



FNAC SPECTRUM OF HEAD AND NECK LESIONS :A RETROSPECTIVE STUDY AT TERTIARY CARE CENTER

Dr. S. A. Bolde	Associate Professor
Dr. Sonali Shinde*	Junior Resident *Corresponding Author
Dr. Shwetha Walke	Assistant Professor
Dr. E. R. Gupta	Junior Resident
Dr. S. S. Shete	Associate Professor
Dr. S. S. Dantkale	Associate Professor &HOD

ABSTRACT

Objective: This study is done to evaluate the role of Fine needle aspiration cytology(FNAC) in palpable head and neck masses and also to study their distribution. A correlation was done between cytology and histopathology wherever surgical specimens were available. **Materials And Methods:** In 150 patients of head and neck swelling FNAC smears were done and stained with H& E. Special stains like ZN is done wherever required. FNAC results were interpreted and analyzed according to the anatomical sites and the lesions were categorized into non neoplastic (inflammatory, infectious) and neoplastic conditions. The cytological findings were compared with those of histopathology wherever available. **Results:** Out of the total 150 cases most common swellings was arising from lymph node(44%) followed by thyroid(23.33%) , salivary gland(8%) other(24.67%).

KEYWORDS : FNAC, thyroid, lymph nodes, salivary glands, skin &soft tissue.

INTRODUCTION

Fine needle aspiration cytology(FNAC) is a simple and rapid diagnostic technique. It is considered valuable diagnostic tool because of easy availability, simplicity, minimal trauma and the absence of complications. The cytomorphological features collaborate with histopathology. It can be even considered as microbiopsy. FNAC is accepted as first line investigation for palpable masses of head and neck region. As the clinical and radiological examinations of head and neck masses are not always accurate, sufficient for diagnosis and open biopsy should be hazardous especially in lateral neck masses in carotid triangle. So cytological examination of material obtained by FNAC is an effective method for diagnosis of lesions preoperatively.² FNAC aspiration cytology separates inflammatory and reactive process which can be managed without surgical intervention. It can also help in distinguishing in benign and malignant lesions. It can be repeated for definite confirmation in doubtful diagnosis.³ FNAC is done on outpatient basis without anesthesia with minor trauma and no risk of complications.⁴

OBJECTIVE

1. To study the cytological features of various head and neck lesions and to arrive at diagnosis
2. To study their cytological correlation with histopathological examination findings wherever available.

MATERIALS & METHODS

The present study was conducted in department of pathology at tertiary care center in Maharashtra and included evaluation of data of all patients that underwent FNAC for various head and neck swellings. A total of 150 patients with masses in head and neck region were subjected for FNAC. A thorough systemic examination, clinical history along with radiological findings if possible were noted. A through local examination of swelling was done. After that area with swelling was cleaned with antiseptic. The swelling was fixed with one hand and disposable plastic (23-25 gauge) needle with 10 ml syringe was inserted in the swelling with negative pressure and mobilized in different directions while aspirating material. Sometimes if swelling was not palpable FNAC was done under USG guidance. In some cases, non-aspiration technique was used. After that slides were prepared and fixed with alcohol and or air dried. Following

stains were used for staining as per requirement-.H& E stain, ZN stain. All the slides were reviewed and analyzed. All the data obtained was compiled and statically analyzed and represented in the form of tables and graphs. Interpretation of slides were done as – Assessment of material obtained in aspirate, Cytomorphological features of cells were studied under light compound microscope.

RESULTS

Out of the total 150 cases females were predominant- 93(62%) and males were 57(38%). Out of the total cases most common swellings were arising (Table-1) from lymph node(44%) followed by skin and soft tissue (24.67%), thyroid(23.33%) and salivary gland(8%). Mostly swellings were benign(48.67%), followed by inflammatory lesions(44.67%) and malignant swellings were only 6.66%. Most common lymph node pathology(Table-2) is tuberculous lymphadenitis(39.42%), followed by reactive lymphadenitis(36.36%). Metastasis in lymph node was found in (13.63%) cases. Acute lymphadenitis contributed 7.57%. Exceptional cases like kimura and lymphoproliferative disorder contributed 1.51%.

Out of the total cases 35 cases involved thyroid. Most common thyroid (TABLE-3) swelling was colloid goiter(68.57%), followed by benign cystic lesion(17.14%). Hashimoto and lymphocytic thyroiditis contributed equally(5.71%). Anaplastic carcinoma was found only in (2.87%) cases. Most common lesion involving salivary gland(Table-4) was pleomorphic adenoma(58.33%), cystic lesion (25%) and sialadenitis were least common(16.67%). Most common cases among skin and soft tissue(Table-5) lesion were of epidermal/sebaceous cyst(45.95%), lipoma(29.73%), inflammatory lesions(18.92%). Least common are benign fibrohistiocytic tumor and haemangioma seen in only 2.7%.

