

Original Research

Assessment of Role of FNAC in diagnosis of Thyroid Lesions

Khalda Nasreen¹, Arunima Satkirti², Aditi Raina³, Indu Bhushan⁴

¹Associate Professor, ²Assistant Professor, ³Professor, ⁴Professor & Head,
Department of Pathology, Rama Medical College and Hospital, Hapur, U.P., India

ABSTRACT:

Background: Thyroid disorders are the most common endocrine disorders worldwide. The present study was conducted to assess role of FNAC in diagnosis of thyroid lesions. **Materials & Methods:** The present study was conducted on 56 patients with history of swelling in the neck of both genders. 5 ml syringe with 22 gauge needle was used to obtain the smears and the needle was then reattached and the aspirate was transferred onto clean labeled glass slides. Slides were prepared and studied. **Results:** Out of 56 patients, males were 20 and females were 36. 44 lesions were neoplastic, 10 were non- neoplastic and 2 were suspicious of malignancy. The difference was significant ($P < 0.05$). 24 lesions were benign and 20 were malignant. The difference was non- significant ($P > 0.05$). 14 non- neoplastic lesions were inconclusive, 7 were cysts, 8 were goiter, 10 were thyroiditis and 5 were primary hypoplasia. The difference was significant ($P < 0.05$). **Conclusion:** Authors found that FNAC is cost-effective and safe diagnostic method. Maximum lesions were neoplastic.

Key words: FNAC, Thyroid, Neoplastic

Received: 12 July, 2019

Revised: 15 September, 2019

Accepted: 23 September, 2019

Corresponding author: Dr. Arunima Satkirti, Assistant Professor, Department of Pathology, Rama Medical College and Hospital, Hapur, U.P., India

This article may be cited as: Nasreen K, Satkirti A, Raina A, Bhushan I. Assessment of role of FNAC in diagnosis of thyroid lesions. J Adv Med Dent Sci Res 2019;7(10): 4-7.

INTRODUCTION

Thyroid disorders are the most common endocrine disorders worldwide, including India. Thyroid nodules cause apprehension because their behavior is unpredictable. Among the available non-invasive screening techniques used to evaluate clinically solitary nodules, thyroid scintigraphy and ultrasonography are of immense help. However, they are inconsistent in distinguishing benign nodules from malignant.¹

Role of FNAC in the thyroid lesions is vital and has been used since the 1950s and is one of the cost effective methods in the diagnosis.² The thyroid lesions are more common in females in the form of nodules with male to female (M:F) ratio ranged from 1.2 to 4.3. These nodules can be detected with ultrasonography (USG) in 19 to 67% cases and by palpation in 5% of cases only.

As the thyroid nodules may cause hormonal imbalance, cosmetic problems and also have the malignant potential.³ As FNAC distinguishes between benign and malignant lesions quite effectively, it is the preoperative screening method of choice worldwide. Its use in recent years has resulted in a significant decrease in the number of surgeries being performed, while increasing the yield of malignant lesions of patients who have undergone surgery.⁴ Due to its simplicity, low cost, and absence of major complications, it is the initial investigation in the management of thyroid disease in our teaching hospital. Thus, the need of the hour is an investigative modality which can be employed before procedures and can effectively differentiate between benign and malignant nodules.⁵ The present study was conducted to assess role of FNAC in diagnosis of thyroid lesions.

MATERIALS & METHODS

The present study was conducted in the department of General Pathology. It comprised of 56 patients with history of swelling in the neck of both genders. All were informed regarding the study. Ethical approval was obtained from institutional ethical committee prior to the study.

General information such as name, age, gender etc. was recorded. 5 ml syringe with 22 gauge needle was used to obtain the smears and the needle was then reattached and the aspirate was transferred onto clean labeled glass slides. Slides were prepared and studied. Results thus obtained were subjected to statistical analysis. P value less than 0.05 was considered significant.

RESULTS

Table I Distribution of patients

Total- 56		
Gender	Males	Females
Number	20	36

Table I, graph I shows that out of 56 patients, males were 20 and females were 36.

