



ISSN (P): 2617-7226
ISSN (E): 2617-7234
www.patholjournal.com
2020; 3(1): 293-295
Received: 19-11-2019
Accepted: 23-12-2019

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Evaluation of thyroid lesions by fine needle aspiration cytology: Our institutional experience

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DOI: <https://doi.org/10.33545/pathol.2020.v3.i1e.186>

Abstract

Thyroid gland lesions are common all over the world and India too. Fine needle aspiration cytology (FNAC) is an effective method for diagnosing clinically important thyroid disorders. The aim of our study is to explore the pattern of distribution of different thyroid lesions in our region and to demonstrate the effectiveness of FNAC as a simple and cost effective procedure for diagnosis of thyroid lesions. Fine needle aspiration cytology of 650 cases from the period of January 2017 to January 2019, presenting with palpable thyroid swelling were evaluated in our institution, out of which 547(84.15%) cases were females and the rest 103(15.85%) cases were males. Females outnumbered the males. 598(92%) cases were reported as benign and only 02% as malignant. Most of the thyroid lesions are non-neoplastic and are common in middle aged females. FNAC is a simple, economical and safe procedure which helps in differentiating neoplastic and non-neoplastic lesions.

Keywords: FNAC, Thyroid lesions, Goitre, Benign, Malignant.

1. Introduction

Thyroid lesions are common worldwide. There is significant burden of thyroid lesions in India too. According to a projection from various studies on thyroid disease, it has been estimated that about 42 million people in India suffer from thyroid diseases^[1].

We have observed a significant incidence of thyroid diseases in our region too, which makes us to take up this study and analyse and compare the proven facts.

Practice guidelines set forth by the American Thyroid Association and National Comprehensive Cancer Network, state that FNA should be used as an initial diagnostic test because of its superior diagnostic reliability and cost-effectiveness before both thyroid scintigraphy and ultrasonography^[2].

FNAC of the thyroid gland has proven to be an important and widely accepted cost-effective, simple, safe and accurate method of triaging patients with thyroid nodules^[3].

The aim of the present study is to explore the pattern of distribution of different thyroid lesions in our region and to demonstrate the effectiveness of FNAC as a simple and cost effective procedure for diagnosis of thyroid lesions.

2. Materials and Methods

This is a retrospective study conducted in the department of Pathology from the period of January 2017 to January 2019. A total of 650 cases were studied. The patient records of these 650 cases were retrieved and the information about age, sex and cytological diagnosis was noted. Fine needle aspiration was performed according to the standard procedure using 23-24 gauge needle under aseptic precautions. Both dry and wet smears were routinely stained by Leishman-Giemsa, Papanicolaou and Hematoxylin-Eosin stains. The smears were reviewed according to standard guidelines and the results were analysed.

3. Results

A total of 650 cases were studied in our study out of which 547(84.15%) cases were females and the rest 103(15.85%) cases were males (Table no.1). Females outnumbered males.

Majority of the thyroid lesions were noted in the age group of 20-40 years (Table no.2). Out of total 650 cases, 13 cases were inadequate to report in our study. We categorised the cases into Inadequate, Benign, Suspicious and Malignant (Table no.3). Nodular colloid goitre was the most common benign lesion in our study accounting to 62% (403) of the cases.

Other benign lesions included were Hashimoto’s Thyroiditis (10.20%), (Figure no.1), Lymphocytic Thyroiditis (4.08%), Granulomatous Thyroiditis (2.04%), and Grave’s disease (2.04%). Suspicious lesions included Follicular neoplasm and Hurthle cell neoplasm (Figure no. 2). Among the malignant lesions, 26 cases (4%) were reported as Papillary Carcinoma followed by 4(0.61%) cases of Anaplastic carcinoma and 03(0.46%) cases of Medullary carcinoma (Figure no.3 and 4) (Table no. 4).

Table 1: Male/Female Distribution

Gender	Total no. of cases	Percentage (%)
Male	103	15.85
Female	547	84.15

Table 2: Age wise distribution of cases

Age group	Number of cases	Percentage (%)
<20 years	26	4
20-40 years	416	64
40-60 years	130	20
>60 years	78	12

Table 3: Distribution of cases in various categories

Category	No. of cases	Percentage (%)
Inadequate	13	02%
Benign	598	92%
Suspicious	26	04%
Malignant	13	02%

Table 4: Spectrum of thyroid lesions

Sl.no	Diagnosis	Total no. of cases	Percentage (%)
1	Colloid goitre	255	40.03
2	Nodular goitre	140	21.97
3	Hashimoto’s thyroiditis	65	10.20
4	Lymphocytic thyroiditis	26	4.08
5	Granulomatous thyroiditis	13	2.04
6	Grave’s disease	13	2.04
7	Papillary carcinoma	26	4.08
8	Medullary carcinoma	03	0.47
9	Follicular neoplasm	65	10.20
10	Colloid cyst	15	2.35
11	Hurthle cell neoplasm	12	1.88
12	Anaplastic carcinoma	04	0.62%