Table No.1: Comparison Of Distribution Of Head And Neck Lesions Between Present Study And Other National And International Studies²⁰.

	Lymph node %	Thyroid %	Salivary gland %	Skin & Soft tissue %
Present study	44	23.3	8	24.67
Shobha [12]	86	-	12	02
Shekhar H. [13]	42	18	15.5	17.5
Sreedevi [14]	50.32	44.07	3.28	2.3
Pathak [15]	61.2	19.2	6.7	12.9
S. Khetrapiel [16]	64.1	16.9	4.1	13.8
SanghviAKB [17]	41	37	5	7
Kapoor S. [18]	43	34	15	8
Patel D. [19]	64	22.8	4.8	2

Table-2: Distribution Of Lymph Node Pathology And Comparison

Lymph Node	Present Study Cases (%)	Shaika et al[3]	Rajia et al [21]177 (73.8%)	Pournima et al[1] 81 (87.09%)	Meenu et al [22] 70 (100%)
Reactive lymphadenitis	24 (36.36%)	206 (35.3%)	42 (17.5%)	31 (38.27%)	16 (22.86%)
Tuberculous lymphadenitis	26 (39.42%)	25 (4.28%)	105 (43.8%)	40 (49.38%)	-
Acute lymphadenitis	5 (7.57%)	-	-	2 (2.47%)	6 (8.57%)
Metastatic malignancy	9 (13.63%)	3 (0.51%)	8 (3.3%)	2 (2.47%)	25 (35.77%)
Lymphoproliferative disorder	1 (1.51%)	7 (1.20%)	22 (9.2%)	5 (6.17%)	9 (12.85%)
Kimura disease	1 (1.51%)	-	-	-	-

Table No.3: Distribution Of Thyroid Pathology &comparison

Thyroid lesions	Present study Cases (%)	Rajia et al[21] 29 (16.2%)	Shaika et al [3] 102 (17.49%)	Manish et al[23] 19 (35.2%)	Inclub et al[24] 40 (100%)
Colloid goiter	24 (68.57%)	24 (10%)	62 (10.63%)	9 (47.36%)	22 (55%)
Benign cystic lesion	6 (17.14%)	-	-	2 (10.52%)	1 (2.5%)
Hashimoto thyroiditis	2 (5.71%)	-	18 (3.08%)	-	2 (5%)
Lymphocytic thyroiditis	2 (5.71%)	-	-	1 (5.26%)	-
Anaplastic carcinoma	1 (2.87%)	15 (6.2%)	-	7 (36.84%)	15 (37.5%)

Table No.4: Distribution Of Salivary Gland Pathology & comparison

Salivary gland lesions	Present study	Rajia et al [21] 24(10%)	Manish et al[23] 11 (20.4%)	Shaika et al[3] 33(5.66%)	Afan et al[4] -	Sudarshan et al[7] 9 (9%)
Pleomorphic adenoma	7 (58.33%)	21 (8.8%)	11 (20.4%)	12 (2.05%)	-	9 (9%)
Sialadenitis	2 (16.67%)	-	3 (5.3%)	18 (3.1%)	8 (4%)	1 (1%)
Cystic lesion	3 (25%)	-	-	-	-	1 (1%)
Others	-	Carcinoma-3 (1.3%)	Warthin-1.9% Carcinoma-5.6%	Carcinoma-3 (0.5%)	Sialoadenosis-4(2%)	Lipoma-1 (1%)

Table No.5: Distribution Of Skin And Soft Tissue Pathology & comparison

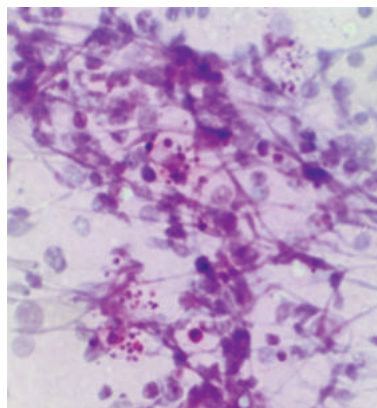
Skin and soft tissue	Cases	Sudarshan [7]8 (8%)	Afan [4] 41(14%)	Shaika[3] 207 (35.5%)
Epidermal/Sebaceous cyst	17 (45.95%)	4(4%)	41(14%)	94(16.12%)
Lipoma	11(29.73%)	1(1%)	-	71(12.17%)
Hemangioma	1(2.7%)	-	-	-
Inflammatory lesion	7(18.92%)	-	-	-
Benign fibrohistiocytic tumor	1(2.7%)	-	-	36(6.17%)

