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RESEARCH ARTICLE

THE BETHESDA SYSTEM FOR REPORTING THYROID FINE NEEDLE ASPIRATES.

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Abstract

The Bethesda system for reporting thyroid cytopathology represents a major step towards standardization, reproducibility, improved clinical significance, and greater predictive value of thyroid fine needle aspirates (FNAs). This is a prospective study undertaken from May 2015 to April 2017 which included 72 clinically diagnosed cases of thyroid swellings who attended the D.Y. Patil Hospital and Research Institute, Kolhapur. Slides were stained with Haematoxylin and Eosin (H&E) and Pap smear. The microscopic diagnosis was interpreted under six categories of Bethesda. Of the 72 FNAs, 2.77% were non-diagnostic, 87.5% were benign, 0% were atypical follicular lesion of undetermined significance (AFLUS), 4.16% were suspicious for follicular neoplasm (SFN), 0% were suspicious for malignancy (SM), and 5.5% malignant. Reviewing the thyroid FNAs with the Bethesda system allowed a more specific cytological diagnosis. TBSRTC is easy, flexible with option for descriptive diagnosis whenever required. It reduces inter observer variability in reporting thyroid FNAs.

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Introduction:-

Thyroid swelling is common problem among south Asian population especially Indian population due to probable dietary, environmental and genetic factors. Although benign nodules far outnumber cancerous lesions, the risk of malignancy needs to be evaluated preoperatively to determine the extent of surgery. Fine needle aspiration cytology (FNAC) is the first-line diagnostic test for evaluating thyroid nodules.¹

To address terminology and other issues related to thyroid fine-needle aspiration (FNA), the National Cancer Institute(Maryland, United States) hosted the "NCI thyroid FNA State of the Science conference".

The conclusions regarding terminology and morphologic criteria from the NCI meeting led to the Bethesda Thyroid Atlas Project and from the frame work for The Bethesda System for reporting Thyroid Cytopathology (TBSRTC).²

The project participants hope that the adoption of this flexible framework will facilitate communication among cytopathologists, endocrinologists, surgeons, radiologists and other health care providers; facilitate cytologic-histologic correlation for thyroid diseases.³ The atlas has six described diagnostics categories of lesions: Non diagnostic/Unsatisfactory, Benign, Atypical follicular lesion of undetermined significance (AFLUS), Suspicious for follicular neoplasm(SFN), Suspicious for malignancy(SM),and Malignant.⁴

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Methodology:-

This is a prospective study which included 72 clinically diagnosed cases of patients with thyroid swellings attending the D.Y. Patil Hospital and Research institute, Kolhapur from May 2015 to April 2017. The eligible patients were briefed about the nature of the study and a written informed consent was obtained from the selected patients. Findings were recorded on predesigned proforma. Slides were stained with Haematoxylin and Eosin (H&E) and Pap. The microscopic diagnosis was interpreted under six categories of Bethesda.

Results:-**Table 1:-** Cytological Diagnosis as per the Bethesda system

Category	Cytological diagnosis	No. of Cases	Percentage
1	Unsatisfactory	2	2.77%
2	Benign follicular lesion	63	87.5%
3	Atypia of undetermined significance or follicular lesion of undetermined significance	0	0%
4	Follicular neoplasm or Suspicious for a follicular neoplasm	3	4.16%
5	Suspicious for malignancy	0	0%
6	Malignant	4	5.55%
	Total	72	100%

Total numbers of cases studied on FNAC were 72. Out of 72 cases 63 (87.5.6%) were Benign lesions [category II], 3 (4.16%) were follicular neoplasms [category IV], 4 (5.55%) were Malignant [category VI] and 2 (2.77%) was Unsatisfactory/Nondiagnostic [category I].

Table 2:- Age and sex distribution of patients with thyroid swelling

Sr. No.	Age in Years	No. of Males	No. of Females	Total No.	Percentage %
1	11-20	00	02	2	2.77
2	21-30	02	19	21	29.16
3	31-40	01	22	23	31.50
4	41-50	03	12	15	20.83
5	51-60	02	05	7	9.72
6	61-70	01	02	3	4.16
7	71-80	00	01	01	1.38

Table 3:- Sub categorization of category II - Benign according to TBSRTC

Sub categorization	No. of cases	No. of Males	Number of Females	Percentage
Benign follicular nodule	54	05	49	85.71 %
Lymphocytic (Hashimoto's) Thyroiditis	08	1	07	12.69%
Acute Thyroiditis	0	1	01	1.58%
Total	63	07	58	100%

Table 4:- Distribution of cases in benign follicular nodule

Diagnosis	No. of cases	Percentage
Nodular goiter	33	61.11%
Hyperplastic/Adenomatoid nodule	02	3.70%
Colloid nodule	16	25%
Grave's disease	03	5.55%
Total	54	100%

