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RESEARCH ARTICLE

ROLE OF FNAC IN THE THYROID SWELLINGS AND THEIR CATEGORIZATION ACCORDINGTO THE BETHESDA SYSTEM IN A NEWLY ESTABLISHED TERTIARY CARE HOSPITAL IN PIR PANJAL REGION

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Abstract

Introduction: FNAC of thyroid gland is the primary investigation done on the OPD basis in the patients with thyroid swellings.
Aimsandadjectives: To evaluate the role of FNAC in the thyroid swellings and categorize the lesion according to the Bethesda system of reporting thyroid cytopathology.
MaterialandMethods: This study was conducted in the department of pathology in tertiary care center in the pir panjal region. 160 aspirations were done from thyroid during this study period from 2019 to 2021.
Results: There was overall female preponderance seen. There were 130 females and 30 males in the study. The cases in category-I were 22 (13.75%), category-II were 114 (71.25%), Category-III were2(1.25%), Category-IV were 6(3.75%), Category-V were 8(5%) and Category- VI were 8(5%) cases.
Conclusion: The Bethesda system of reporting thyroid cytopathology is very helpfulfor guiding the clinician to correctly manage the thyroid lesions. Unnecessary surgeries can be avoided.

Introduction:-

As this area lies in the Himalayan foothill therefore, Thyroid nodules are commonly encountered in thepatients in this belt. FNAC of thyroid lesions can be performed easily and used to distinguish benign lesions from malignant lesions. Therefore, it helps in the proper management of the disease. A new system was established called the Bethesda system of reporting of thyroid lesions. It has given the uniformity to the reports by cytopathologists thereby helping surgeons in the right management of the lesions. It is a 6-tier system, the aim was to study the role of FNAC in thyroid swellings and categorizing them according to the Bethesda system at our newly established institute in pir panjal region. The categories and the risk of their malignancies are category I - non diagnostic is 1-4%, category II - Benign is 0-3%, category III-AUS/FNUS is 5-15%, Category IV-FN/SFN 15-30%, Category V-suspicious for malignancy 60-75%, category VI-Malignant 97-99%

Method:-

This study was conducted in a tertiary care hospital in pir-panjal region over a period of 2 year from 2019 to 2021. Out of total 906 FNACs, 160 aspirations were done from the thyroid. All the patients who were referred to the department were included in the study. FNACs were done by using 22-gauge needle attached to 20 ml syringe. Smears were stained with MGG and PAP stain and examined by the cytopathologists.

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Results:-

This study was conducted in Government Medical College, Rajouri. In this study 160 thyroid aspirations were included which constitutes 17.66% of the total FNACs done during this period. Patients of all age groups were included and both the genders were included. Age range was 0-70 years of age. Table 1 shows majority of the patients were in the age group of 21-40 years of age. There were 130 females and 30 males. Table 2 shows that thyroid lesions were more common in females.

The diagnosis was made by using the Bethesda system of reporting of thyroid lesions. Table 3 shows Category 1 (non-diagnostic) includes 22 cases, category 2 (benign) includes 114 cases, category 3 (AUS/FLUS) includes 2 case, category 4 (FN/SFN) includes 6 cases, category 5 (Suspicious for malignancy) includes 8 cases and category 6 (malignant) includes 8 cases.

In the present study, colloid nodule comprised of 98 (86%) cases which was the main lesion followed by 14 (12%)cases of chronic lymphocytic thyroiditis and granulomatous thyroiditis were 2 (2%) cases.

Table1:- Age distribution of thyroid swellings.

Age in years	No. of cases	Percentage%
0-10	4	2.5
11-20	16	10
21-30	52	32.5
31-40	32	20
41-50	28	17.5
51-60	18	11.25
61-70	10	6.25
>70	0	0
Total	**160**	**100**

Table2:- Gender distribution of thyroid swellings.

Gender	No. of cases	Percentage%
Females	130	81.25
Males	30	18.75
Total	**160**	**100**

Table3:- Distribution of cases according to The Bethesda system.

Category	No. ofcases	Percentage%
Category I	22	13.75
Category II	114	71.25
Category III	2	1.25
Category IV	6	3.75
Category V	8	5
Category VI	8	5
Total	**160**	**100**

Table4:- Comparison of the studies.

