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Original Research Article

An Observational Study to Correlate Cytological Finding in Thyroid Lesions

Sunil Kumar[1], Richa Sharma[2], Shipra Singh[3], Poonam Kumari[4]

[1]Tutor, Department of Pathology, Darbhanga Medical College and Hospital, Darbhanga, Bihar, India

[2]Tutor, Department of Pathology, Darbhanga Medical College and Hospital, Darbhanga, Bihar, India

[3]Tutor, Department of Pathology, Darbhanga Medical College and Hospital, Darbhanga, Bihar, India

[4]Professor and HOD, Department of Pathology, Darbhanga Medical College and Hospital, Darbhanga, Bihar, India

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Corresponding Author: Dr. Richa Sharma
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Abstract

Aim: The aim of the present study was to correlate cytological finding in thyroid lesions.

Methods: This observational Prospective study was conducted in the Department of Pathology Darbhanga Medical College and Hospital, Darbhanga, Bihar, India in collaboration with Department of Surgery and Radiology. A total of 100 patients with thyroid lesions were subjected to fine needle aspiration cytology during a period of 1 year.

Results: Majority of the patients referred for FNAC thyroid were females constituting 80 (80%) of the total 100 patients, and 20 male cases (20%). Age of the patients ranged from 10 years to75 years with a median age of 39 years. The maximum incidence of thyroid lesions was noted in the 31 to 40 years age group in which there were 30 cases (30%). This was followed by the 21 to 30 years of age group and 41 to 50 years of age group with an incidence of 28% (28 cases) and 24% (24 cases). Smears with large quantity of colloid and several groups (generally six or more) of normal appearing follicular cells with or without the presence of histiocytes. The benign lesions include colloid nodule, nodule goiter, thyroiditis and thyroid cysts. The aspirations which contained groups of cells with malignant features were considered diagnostic of primary thyroid cancer (papillary, medullary or anaplastic subtypes) or disease metastatic to thyroid. Histopathologic evaluation was advised because the criteria of malignancy in these lesions are based on evidence of capsular or vascular invasion. Fine needle aspiration cytology of thyroid sensitivity was 88% and specificity was 100%.

Conclusion: Fine needle aspiration cytology of thyroid is simple diagnostic tool with sensitivity 88% and specificity 100%. It has certain limitations but it gives guidelines to clinicians about further management of various thyroid lesions.

Keywords: cytological finding, thyroid lesions

Introduction

Thyroid nodule is a common clinical condition and nearly 85 to 90% of them are benign lesions. [1,2] Thyroid FNA has been widely used as a first line investigation to assess thyroid nodules, as it is rapid, cost effective, safe and reliable. [3] It is important that cytology report is unambiguous and clinically useful. It has been observed that thyroid FNAC smears terminologies vary significantly from one laboratory to other, sometimes from one cytologist to other in the same institution. This is creating confusion in some cases and has become an obstacle in sharing information amongst different institutions. [4,5] This issue of terminology related to thyroid cytology was addressed at National Cancer Institute (NCI) which hosted "NCI thyroid FNA state of the science conference" which led to the formation of "The Bethesda System for Reporting Thyroid Cytopathology" (TBSRTC). [6]

Fine Needle Aspiration Cytology (FNAC) is the present day's worldwide accepted diagnostic tool as it is a cost effective, minimally invasive, low complication, non-operative method and has a high sensitivity and specificity in most of thyroid lesions. [7] As a diagnostic test, FNAC can diagnose most benign lesions, inflammatory lesions as well as malignant lesions. The test can be used to differentiate thyroid lesions which require surgical excision from conditions which can be managed medically. [8] However, the success of FNA is

contingent upon several important contributing influences including aspirator experience, skillful cytological interpretation and a rational analysis based upon a synthesis of cytological and clinical information in the context of an individual patient. [9]

The aim of the present study was to correlate cytological finding in thyroid lesions.

Materials and Methods

This observational Prospective study was conducted in the Department of Pathology, Darbhanga Medical College and Hospital, Darbhanga, Bihar, India in collaboration with Department of Surgery and Radiology. A total of 100 patients with thyroid lesions were subjected to fine needle aspiration cytology during a period of 1 year.

Inclusion Criteria

All the patients coming our hospital with thyroid lesions irrespective of age and sex was included in present study.

Sample Collection and Method

All the patients were clinically examined in detail according to the proforma and a careful palpation of the thyroid was done to guide precisely the location for doing aspiration. Details of the procedure were explained to the patients. Aspiration was done with the patient lying comfortably in a supine position and the neck was extended with a pillow under the shoulder so as to make the thyroid swelling appear prominent.

