

Spectrum of Pathological Lesions on FNAC from Neck Swellings

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ABSTRACT

Background and Objective: Neck swellings are very common conditions which can be diagnosed in a short time by doing fine needle aspiration cytology (FNAC). It is used to diagnose different inflammatory and neoplastic conditions of lymph nodes, thyroid, salivary glands and soft tissues. Moreover, it is cost effective and has no or minimal side effects.

Methods: A total of 100 patients with neck swellings were included. A prospective study was conducted from January, 2018 to May, 2019. Cytological diagnosis was made and correlated clinically. Data analysis was done by Statistical Package for the Social Sciences (SPSS) Version 20 and expressed as frequency and percentage.

Results: Among hundred FNAC procedures were performed, of which majority (95%) were benign, and a few (5%) were malignant. Out of total 60 Lymph node lesions, chronic granulomatous inflammation, was the most common (53.33%). There were two cases of Non-Hodgkin's Lymphoma and one of meta-static carcinoma in lymph node. In all 30 cases of thyroid lesions, frequency of benign follicular lesions (Bethesda II) was 86.66%. Pleomorphic adenoma (50%) was the commonest amongst salivary gland lesions.

Conclusion: Fine needle aspiration cytology is a simple and effective method of assessing neck lumps. FNAC can differentiate infective and benign conditions from malignant ones and helps in speedy and safe diagnosis of patients with optimal guidance for further excision.

KEYWORDS: Fine needle aspiration cytology, Non-Hodgkin's Lymphoma, Pleomorphic adenoma.

INTRODUCTION

There can be a wide variety of palpable lesions in the neck.¹ Fine needle aspiration cytology is a minimally invasive procedure which is helpful in the diagnosis of different neck lesions. Various inflammatory and neoplastic lesions can be differentiated by FNAC. Along with FNAC, clinical history is important in making a diagnosis.²⁻³ Proper diagnosis is necessary for the management of patients. Biopsy requires surgery, may leave a scar and patient may be hospitalized.⁴

Acute, chronic or subacute lymphadenitis can occur in the lymph nodes. Lymph nodes can be enlarged due to bacterial or viral infections, tuberculosis, lymphoma or metastatic carcinoma.⁵

Thyroid nodules are found more often in females. They can cause cosmetic problems, hormonal imbalance, pressure symptoms and also have malignant potential.⁶⁻⁷ Mostly thyroid nodules are benign, a few are malignant. This can be diagnosed by FNAC, thereby reducing unnecessary surgery for benign lesions.⁸ Other tests like ultrasound and nuclear scan should be used in conjunction with FNAC.⁹

Tumors, infections or cystic lesions can arise in

salivary glands and can be difficult to say whether its arising from salivary gland or other structures in neck.¹⁰ Pre-operative FNAC diagnosis improves surgical treatment of salivary gland masses.¹¹

Cystic lesions in neck can be inflammatory, developmental, benign or malignant. In children the cysts are usually benign and developmental, whereas in adults the risk of malignancy is increased. FNAC can help in the pre-operative management of patients. However, radiological correlation is required.¹²

The aim of the present study is to evaluate the spectrum of neck lesions in our setting.

METHODS

Patients of any age and sex, with swelling in neck due to enlarged thyroid, lymph node, submandibular salivary gland, soft tissue swelling and congenital or acquired cystic lesion of neck were included in the study. Patients with bleeding disorder or hyperthyroidism were excluded. Patients were explained about the procedure, and after wearing the gloves, the area was cleaned with spirit swab. Fine needle aspiration cytology was done by using 10 cc syringe. After holding the lump, the needle was passed

back and forth, and negative pressure was given by pulling on the plunger and maintaining the pressure with the fingers and thumb. This was done until adequate material appeared in the hub of the needle. The negative pressure was released and the needle withdrawn from swelling. The material aspirated was spread on slides. Slides were air dried and fixed in 95% alcohol. Hematoxylin and eosin, and Giemsa staining was done.

This was a prospective study conducted at Sughra Shafi Medical Complex and Sahara Medical College Narowal. Cytological diagnosis of 100 different lesions of neck from January, 2018 – May, 2019 was done and the results were correlated clinically or histologically. Institutional ethical committee approval was taken (diary no.SMC/EC/02-18).

STATISTICAL ANALYSIS

The data was expressed as frequency and percentage and analyzed using SPSS (Statistical Package for the social sciences) Version 20.0 (SPSS for Windows, SPSS Inc., Chicago, IL, USA).

