

Diagnosis of Thyroid Gland Swellings with Fine Needle Aspiration Cytology

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ABSTRACT

Introduction: Goiter is the most common diagnosis among thyroid swellings. Thyroid gland cancer accounts for 1% of all cancers. Fine needle aspiration cytology has emerged as a reliable tool for diagnosis of thyroid swellings. It gives highly accurate cytological information from which a definitive management plan can be formulated.

Materials and methods: This is a retrospective study, including cytology reports of cases of thyroid diseases over a three-year period, from Baisakh 2074- Chaitra 2076 B.S. (April 2016-May 2019 A.D.) Approval for study was obtained from Institutional Review Committee, Pokhara Academy of Health Sciences.

Results: Majority (88.57 %) of the patients were females. Nodular goiter was found to be the commonest diagnosis (64.28%).

Conclusion: Thyroid swellings can be diagnosed early by cytology and it helps in management of patients.

Keywords: Carcinoma, FNAC, goiter, thyroid swellings.

INTRODUCTION

Head and neck swelling is a common complaint worldwide. The cause of head and neck swelling can be developmental, inflammatory and neoplastic. Swellings can arise from lymph nodes, soft tissues, thyroid gland, salivary glands, blood vessels, lymphatic channels and neural elements. Diagnosis of swelling arising in any part of the body can be made from the site of swelling and associated features, which applies to head and neck region as well. Benign or malignant nature of disease guides the management. ¹

Neck masses are usually benign. The clinical importance is mainly related to the need to exclude malignancy. ²The prevalence of thyroid nodules is reported to be 4-7 percent. ³Goiter is the most

common diagnosis among thyroid swellings. ⁴Thyroid gland cancer accounts for 1% of all cancers and is responsible for 0.5% of death related to cancer. ⁴Patient age and histology as well as stage of cancer are important prognostic factors. ²Fine needle aspiration cytology has emerged as a reliable tool for clinching the diagnosis in head and neck swellings. FNAC represents a feasible, valuable screening examination. ²

FNAC is considered as the gold standard investigation in diagnosis of thyroid nodules. ⁵It gives highly accurate cytological information from which a definitive management plan can be formulated. ⁶FNAC has high sensitivity and specificity approaching to 96% in some studies. ⁷Limitations in FNAC due to scanty sample, vascularity of thyroid swelling, variation in sampling

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technique, and expertise can sometimes pose a problem in arriving at a definitive diagnosis.^{8,9,10}

The aim of the study is to find out different diagnosis of thyroid swellings achieved by FNAC at WRH. It is hoped that that this study will highlight the burden of benign and malignant swellings in this region of the country.

MATERIALS AND METHODS

This is a retrospective observational study. Data was collected from the electronic records maintained at the Department of Pathology, Western Regional Hospital. It included FNAC reports of cases of thyroid diseases over three-year period, from Baisakh2074- Chaitra2076 B.S. (April 2016-May 2019 A.D.) Approval for retrospective study was received from Institutional Review Committee(IRC), PAHS, WRH.

All patients who underwent FNAC for thyroid swellings whether after clinical diagnosis or following ultrasonography diagnosis were enrolled for study purpose.

Fine needle aspiration of solid area of thyroid nodule was done in each case with 23 Gauge needle connecting to a 10-ml syringe. Multiple needle passes, usually 3-4 times were made within the lesion at varying angles and depths and with constant negative pressure. Before final withdrawal, the negative pressure was released prior to the needle emerging out from the skin. The cytological material was transferred on to glass slides. The aspirated material was then smeared on 2-4 slides, fixed in 95% ethanol and stained by Papanicolaou stain. The air dried slides were stained with Giemsa stain. The stained slides were seen under light microscope.

The collected data was entered in Microsoft Excel spreadsheet and descriptive analysis was done.

RESULTS

A total of 140 patients were included in the study. 88.57% of total patients were females. Most common age group was 41-50 years. The commonest diagnosis was nodular goiter (64.28%). Papillary thyroid carcinoma was seen in 5 patients (3.57 %). Other findings are elaborated in Table 1 and Table 2.

Table 1. Case Characteristics

Age group	<= 10	4 (2.85%)
	11-20	10 (7.14%)
	21-30	27 (19.28%)
	31-40	29 (20.71%)
	41-50	37 (26.42%)
	51-60	18 (12.85%)
	61-70	9 (6.42%)
	>70	6 (4.28%)
Gender	Male	Female
	16(11.42%)	124 (88.57%)
Type of swelling	Benign	Malignant
	125 (89.28%)	15 (10.71%)

Table 2. FNAC Diagnosis of Thyroid Swellings

Diagnosis	Frequency	Percentage
Nodular goiter	90	64.28%
Thyroglossal cyst	8	5.71%
Hashimoto thyroiditis	25	17.85%
Subacute thyroiditis	2	1.42%
Suspicious for Papillary thyroid carcinoma	8	5.71%
Papillary thyroid carcinoma	5	3.57%
Neoplastic	2	1.42%
Total	140	

DISCUSSION

Thyroid diseases are a common clinical problem worldwide. The incidence of thyroid malignancy is ~122 000 new cases per year. Investigations such as thyroid function test, ultrasound, thyroid scan, and antibody detection tests are done aiming to select the patients who can be managed conservatively and patients who need surgery.⁵ Management of patients with thyroid disease has changed radically based on the result of FNAC .It

can be used as an initial investigation for diagnosis of thyroid disease. It is safe, cost-effective, diagnostic modality, minimal invasive, and rapid as a diagnostic tool for preoperative assessment and helps surgeon in management. If cytologic finding is nondiagnostic, repeat fine-needle aspiration can be done. Small cystic lesions that collapse after aspiration can be observed.^{5,13,14}

In a study, most of the patients were females, with female to male ratio of 73: 7, and patients presented mostly in third and fourth decades.⁵In our study female to male ratio was found to be 7.75:1. Cases were most common in the third and fourth decades.

In a study done by Sengupta et al, the majority of the cases (76.97%) were found to have colloid goiter, followed by follicular carcinoma (8.99%); papillary carcinoma was not found.¹¹ In our study too, nodular goiter was the commonest diagnosis. Papillary thyroid carcinoma was found in 5 cases (3.57%).

Sikder et al studied 100 cases of preoperative FNAC. Out of 100 cases of thyroid swelling 76 (76%) were non neoplastic, 24 (24%) were neoplastic, of which 20 (90.903%) were papillary carcinoma and 2 (9.10%), medullary carcinoma.¹² 2 cases reported as follicular lesion in FNAC, as follicular carcinoma cannot be diagnosed by FNAC. Histopathological diagnosis is the final diagnosis in case of follicular carcinoma. In the present study, benign swellings were detected in 89.28% and malignant cases were observed in 10.71%.

Limitation of the present study is that comparison of FNAC findings with histopathology could not be done.

CONCLUSION

FNAC provides early and reliable diagnosis in thyroid swellings. Benign and malignant swellings can be diagnosed with FNAC which guides in treatment of patients.

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