Graph I Distribution of patients

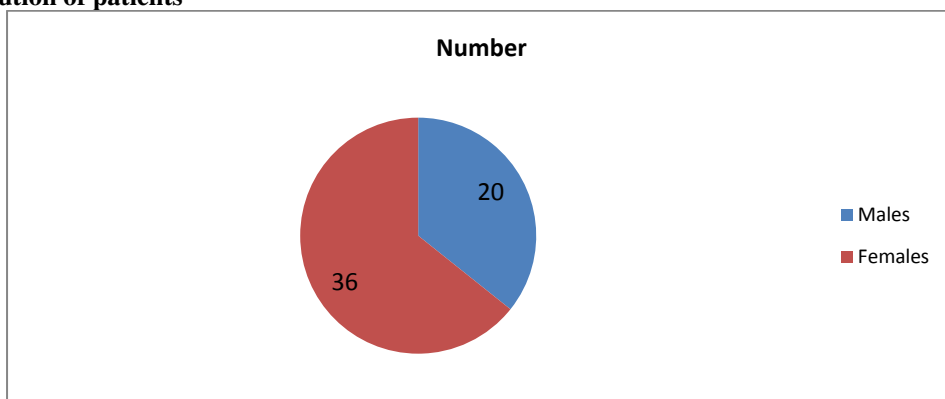


Table II Distribution of thyroid lesions by FNAC

Lesions	Number	P value
Neoplastic	44	0.01
Non- neoplastic	10	
Suspicion of malignancy	2	

Table II, graph II shows that 44 lesions were neoplastic, 10 were non- neoplastic and 2 were suspicious of malignancy. The difference was significant (P< 0.05).