RESULTS

Out of 100 cases of neck lesions, 95 were benign and 5 were malignant. For benign lesions, the ages of the patients were from 03-68 years, with mean age of 25.68 ± 13.61 SD, whereas for malignant lesions the ages of the patients were from 27-80 years with mean age 51.4 ± 21.03 SD.

There were 60 cases of lesions in the lymph nodes, of which 32 (53.33 %) were of chronic granulomatous inflammation, and out of these, 2 cases were false positive. Fifteen cases (25%) were of reactive lymphadenitis,

of which one was false positive, which on biopsy showed granulomatous inflammation. Ten cases (16.66%) were of acute suppurative inflammation. All cases were correlated clinically. Out of two cases (3.33%) of Non-Hodgkin’s Lymphoma one was confirmed histologically. There was 1 (1.66%) case of metastatic carcinoma in lymph node. All cases were correlated clinically. Five percent lesions were malignant. Ratio of male to female was 1:1 (Table- 1, Fig.1 a-e).

There were 30 cases of lesions in thyroid gland (30%). Cytological diagnosis was made as per Bethesda system.¹³ Benign follicular lesions (Bethesda II) were the most common lesions (86.66%). All were correlated clinically or on biopsy. There were 3 cases of follicular neoplasm (10%), one confirmed on biopsy and the other two could not be followed. There was 1 case (3.33%) of papillary carcinoma. The patient could not be followed up. The ages of the patients were from 22-55 years with mean age 33.8 ± 8.64 SD. Male to female ratio was 1:14 (Table-2, Fig. 2a & 2b).

Out of the 4 salivary gland lesions, 1 was of chronic sialadenitis (25%), 2 of pleomorphic adenoma (50%) and 1 suspicious of mucoepidermoid carcinoma (25%). All were correlated clinically. The ages of the patients ranged from 22- 80 years with mean age 50.75 ± 27.65 SD. Male to female ratio was 3:1 (Table-3, Fig. 3).

There were four cases (4%) of benign cystic lesions of neck. The ages of patients were from 9-18 years with mean age 13.25 ± 3.68 SD. There were 2 cases of thyroglossal duct cyst (50%), 1 of branchial cyst (25%) and 1 of epidermal inclusion cyst (25%). There were two cases of lipoma in females of ages 40 and 45 years respectively. All were correlated clinically.

Table-1: Frequency and age distribution of different lesions of lymph nodes.

Sr. No.	Lesion	Age in Years (Mean ± SD)	Male	Female	Total No. of Cases
1.	Reactive lymphadenitis	3–30 (13.6 ±10.32)	11 (18.3%)	4 (6.6%)	15
2.	Chronic granulomatous inflammation (tuberculosis)	7-55 (23.4 ±11.06)	13 (21.6%)	19 (31.6%)	32
3.	Acute suppurative inflammation	4–50 (23.9 ±16.73)	5 (8.3%)	5 (8.3%)	10
4.	Non-Hodgkin’s lymphoma	35-60 (47.5 ± 17.67)	--	2 (3.3%)	2
5.	Metastatic carcinoma in lymph node	55	1 (1.6%)	0 (0%)	1

Table-2: Frequency, age and sex distribution of different lesions of thyroid.

Sr. No.	Lesion	Age in Years (Mean ± SD)	Male	Female	Total No. of Cases
1.	Bethesda II (colloid goiter/solitary colloid nodule)	22-54 (33.23 ± 8.15)	2 (6.6%)	24 (80%)	26
2.	Bethesda IV (follicular neoplasm/suspicious of follicular neoplasm)	33–55 (41 ± 12.16)	--	3 (10%)	3
3.	Bethesda VI (papillary carcinoma)	27	--	1 (3.3%)	1

Data for neck lesions
 Thyroid total no, of cases 30
 Bethesda II COLLOID GOITRE/SOLITARY COLLOID NODULE = 27 correlated clinically and on biopsy
 Bethesda IV Follicular neoplasm=2 one confirmed on biopsy, other could not be followed
 Age ranged from 13–55 years
 2 males rest females
 Sensitivity
 Specificity
 Positive predictive value
 Negative predictive value
 LYMPH NODES – Total no. of cases – 57
 Chronic granulomatous inflammation ---- 32
 False positive – 2
 Reactive lymphadenitis---15

False positive = 2
 Acute suppurative inflammation = 10
 Non-Hodgkin’s lymphoma = 2 – confirmed by biopsy
 Metastatic carcinoma = 2
 All correlated clinically
 SALIVARY GLAND
 Chronic sialadenitis = 1
 Pleomorphic adenoma = 2
 Malignant salivary gland tumor = 1
 All were not followed
 LIPOMA == 1
 BENIGN CYSTIC LESION OF NECK
 THYROGLOSALDUCT CYST == 2
 Branchial cyst = 1
 Epidermal inclusion cyst = 1
 All corelated clinically

Table-3: Frequency, age and sex distribution of different lesions of submandibular salivary gland.

