL US, 2 Benign, 1 Malignant, FN SFN, 3 Benign, 1 Malignant. In cytology, out of 25 cases, 2 were malignant; 19 (76%) were benign, and 6 (24%) were malignant (Table 2) (Figure 1, 2, 3 and 4). These findings are more or less in agreement with previous studies [7,8,9].

The Bethesda system for reporting thyroid cytopathology (TBSRTC) was formulated in 2007 to find a uniform thyroid cytology reporting system that facilitates easy interpretation by the clinician. However, reasons for high malignancy risk categories I and III need to be looked into, along with

various contributing factors. The cytological appearance of nodular goiter can overlap with that of follicular adenoma, and cytological criteria alone cannot reliably distinguish in certain cases [10,11]. Atypical undetermined significance or follicular lesions of undetermined significance (AUS/FLUS) have been a source of confusion for both clinicians and pathologists, as they cannot confirm whether they are benign or malignant. TBSRTC suggests the frequency of AUS (atypia of undetected significance) [12]. TBSRTC is a relatively recent technique to classify thyroid cytology smears. It needs to be validated by more prospective studies on a larger number of patients with thyroid lesions with histo-pathological correlations.

Summary and Conclusion

Present study of cyto-histo-pathological thyroid lesion in south Karnataka population Thyroid aspiration smears by TBSRTC using the Bethesda monograph. The monograph is briefly written in an easy-to-read format, which helps to diagnose easily. The clinician and pathologist benefit. However,

the exact incidence of malignancy in this heterogenic category is difficult to predict. Hence, the present study must be confirmed with a large number of patients with experienced pathologists because the stages and mechanisms of malignancy spread are still unclear.

Limitation of study: Owing to the remote location of the research center, the small number of patients, and the lack of the latest technology, we have limited findings and results.

This research was approved by the ethical committee of the Sambram Institute of Medical Sciences and the research center BEML, KGF Kolar, Karnataka-563115.

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