CYTOPATHOLOGICAL STUDY OF THYROID LESIONS BY BETHESDA SYSTEM.

Pathology

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ABSTRACT

Back ground: The Bethesda system for reporting thyroid cytopathology (BSRTC) stratifies thyroid fine needle aspirations (FNAs) into 6 main diagnostic categories and conveys uniform language among pathologists and clinicians. It has standardized the diagnostic approach to cytomorphological criteria and reporting.
Aim: To evaluate the results of FNAC in diagnosis of thyroid lesion using Bethesda system of reporting
Materials and methods: We retrospectively revived one year thyroid FNAs and classified according   to BSRTC.
Results: Total 150 thyroid FNAs were reviewed and categorized into diagnostic categories of Bethesda system. Among those 72% belonged to benign category (Bethesda 2), followed by Non diagnostic (Bethesda 1), 13%, Malignant (Bethesda 6) 6%, Follicular
neoplasm (Bethesda 4) 5% and both Suspicious for malignancy (Bethesda 5) and Atypia of undetermined significance (Bethesda 3) 2% each.
Conclusion: Interpretation of thyroid FNA varies from one laboratory to another resulting
in diagnostic ambiguity in few cases. Application of BSRTC may bring in objective guidelines for reporting thyroid cytopathology.

KEYWORDS

Bethesda, Cytopathology of thyroid, Fnac thyroid.

INTRODUCTION:
Thyroid swelling is common problem among south Asian women. Although benign nodules far outnumber cancerous lesion , the risk of malignancy needs to be evaluated pre-operatively for which FNAC is widely used. Bethesda system for reporting thyroid cytopathology (TBSRTC) was introduced to steamline the reporting of thyroid aspirates[2] .

Various reporting formats of thyroid FNACs have been used varying from two category schemes to six or more category schemes. While some of them tried to diagnose various lesions using histology-equivalent categories, other formats had categories like equivocal, inconclusive, indeterminate, atypical, suspicious, uncertain, malignancy suspicious, possibly neoplastic, possibly malignant, and probably malignant to report thyroid aspirates that fell between benign and malignant diagnostic categories. It made it difficult for clinicians to interpret the reports[3].

"The Bethesda System for Reporting Thyroid Cytopathology" (TBSRTC) which includes definitions, diagnostic/morphologic criteria, explanatory notes, and a brief management plan for each diagnostic category was published[4,5].

Table 1:Bethesda system of reporting diagnostic criteria and brief management guidelines.

Diagnostic category	Risk of Malignancy	Usual management
1.Nondiagnostic or Unsatisfactory	1-4	Repeat FNA with ultrasound guidance
2.Benign	0-3	Clinical follow-up
3.Atypia of Undetermined Significance	5-15	Repeat FNA
4.Follicular Neoplasm or Suspicious for a Follicular Neoplasm	15-30	Surgical lobectomy
5.Suspicious for Malignancy	60-75	Near-total thyroidectomy / surgical lobectomy
6. Malignanacy	97-99	Near-total thyroidectomy

Aim and Objectives:
1. To evaluate the results of FNAC in diagnosis of thyroid lesion using Bethesda system of reporting.

MATERIALS AND METHODS:
Source of data:
All the thyroid FNAC done in SIMS, Shivamogga for cytological

evaluation during the study period.

Study type: Cross sectional, descriptive study.
Study period: Aug 2019 to Dec 2019
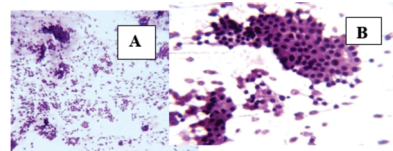**Study duration:** 5 months.
Sample size: 150.

Statistical method employed for Analysis of data: SPSS version 20 and descriptive statistics will be used.

Inclusion Criteria:
 All the cases FNAC done on thyroid gland.

Exclusion Criteria:
All other FNAC excluding thyroid gland.

Fig 1. A:Photomicrograph showing Follicular cells arranged in acinar and in
singles;B:Photomicrograph showing follicular pattern with thin colloid.

Results:
The study included 150 cases of thyroid lesion. Benign category constituted the majority(72%) follwed by ND/UNS category(13%).