Sr. No.	Lesion	Age in Years (Mean ± SD)	Male	Female	Total No. of Cases
1.	Chronic sialadenitis	22	1 (25%)		1
2.	Pleomorphic adenoma	33-68 (50.5 ± 24.75)	2 (50%)		2
3.	Suspicious of mucoepidermoid carcinoma	80	0	1 (25%)	1

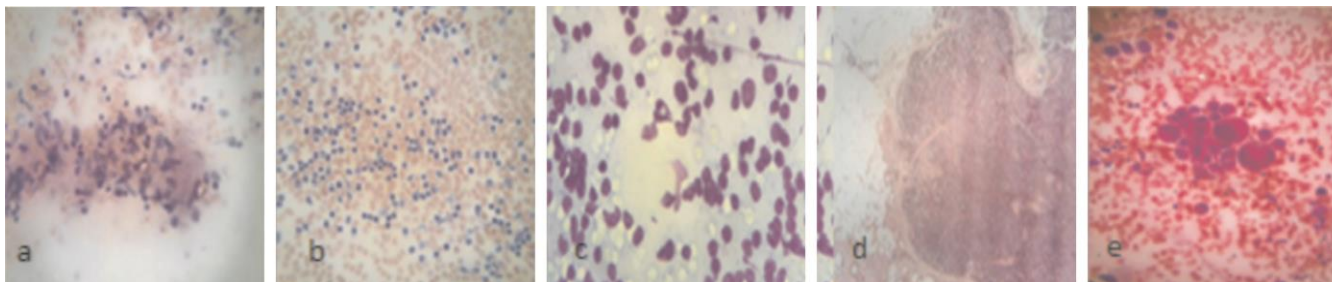


Fig. 1: Photomicrographs of lymph node showing a granu-loma with caseation necrosis (Hematoxylin and Eo-sin stain, 200x), b; reactive lymphadenitis, (H&E stain, 200x) c; non-Hodgkin’s Lymphoma, (Giemsa stain, 200x) d; non-Hodgkin’s lymphoma, (H & E stain) e; metastatic carcinoma in lymph node (He-matoxylin and Eosin stain, 200x).

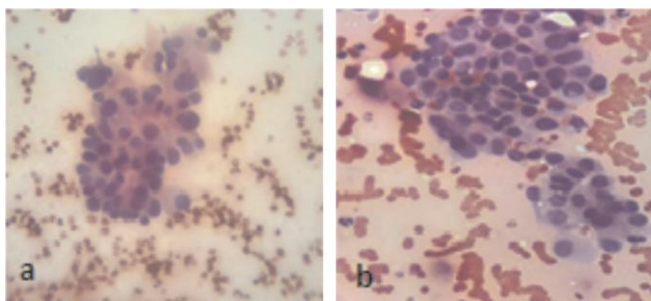


Fig. 2: Photomicrograph showing benign follicular epithelial cells forming microfollicular and macrofollicular pattern, Bethesda II, benign follicular lesion, colloid goiter (H&E stain 200x); b: photomicrograph showing intranuclear inclusions, Bethesda VI, Papillary carcinoma (H&E stain 200x).

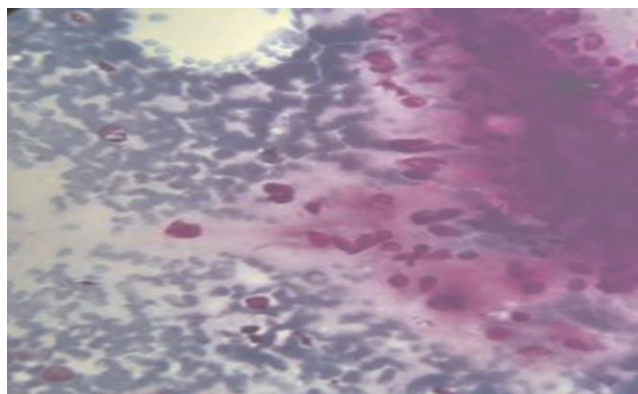


Fig. 3: Photomicrograph showing myxoid stroma and benign epithelial cells, submandibular salivary gland---pleomorphic adenoma (Giemsa stain 200X).