Graph II Distribution of thyroid lesions by FNAC

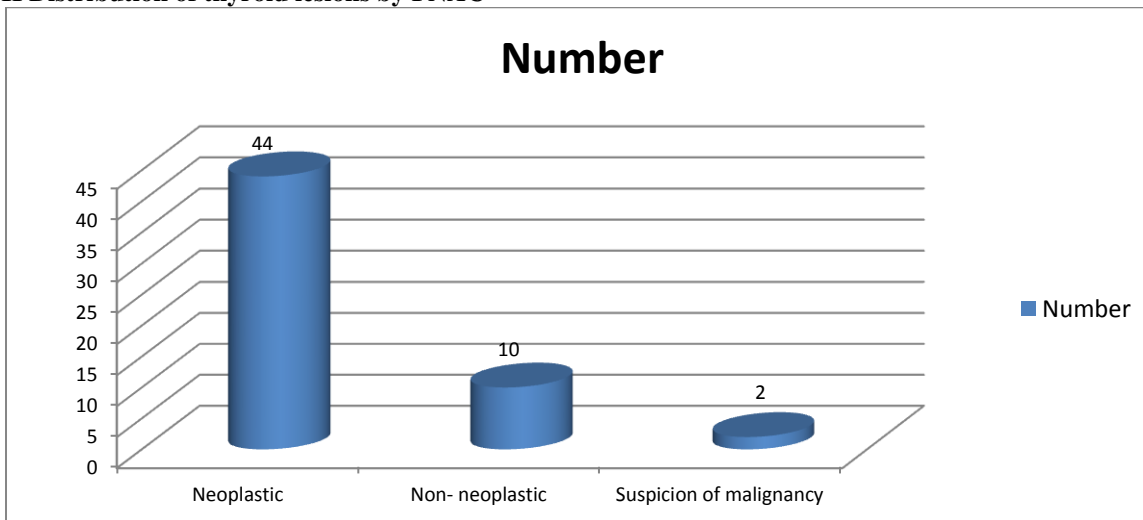


Table III Neoplastic lesions

Neoplastic lesions	Number	P value
Benign	24	0.41
Malignant	20	

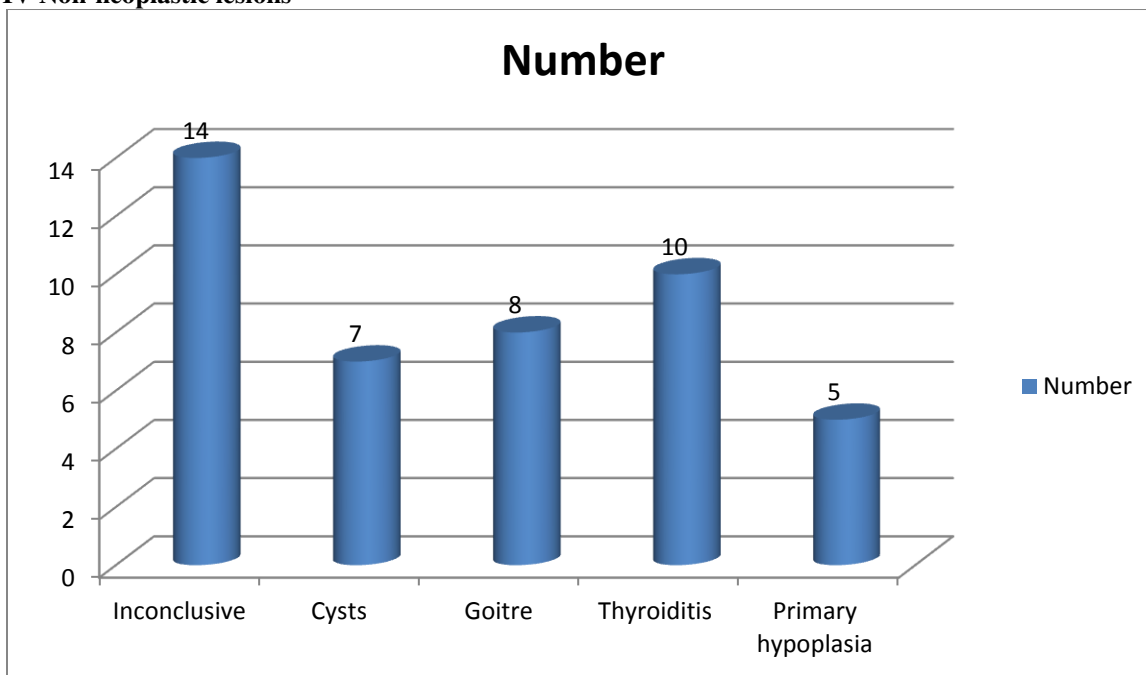
Table III, graph III shows that 24 lesions were benign and 20 were malignant. The difference was non-significant ($P > 0.05$).

Table IV Non-neoplastic lesions

Non-neoplastic lesions	Number	P value
Inconclusive	14	0.01
Cysts	7	
Goitre	8	
Thyroiditis	10	
Primary hypoplasia	5	

Table IV, graph IV shows that 14 non-neoplastic lesions were inconclusive, 7 were cysts, 8 were goiter, 10 were thyroiditis and 5 were primary hypoplasia. The difference was significant ($P < 0.05$).

Graph IV Non-neoplastic lesions



DISCUSSION

Palpable thyroid nodules can be seen in 4 to 7% of the adult population. Malignancy is reported in less than 5% of thyroid nodules. Reliable and precise examination is needed due to this prevalence and malignancy risk.⁶ Fine needle aspiration cytology (FNAC) is increasingly used as it is a quick, noninvasive and reliable means of detecting cancerous thyroid nodules and, in many cases, surgery can be avoided. Since FNAC was developed, the rate of thyroid surgery has decreased remarkably.⁷ The present study was conducted to assess role of FNAC in diagnosis of thyroid lesions.

In present study, out of 56 patients, males were 20 and females were 36. We found that 44 lesions were neoplastic, 10 were non-neoplastic and 2 were suspicious of malignancy. Rangaswamy et al⁸ conducted a study in which 100 cases of thyroid FNA's was undertaken and interpreted. All thyroid lesions conventionally diagnosed by FNA were classified according to TBSRTC. A total of 100 cases of thyroid swellings were analyzed, out of which 84 cases were diagnosed as non-neoplastic lesions, 3 cases as suspicious for malignancy, and 13 cases as neoplastic lesions by FNAC. The results were further classified under TBSRTC.

We found that 24 lesions were benign and 20 were malignant. 14 non-neoplastic lesions were inconclusive, 7 were cysts, 8 were goiter, 10 were thyroiditis and 5 were primary hypoplasia. A et al found that out of 51 patients, 41 were females (80.3%) and 10 were males (19.7%). The mean age was 42.8 ± 16.8 with age range of 15-82 years. The mean age of male patients was greater than the mean age of female patients (58.2 ± 15.8).