Category	Yassa L et al (2007)	Yang J et al (2007)	Nayar R and Ivanovic M et al (2009)	Jo V Y et al (2010)	Mufti and Molah (2012)	Mondal S K et al (2012)	Mehra P and Verma AK (2015)	Garg S et al (2015)	Samita S et al 2020	Our study
I	7	10.4	5	18.6	11.6	1.2	7.2	6	2.41	13.75
II	66	64.6	64	59	77.6	87.5	80	78	88.5	71.25
III	4	3.2	18	3.4	0.4	1	4.8	4	1.82	1.25
IV	9	11.6	6	9.7	4	4.2	2.2	5	4.24	3.75
V	9	2.6	2	2.3	2.4	1.4	3.6	14	1.21	5

VI	5	7.6	5	7	3.6	4.7	2.2	4	1.82	5

Discussion:-

For thyroid aspirations to be satisfactory 6 groups of benign follicular epithelial cells are required and each group is composed of at least 10 cells [15]. In this study cytodiagnosis of thyroid lesions were classified according to the Bethesda system of reporting thyroid cytopathology. Out of total 906 aspirations, 160 aspirations were done from thyroid lesions which forms 17.66%. Study conducted by **SmitaS** et al, thyroid were 9.3% of all FNACs done during that period [13]. In our study the majority of the cases were seen in the age group of 21-40 years (52.5%) which is in comparison to the study conducted by **Garg** S et al, and **Sengupta** et al which shows 35%and 40-45% respectively[11,14]. In this study the females outnumbered the males i.e. F:M ratio is 4.3:1 which is in comparison to the studies conducted by **Sengupta** et al, **SmitaS** et al, **Silverman** J et al, **AnandB** et al and **JoLY** et al i.e. 4:1, 10:1, 8:1, 6.8:1 and 8.7:1 respectively [2,5,13,14,16]. In this study, the cytodiagnosis of the lesions was classified according to the Bethesda system for reporting thyroid pathology (TBSRTC). The most common were benign (Bethesda category 2) swellings which includes 114 cases (71.25%) of the cases.

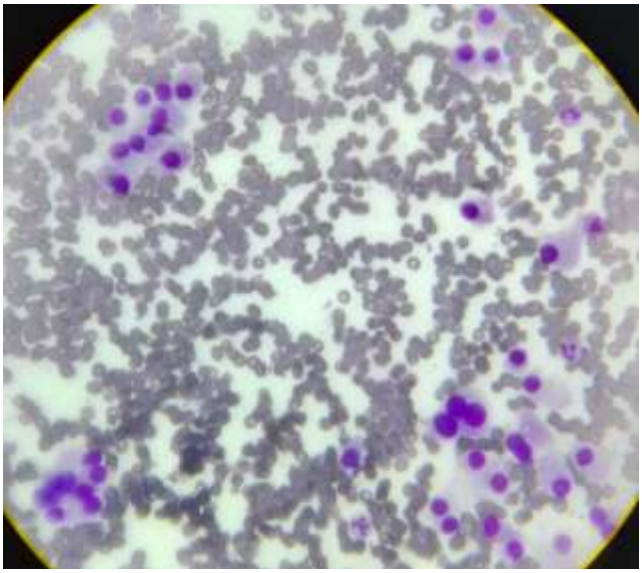

Fig. 1:- Photomicrograph of category III – follicular lesion of undetermined significance showing sparsely cellular aspirate with predominance of microfollicles and colloid.

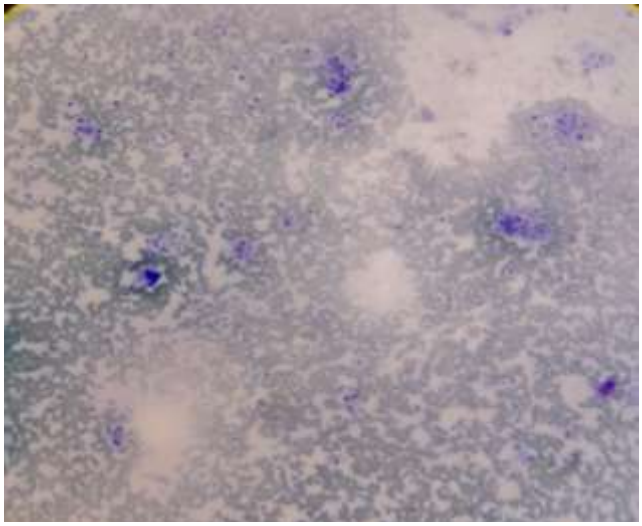

Fig 2:- Photomicrograph for category IV – suspicious for follicular neoplasm showing cellular aspirate with micro and macrofollicles.