DISCUSSION

The study was conducted from 2018-19 in Pathology Department, Sahara Trust Hospital, Narowal. Out of 100 cases of neck lesions, 95 were benign and 5 were malignant. For benign lesions, the ages of the patients were from 3-68 years, whereas for malignant lesions the ages of the patients were from 27-80 years.

There were 60 cases of lesions in lymph nodes, of which 95% were benign and 5% were malignant. Of the benign lesions, 32 (53.33%) were chronic granulomatous infections. Study conducted by Majeed and Bukhari showed that lesions were commonly found in cervical lymph nodes and the incidence was more in females. Along with FNAC, history, clinical examination, biopsy and PCR are helpful in diagnosing tuberculosis. FNAC is very helpful in diagnosing granulomatous inflammation.¹⁴ Work done by Batni et al.¹⁵ shows that in India tuberculosis is a very common cause of enlarged lymph nodes. There were 15 cases of (25%) of reactive lymphadenitis, 10 (16.66%) of acute suppurative inflammation. This is in accordance with the work done by Arul et al.¹⁶ who observed tuberculous lymphadenitis in 44.1% and reactive lymphadenitis in 32.2% cases.¹⁶ There were 2 cases of Non-Hodgkin's lymphoma and 1 of metastatic carcinoma in lymph node (Table- 1, Fig.1 a-e).

FNAC can help in diagnosing metastatic malignancies which may be due to the fact that metastatic carcinoma cells are usually abundant and their cytologic features are dissimilar to that of the cells of normal or hyperplastic lymph nodes.⁵

There were 30 cases of lesions in thyroid gland (30%). Cytological diagnosis was made as per Bethesda system. Benign follicular lesions (Bethesda II) were the most common lesions (86.66%). There were 3 cases of follicular neoplasm (10%) and 1 (3.33%) of papillary carcinoma. The ages of the patients were from 22-55 years with mean age 33.8 ± 8.64 SD. Male to female ratio was 2:28 (Table-2, Fig.2a, 2b). Study conducted by Bhartia R et al.¹⁷ also showed that out of 238 patients with enlarged thyroid, most of them were younger females and colloid goiter was the most common lesion.

Out of the 4 salivary gland lesions, 1 was of chronic sialadenitis, 2 of pleomorphic adenoma and 1 suspicious of mucoepidermoid carcinoma. Patients age was from 22-80 years with mean age 50.75 ± 27.65 SD. Male to female ratio was 3:1 (Table- 3, Fig.3). Katoki S et al.¹⁸ found pleomorphic adenoma, the commonest lesion in salivary gland and mucoepidermoid carcinoma, the most common malignant tumor.

There were two cases of lipoma in females of ages 40 and 45 years respectively. There were four cases (4%) of benign cystic lesions of neck. Mean age of patients was 13.25 years ± 3.68 SD. There were 2 cases of thyroglossal duct cyst, 1 of branchial cyst and 1 of epidermal inclusion cyst. Most of the congenital cystic

lesions occur in first three decades of life.¹⁹

Standard method for the definitive diagnosis of not only lesion, but FNAC also provides high diagnostic value and being an easy method with low rate of complications, it is still a cost-effective tool in the diagnosis of thyroid.

CONCLUSION

Neck swellings are a very common conditions and by doing fine needle aspiration cytology benign and infectious conditions can be differentiated from malignant ones and avoid wrong management. It is a standard method for the definitive diagnosis of any lesion. It also provides high diagnostic value and being an easy method with low rate of complications, it is a cost-effective tool in the diagnosis of thyroid and lymph node lesions.

LIMITATIONS OF STUDY

This should be more focused and further studies with large sample size should be made to find ways to improve the diagnosis.

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AUTHOR'S CONTRIBUTION

ANI: Conception of study, acquisition of data and articrafting the work.

TT: Acquisition of data.

AA: Analysis of data.

BN: Acquisition of work.

KA: Conception of work, drafting, final approval of work.

CONFLICT OF INTEREST

None to declare

GRANT SUPPORT AND FINANCIAL DISCLOSURE

None to disclose.

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