Malignant and SFM constituted 6% & 2% respectively & AUS included 2% & SFN/FN with 5%.

Table 2:Shows distribution of thyroid lesions with respect to BSRTC.

Diagnostic category	No. of cases	No. of cases in each category
Nondiagnostic or Unsatisfactory		19(13%)
Cyst Fluid only	14	
Virtually acellular smear	02	
Other (obscuring blood, clotting artefact etc.)	03	
Benign		108(72%)
Colloid goiter	82	
Follicular neoplasm	07	
Lymphocytic thyroiditis	11	
Granulomatous thyroiditis	08	

Atypia of undetermined significance	03	03(2%)
Follicular Neoplasm or Suspicious for a Follicular Neoplasm	08	8(5%)
Suspicious for Malignancy	03	03(2%)
Malignant	09	09(6%)

Histo pathological correlation was done whenever possible.

Table 3:BSRTC has proposed cut of values for diagnostic categories which were compared with present study.

Diagnostic categories	Present study(%)	BSRTC2
Non Diagnostic	13	2-10
Benign	72	60-70
AUS	2	3-6
FN/SFN	5	**
Suspicious for malignancy	2	**
Malignancy	6	3-7
**It is intended as flexible framework that can be customized according to need of particular laboratory.		

DISCUSSION:
Mean age of the patients included in the study was 40 years (18-75) and male to female ratio was 1:1.26.

Few studies have been reported on Bethesda system of reporting cytopathological changes in thyroid. In our study Bethesda category 2 constituted the majority (72%) which was in concordance with study done by Payal Mehra et al6 who had conducted a prospective study of 225 fine needle aspiration cytology (FNAC).

Mild atypia, Cellular adenoma, Nucleomegaly, Occassional grooving or incusions and neoplasia cannot be ruled out create too much ambiguity among clinicians to plan for further management of patients.

Cystic lesions of thyroid has a propensity to diagnosed as papillary carcinoma which is classified under non diagnostic category which indicates for a repeat aspiration increasing the chances of detection on FNAC only.

Application of BSRTC helps both clinicians and pathologists to make a uniform , simple, flexible and accurate diagnosis.

Table4: Cytohistopathological correlation of diagnosis.

Bethesda category	FNAC Diagnosis	Histopathological Diagnosis	Accuracy
Category 2	Colloid goiter (100) Follicular neoplasm(08)	Colloid goiter(98) Nodular goiter(02) Follicular Adenoma(06) Follicular Carcinoma(02)	98.1%
Category 3	AUS(02)	Nodular goiter(02) Colloid goiter(01)	100%
Category 4	FN / SFN(08)	Follicular adenoma(07) Follicular Carcinoma(01)	100%
Category 5	SFM(03)	Papillary ca (02) Hashimoto thyroiditis(01)	66.7%
Category 6	Malignancy (09)	Papillary ca (07) Poorly Differentiated Ca(01) Medullary ca(01)	100%

Table: Comparison of distribution of diagnostic categories with previous studies

Diagnostic category	Present study	Shankar SP et al8 2016(%)[7]	Shagufta et al2 2012(%)[8]	H Juing et al9 2011 (%)[9]	Lee K et al10 2010 (%)[10]	Shilpa et al(%)11
ND/UNS	13	10.7	11.6	20.110	10	11
BN	72	81.6	77.6	3967.7	67.7	73.4
AUS	02	1.24	0.4	27.23.1	3.1	1.8
SFN	05	1.74	04	8.41.1	1.1	7.3
SM	02	02	2.4	2.65.1	5.1	2.8
MT	06	2.7	3.6	2.713	13	3.7

*ND/UNS: Non diagnostic, BN:Benign, AUS: Atyoia of undetermined significance, SFN: Suspicious for follicular neoplasm, SM:Suspicious for malignancy, MT: Malignant.

CONCLUSION:
Interpretation of thyroid FNAC differs from one laboratory to another which results in ambiguity in the diagnosis and management in some cases. Application of BSRTC may bring a uniform guidelines among clinicians which helps in management of cases. Brief knowledge about BSRTC among clinicians help to share data and have a universal language in diagnosis and management.

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