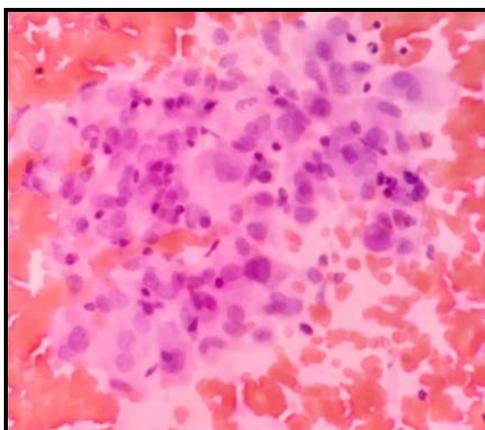


Fig 1: Photomicrograph from a case of Hashimoto’s thyroiditis showing hurthle cells and lymphocytes (H& E 40X)

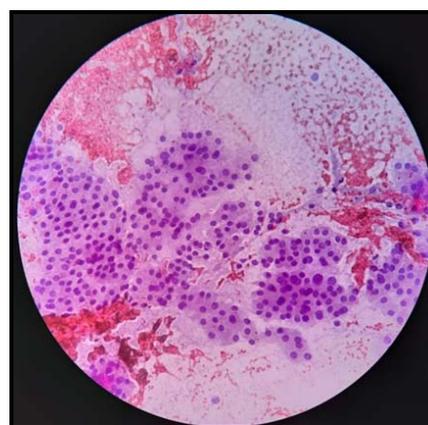


Fig 2: Photomicrograph from a case of Hurthle cell neoplasm hurthle cells in clusters (H&E 10 X)

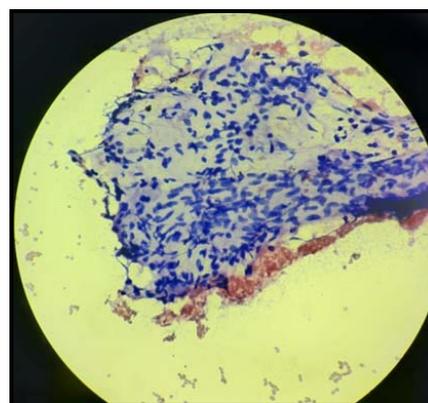


Fig 3: Photomicrograph from a case of Medullary carcinoma showing spindle cells (PAP 10 X)

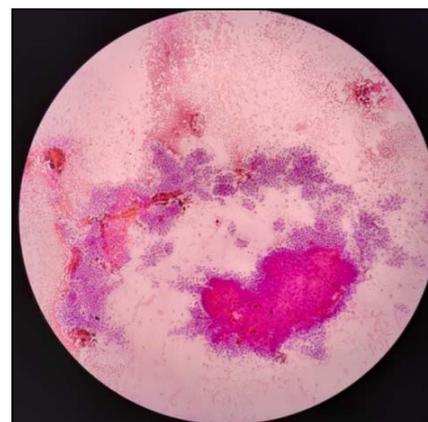


Fig 4: Photomicrograph from a case of Medullary Carcinoma showing amyloid deposition (H&E 10 X)

4. Discussion

FNAC is usually the first line of investigation and other investigations like Ultrasound examination, thyroid function tests, thyroid scan and antibody levels are done subsequently with an aim to select the patients who require surgery and those that can be managed conservatively [4]. In our present study, females outnumbered males and male: female ratio was 5:1 which is similar to other studies [5]. Most of the cases were reported in the age group of 20-40 years. This is the common finding in most of the studies

establishing the fact that most of the thyroid lesions are commoner among middle aged women. This finding is in agreement with various other studies conducted by Larijani *et al.* [6], El Hag *et al.* [7] Bomanikar *et al.* [8] Handa *et al.* [9] and Mandal *et al.* [10] The present study reveals a total of 637 cases adequate for reporting and 13 cytological smears inadequate for interpretation which is almost comparable with other studies done by Sangalli *et al.* and Scalbas *et al.* [11, 12].

In our study, 604 cases were benign and 33 cases were malignant. The ratio of benign to malignant cases is 18:1. Ratio was comparable with other studies conducted by Frable and Frable [13].

Another study revealed similar results with more benign lesions than malignant. Many similar studies have shown the importance of FNAC procedure and its accuracy for early diagnosis of thyroid nodules and also for differentiation of benign and malignant nodules [15, 16, 17, 18].

Our study findings correlate with many other studies and proves that FNAC is a simple and effective procedure which helps in differentiating benign and malignant thyroid lesions and guides in the proper management of the patients thus avoiding unnecessary surgical procedures.

5. Conclusion

FNAC is a simple, safe and cost effective procedure and should be adopted for reliable preoperative diagnosis which guides in the proper management of the patient. Our study reveal that majority of thyroid lesions are noted in middle aged females and benign lesions are more common than malignant which is in agreement with many other studies. Hence, the use of FNAC has reduced the number of patients with benign thyroid lesions undergoing unnecessary surgery and has led to proper management in malignant cases.

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