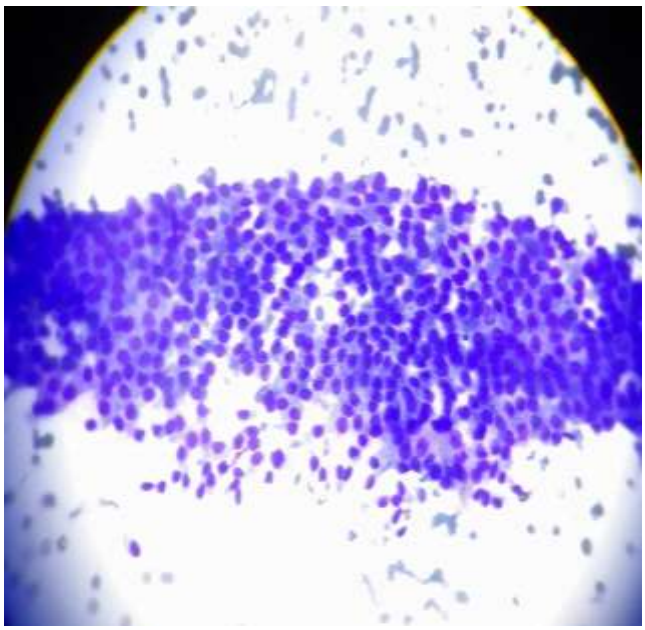

Fig 3:- Photomicrograph of category V --Suspicious of papillary carcinoma thyroid.

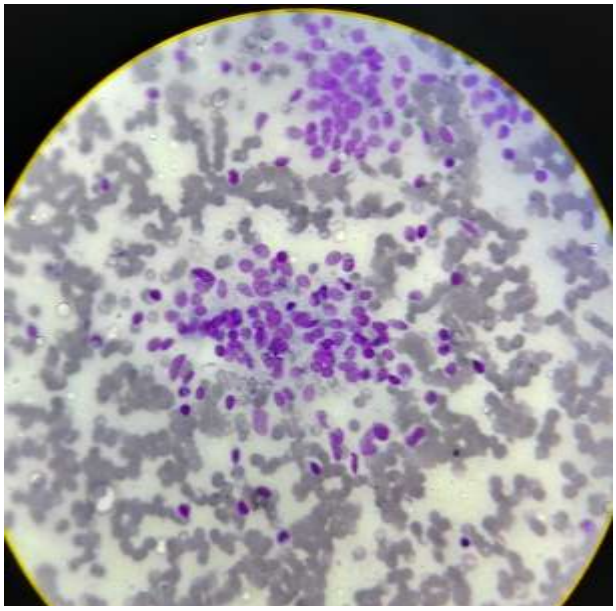

Fig. 4:- Photomicrograph of Category VI--Medullary carcinoma thyroid.

There are 114 cases in the category II i.e., benign therefore in such cases surgeries are avoided. Few cases i.e., 2 cannot be categorized either benign or malignant and are reported as atypia of undetermined significance (AUS). Category IV i.e., Follicular neoplasms have 1-30% chances of malignancy. Histopathology can differentiate follicular adenoma from follicular carcinoma therefore the patient can be subjected for hemithyroidectomy. Category V has 8 cases they were given susupicious for papillary carcinoma thyroid because only few follicular cells were showing intranuclear cytoplasmic inclusions(figure3). There were 1 case of medullary carcinoma thyroid as it was showing moderately cellular smears comprising of round to polygonal cells having round nuclei and coarse chromatin(figure4) and 7 cases of papillary carcinoma thyroid as the follicular cells were arranged in papillary architecture and showing nuclear grooves and inclusions which are characteristic of papillary carcinoma thyroid.

Conclusion:-

This study helps in categorizing the thyroid lesion according to Bethesda system of reporting thyroid cytopathology thereby helps the surgeon in proper management of thyroid lesions. It gives uniformity to the diagnosis by different pathologists and helps the surgeon to manage according to the risk of the malignancy.

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