Guhamallick et al⁹ in their study a total of 252 FNACs of thyroid lesions were done during the study period. The results of the FNA cytological diagnosis showed that four (1.6%) of the patients had FNAs, which were inadequate for cytological assessment, 228 (90.5%) patients had benign lesions, 17 (6.7%) had lesions that were suspicious for malignancy, and three (1.2%) had malignant neoplasms. The correlation of the FNAC findings with the histopathological diagnosis showed that our FNAC diagnostic accuracy rate was 96.2%, with a sensitivity of 66%, and specificity of 100%.

Fine needle aspiration cytology has certain limitations on account of an inadequate sample and suspicious diagnosis. Intermediate FNAC results and cytodiagnostic errors are unavoidable due to overlapping cytological features, particularly among hyperplastic adenomatoid nodules, follicular neoplasms, and follicular variants of papillary carcinoma.¹⁰

Binesh et al¹¹ found that out of the total 100 cases, as per the six tier Bethesda system, 3 cases belonged to non-diagnostic/unsatisfactory – I category, 81 cases belonged to benign - II category, no cases were classified under atypia of undetermined significance – III category, 9 cases belonged to follicular neoplasm/suspicious for follicular neoplasm - IV category, 3 cases belonged to suspicious for malignancy - V category, and 4 cases belonged to malignant - VI category. The majority of cases 81 cases (81%) were categorized into benign category II.

Wu et al¹² reviewed the results of 18,183 FNAs. Their data revealed a mean sensitivity and specificity of 83% and 92%, respectively. Other studies with smaller numbers of FNAs report accuracy rates ranging from 70% to 97%, dependent on both the skill of the individual performing the biopsy and the cytopathologist interpreting it.

CONCLUSION

Authors found that FNAC is cost-effective and safe diagnostic method. Maximum lesions were neoplastic.

REFERENCES

1. Parikh UR, Goswami HM, Shah AM, Mehta NP, Gonsai RN. Fine needle aspiration cytology (FNAC) study of thyroid lesions (study of 240 cases). *Gujarat Med J* 2012;67:25-30.
2. Singh DK, Kumar R, Paricharak SD, Nigam N, Nigam SK. Role of fine needle aspiration cytology in solitary thyroid nodules. *J Evol Med Dent Sci* 2013;36:6903-14.
3. 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;111:508-16.
4. Silverman JF, West RL, Larkin EW, Park HK, Finley JL, Swanson MS, *et al.* The role of fine-needle aspiration biopsy in the rapid diagnosis and management of thyroid neoplasm. *Cancer* 1986;57:1164-70.
5. Gupta M, Gupta S, Gupta VB. Correlation of fine needle aspiration cytology with histopathology in the diagnosis of solitary thyroid nodule. *J Thyroid Res* 2010;379051.
6. Ray S, Manna AK, Sen S, Pathak S, Chakraborty D, Bhattacharya P. Morphometry of thyroid lesion with cytological and histological correlation. *J Cytol* 2006;23:113-8.
7. Swamy GG, Madhuravani S, Swamy GM. Fine needle aspiration cytology – A reliable diagnostic tool in the diagnosis of thyroid gland enlargements. *Nepal Med Coll J* 2011;13:289-92.
8. Rangaswamy M, Narendra K, Patel S, Gururajprasad C, Manjunath G. Insight to neoplastic thyroid lesions by fine needle aspiration cytology. *J Cytol* 2013;30:23-6.
9. Guhamallick M, Sengupta S, Bhattacharya NK. Cytodiagnosis of thyroid lesions-usefulness and pitfalls: A study of 288 cases. *J Cytol* 2008;25:6-9.
10. Handa U, Garg S, Mohan H, Nagarkar N. Role of fine needle aspiration cytology in diagnosis and management of thyroid lesions: A study of 434 patients. *J Cytol* 2008;25:13-7.
11. Binesh F, Salari AA. Comparative evaluation of the diagnosis results of fine-needle aspiration cytology and pathology in the assessment of thyroid nodules. *Pak J Med Sci* 2008;24:382-5.
12. Wu HH, Rose C, Elsheikh TM. The Bethesda system for reporting thyroid cytopathology: An experience of 1,382 cases in a community practice setting with the implication for risk of neoplasm and risk of malignancy *Diagn Cytopathol* 2012;40:399-403.