Others	-	Papilloma-1 (1%)	Soft tissue tumor-41 (14%)	Pilomatrixoma-3(0.5%) Angiolymphoma-1(0.17%)
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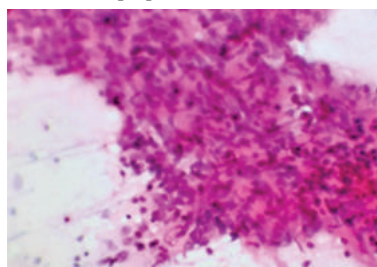
DISCUSSION

FNAC dates back to around mid 19th century. In 1940 two doctors Martin and Colley and a technical developer Ellis performed aspirations from several organs and carried out cytological studies on them. The main advantage of FNAC is avoidance of a surgical biopsy and its attendant risks which include scarring ,greater duration of hospital stay and increased costs.4 Head and neck lesions are easily accessible as a result of relatively superficial locations where they are often palpable. Hence head and neck lesions offer an accessible site for FNAC. Because of the variety of tissues present in head and neck with wide range of primary and metastatic neoplasms that are present in this region7.The accuracy of FNAC depends on important factors like adequacy of sample, sampling method, the experience of the clinician performing the procedure in addition to the experience of the pathologist assessing the sample.5,7 FNAC is always beneficial while doing early differentiation of benign from malignant pathology as it greatly influences the planned treatment. It can be both diagnostics or therapeutic in cystic swellings 6. Hence we studied to assess the nature of various head and neck swellings by FNAC. In the present study FNAC results from 150 patients with head and neck masses were reviewed and analyzed. The results were analyzed according to sex ,site, origin of swelling and nature of swelling. In our study which comprised 150 patients;90 were females and 60 were males giving male to female ratio of 1:1.5 which is comparable to studied done by Tilak et al8(1:2.4), Fernandes H et al9(1:4.37), Solanki PK et al10(1:1.32) and incomparable with study of Schwarz R et al 11(1.43:1).

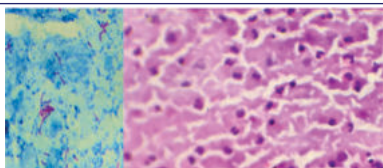
LYMPH NODE: Out of the total 66 lymph nodes aspirated most common lymph node pathology is tuberculous lymphadenitis (39.42%) followed



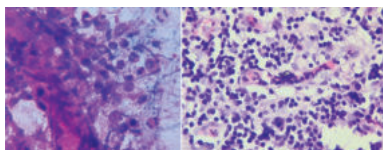
Photomicrograph1: Smear shows mixed population of lymphocytes and many tingible body macrophages suggestive of reactive lymphadenitis.



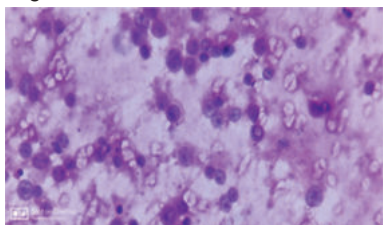
Photomicrograph2: depicting well formed epithelioid cell granulomas diagnosed as tuberculosis in cervical lymph node cytology.



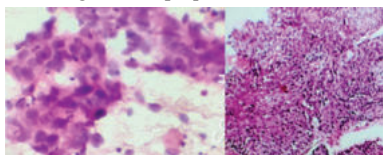
Photomicrograph3A&B: FNAC of cervical LN from a 30 year male HIV positive patient showed eosinophilic necrotic material with polymorphs. There is absence of epithelioid granulomas or histiocytes. On ZN staining, AFB positive bacilli are seen, confirming a diagnosis of tuberculous lymphadenitis.



Photomicrograph 4A&B: On FNAC of post auricular nodule, presence of polymorphous population of lymphocytes, histiocytes and clusters of endothelial cells with background showing eosinophils and fibrous stroma hinted at a diagnosis of Kimura disease. Histopathological examination showed disruption of follicles by increased eosinophils, admixed with polymorphous populations of lymphocytes and histiocytes suggest a diagnosis of Kimura disease.



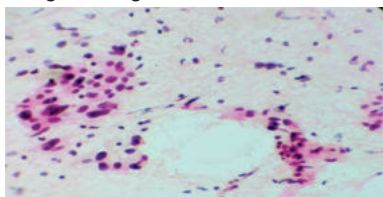
Photomicrograph5: A 55 year old male presented with swelling over right cervical region since 2 years. Multiple lymph nodes were palpable with largest measuring 2x1cm. FNAC was performed which showed atypical, large lymphoid cells with vesicular nuclei and prominent nucleoli revealed the presence of NHL - Diffuse large B cell lymphoma.