Out of 54 cases of BFN 33 (61.11%) were nodular goiter, 02(3.70%) were adenomatoid nodule in nodular goiter, 16(33.68%) were colloid nodules and 03(5.55%) were of Graves' disease

Table 5:- Age and Sex distribution for Follicular neoplasm

Sr. No.	Age in years	No. of Males	No. of Females
1	21-30	0	1
2	41-50	0	2

Table 6:- Age and Sex distribution for papillary carcinoma

No. of Cases	Age in years	Male	Female
1	21-30	0	0
2	31-40	1	1
3	41-50	0	2
4	51-60	0	0

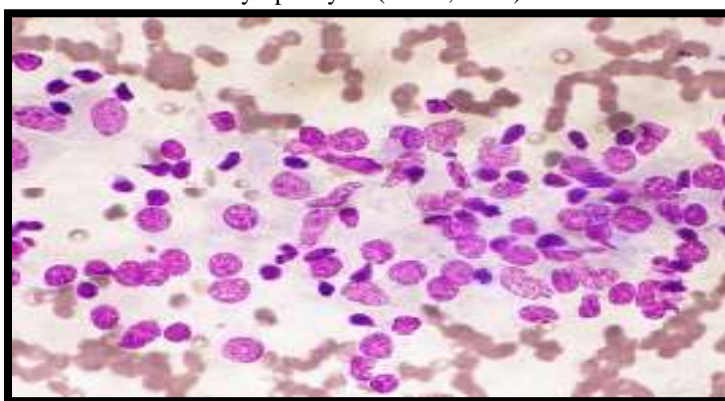
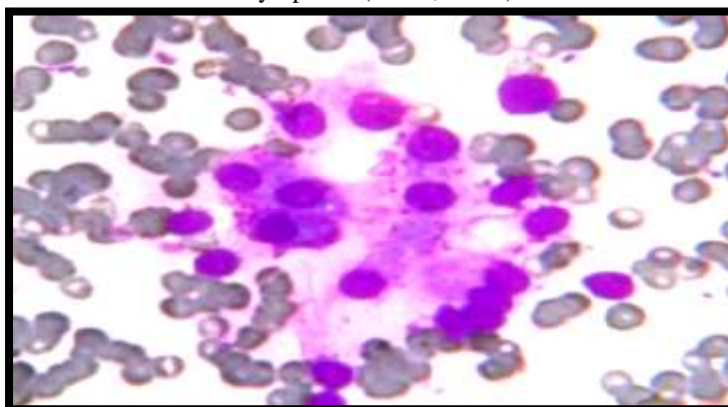
Photographs:-**Fig.1:-** Category II-Hashimoto's thyroiditis-smear showing degenerating sheet of follicular cells with clinging of lymphocytes.(MGG,X400)**Fig.2:-** Category II- Grave's disease – smear showing fire flares and follicular cells with abundant finely vacuolated cytoplasm.(MGG, x 400)

Fig.3:- Follicular Neoplasm-Category IV- FNAC showing compact microfollicular clusters.(MGG, X 100).

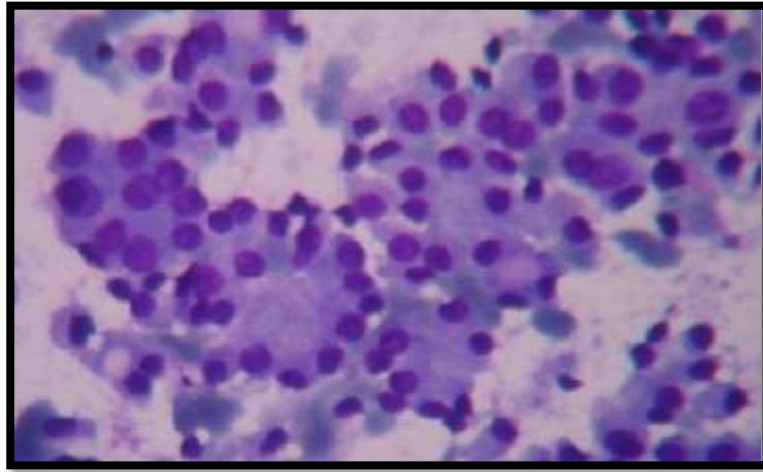
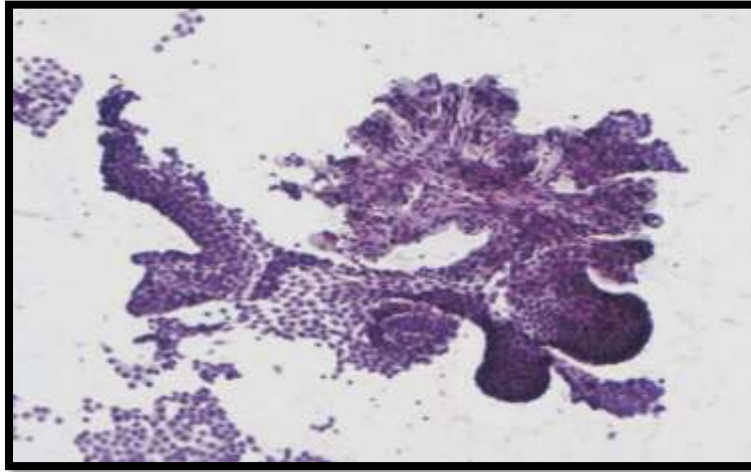


Fig.4:- Category VI- Papillary thyroid carcinoma. There is a mix of flat sheets and rounded, papillary-like fragments without fibrovascular cores (Smear, Papanicolaou stain).