FNAC was performed under all aseptic precaution, with help of 23 gauge needle and disposable 5ml/10ml syringes. Whenever needed USG guided FNAC was done. Smears was prepared, fixed in 95% ethyl alcohol and Stained with hematoxylin & eosin stains FNAC smears were carefully studied and categorized into non neoplastic and neoplastic lesions.

Statistical Analysis

Statistical analysis was done with appropriate tests in consultation with a statistician.

Results

Table 1: Age and gender distribution

Gender	N	%
Male	20	20
Female	80	80
Age groups in years		
21-30 years	28	28
31-40 years	30	30
41-50 years	24	24
51-60 years	18	18

Majority of the patients referred for FNAC thyroid were females constituting 80 (80%) of the total 100 patients, and 20 male cases (20%). Age of the patients ranged from 10 years to75 years with a median age of 39 years. The maximum incidence of thyroid lesions was noted in the 31 to 40 years age group in which there were 30 cases (30%). This was followed by the 21 to 30 years of age group and 41 to 50 years of age group with an incidence of 28% (28 cases) and 24% (24 cases).

Table 2: Non – Neoplastic and Neoplastic lesions on cytology

Non-Neoplastic lesions	N
Colloid goitre	60
Hashimoto's thyroditis	10
Thyroditis	9
Multinodular thyroditis	10
Granulomatous thyroiditis	1
Neoplastic lesions	
Suspicious of follicular neoplasm	5
Suspicious of papillary carcinoma	2
Positive malignancy	2
Carcinoma	1

Smears with large quantity of colloid and several groups (generally six or more) of normal appearing follicular cells with or without the presence of histiocytes. The benign lesions include colloid nodule, nodule goiter, thyroiditis and thyroid cysts. The aspirations which contained groups of cells with

malignant features were considered diagnostic of primary thyroid cancer (papillary, medullary or anaplastic subtypes) or disease metastatic to thyroid. Histopathologic evaluation was advised because the criteria of malignancy in these lesions are based on evidence of capsular or vascular invasion.

Table 3: Sensitivity and specificity

	%
Sensitivity	88
Specificity	100
PPV	100
NPV	98.21
Accuracy	95.45

Fine needle aspiration cytology of thyroid sensitivity was 88% and specificity was 100%.

Discussion

Thyroid lesions are common among all endocrine disorders. In clinical practice, majority are benign but in a significant percentage them are underlying malignant. [10,11] It is difficult to overall diagnose based only on clinical evaluation. Therefore, it is essential that a correct diagnosis is made as early as possible. [12] As we know, thyroid lesions are very common in surgical practice and their worldwide prevalence is 4-7%. The incidence of malignancy in thyroid goiter is 10%. It affects women more commonly than men. It is not practical to excise all the thyroid lesions because of certain risks associated with it. To avoid unwanted surgery, an effective screening test is required. [13]

Majority of the patients referred for FNAC thyroid were females constituting 80 (80%) of the total 100 patients, and 20 male cases (20%). Sex distribution was comparable with Rangaswamy et al [14], Afroze N et al. [15] Age of the patients ranged from 10 years to75 years with a median age of 39 years. The maximum incidence of thyroid lesions was noted in the 31 to 40 years age group in which there were 30 cases (30%). This was followed by the 21 to 30 years of age group and 41 to 50 years of age group with an incidence of 28% (28 cases) and 24% (24 cases). This was comparable to Rabia Basharat et al [16], Pandey et al [17], Herachand et al18 and Rangaswamy et al. [14]

Smears with large quantity of colloid and several groups (generally six or more) of normal appearing follicular cells with or without the presence of histiocytes. The benign lesions include colloid nodule, nodule goiter, thyroiditis and thyroid cysts. The aspirations which contained groups of cells with malignant features were considered diagnostic of primary thyroid cancer (papillary, medullary or anaplastic subtypes) or disease metastatic to thyroid. Histopathologic evaluation was advised because the criteria of malignancy in these lesions are based on evidence of capsular or vascular invasion. Fine needle aspiration cytology of thyroid sensitivity was 88% and specificity was 100%. These results are comparable to the study done by Afroze et al [19] where malignancy showed 1) sensitivity of 61.90%, 2) specificity of 99.31%, 3) positive predictive value of 92.86%, 4) Negative predictive value of 94.74%, 5) Accuracy of 94.58%.

Conclusion

Fine needle aspiration cytology of thyroid is simple diagnostic tool with sensitivity 88% and specificity 100%. It has certain limitations but it gives guidelines to clinicians about further management of various thyroid lesions.

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