Discussion:-

In our study out of 72 cases 63(87.5%) were benign(category II), 3 (4.16 %)were follicular neoplasm(category IV), 4(5.5%) were malignant(category VI)and 2(2.77%) was Unsatisfactory/Nondiagnostic (category I).

The results were consistent with study done by Mondal et al ⁵ in which unsatisfactory were 1.2%, Benign follicular lesion were 87.5%, AFLUS were 1%, FN/SN were 4.2%, 1.4% cases of suspicious for malignancy and Malignant were 4.7% Maximum numbers of cases were reported as benign [Category II] which were consistent with the other studies.

Maximum number of cases in this study were females (85.2%) and in the age group 21-50 years which were consistent with study done by Yassa et al.⁶

In this study the rate of nondiagnostic category was found to be 2.2% whereas in other studies it ranged from 1 to 18%. Ali suggested that the rate of non diagnostic should be limited to <10% which is consistent with this study.⁷

In this study benign cases were total 87.5%. In other studies this category ranged only from 59 to 87%; but still they were maximum in number with their respective studies. The difference in the rate of benign category in these was explained by Jo et al⁸; by the fact that these studies have been in tertiary care centers, where patients come only on a referral basis and, hence, are not exactly representative of general population.

In this study the rate of follicular neoplasm was found to be 4.16%, whereas in other studies it range from 4 to 20 %. The results were consistence with studies done by Mondal et al⁵ and Renuka et al⁹.

In this study total 4 cases were found to be papillary thyroid carcinoma and the rate was found to be 5.55%, whereas in other studies it ranged from 3 to 7%. This is the least controversial of the diagnostic total categories. The risk of malignancy is 97-100%. The results were consistent with study done by Renuka et al⁹ and Bhasin et al.¹⁰

Conclusion:-

Reviewing the thyroid FNAs with the Bethesda system allowed a more specific cytological diagnosis. The distribution of cases in the Bethesda categories differed from some studies, benign cases being higher and the number of non-diagnostic and AFLUS cases being lower. The malignancy risk for each category correlated well with other studies. The Bethesda system thus allows standardization in reporting, improves perceptions of diagnostic terminology between cytopathologists and clinicians, and leads to more consistent management approaches.

References:-

1. K santosh, Mondal et al: The Bethesda system for reporting thyroid fine needle aspirates: journal of cytology/April 2013/Volume 30/Issue 2;244.
2. S Edmund . Cibas, MD, and Z sayed . Ali, MD et al: The Bethesda System For Reporting Thyroid Cytopathology: American Society for Clinical Pathology/2009;132:655-58.
3. Sameer Naz, Atif Ali Hashmi et al: Diagnostic accuracy of Bethesda system for reporting thyroid cytopathology: BioMed. International Archiv of Medicine 2014,122-26.
4. Mondal SK, Sinha S, Basak B, Roy DN, Sinha SK. The Bethesda system for reporting thyroid fine needle aspirates: A cytologic study with histologic follow-up. J Cytol 2012;30(2):94-99.
5. Yassa L, Cibas Es, Benson CB, Frates MC, Doubilet PM, Gawande AA, et al. Long-term Assessment of a Multidisciplinary Approach to Thyroid Nodule Diagnostic Evaluation. Cancer 2007;111(6):508-16.
6. Ali SZ. Thyroid Cytopathology: Bethesda and Beyond. Acta Cytol 2011;55:4-12.
7. Jo VY, Stelow EB, Dustin SM, Hanley KZ. Malignancy Risk for Fine Needle Aspiration of Thyroid Lesions According to the Bethesda System for Reporting Thyroid Cytopathology. Am J Clin Pathol 2010;134:450-56.
8. Renuka IV, Saila Bala G, Aparna C, Kumari R, Sumalatha K. The Bethesda System for Reporting Thyroid Cytopathology: Interpretation and Guidelines in surgical Treatment. Indian J Otolaryngol Head Neck Surg 2012;64(4):305-11.
9. Bhasin TS, Mannan R, Manjari M, Mehra M, Gill Sekhon AK, Chandey Metal. Reproducibility of 'The Bethesda System for reporting Thyroid Cytopathology': A Multi Center Study With Review of the Literature. J Clin Diagn Res 2013;7(6):1051-54.