Photomicrograph 6A&B: FNAC revealed malignant cells present singly and in small clusters with cells having a high nucleocytoplasmic ratio and prominent nucleoli suggesting positive for epithelial malignancy. Histopathology confirmed a diagnosis of squamous cell carcinoma.

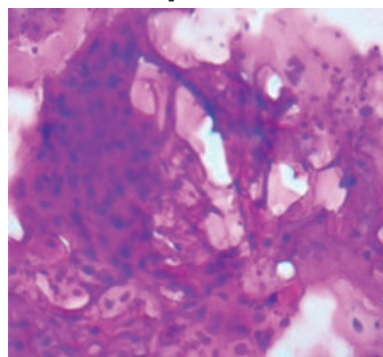
Thyroid

Out of the total cases 35 cases involved thyroid. Most common thyroid swelling was colloid goiter(68.57%) ,followed by benign cystic lesion(17.14%). Hashimoto and lymphocytic thyroiditis contributed equally(5.71%). Anaplastic carcinoma was found only in (2.87%) cases. Present study is comparable to studies done by Rajia et al[21],Shaika et al[3], Inclub et al[24]and Manish et al[23] with most common thyroid pathology being colloid goiter.



Photomicrograph7: FNAC done on 45 year female with thyroid

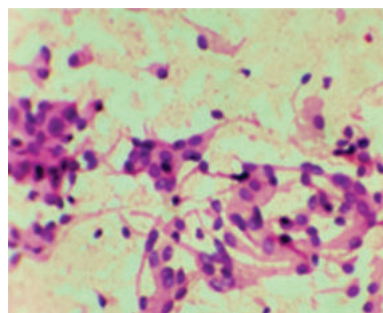
swelling showing cluster of oxyphil cells, lymphocytes, anisokaryosis and abundant eosinophilic cytoplasm giving a diagnosis of Autoimmune thyroiditis -Hashimoto thyroiditis.



Photomicrograph8: A 68 year old female, thyroid nodule of size 3x3cm since 3 weeks. The nodule was hard, non mobile and non tender. USG was S/O TIRAD IV etiology. FNAC showed presence of anaplastic carcinoma of thyroid with osteoclast like giant cells and bizarre atypical undifferentiated follicular cells.

Salivary Gland

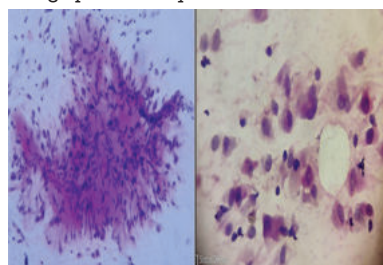
Most common lesion involving salivary gland was pleomorphic adenoma(58.33%), cystic zlesion (25%) and sialadenitis were least common(16.67%). Present study is comparable to studies done by Rajia et al[21],Shaika et al[3], Sudarshan et al[24], Afan et al[4] and Manish et al[23] with most common salivary gland pathology being pleomorphic adenoma.



Photomicrograph9:FNAC shows moderately cellular smear showing epithelial cells with plasma cell like arrangement suggestive of pleomorphic adenoma.

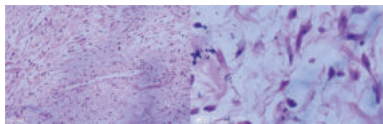
Other Skin & Soft Tissue

Most common cases were of epidermal/sebaceous cyst (45.95%), lipoma(29.73%),inflammatory lesions (18.92P%). Least common are benign fibrohistiocytic tumor and haemangioma seen in only 2.7%. Present study is comparable to studies done by Shaika et al[3], Sudarshan et al[24], Afan et al[4] and with most common skin and soft tissue pathology being epidermal cyst.



Photomicrograph 10A & B :71 year old male came with swelling of size 3x2cm over right temporal region since 2 months. On examination, the swelling is firm, non-tender and non-mobile. USG was suggestive of infective etiology. FNAC was performed.

Photomicrographs showing low power and high power views of benign fibrohistiocytic tumor. Smear showing spindle fibroblastic cells arranged in clusters and singly scattered associated with strands of myxoid and collagenous stroma. Some cells are large, round to oval ganglion like cells with eccentric nuclei and pale cytoplasm.



Photomicrograph 10 C&D: Histopathology showed presence of uniform spindle shaped cells with ill-defined eosinophilic cytoplasm, elongated vesicular nuclei with no atypia. Stroma is myxoid. Above features suggest a differential diagnosis of benign fibrohistiocytic tumor.

CONCLUSION

FNAC is valuable aid in the preliminary diagnosis of various head and neck swellings. It helps to differentiate lesions benign from malignant thus avoiding unnecessary surgeries. FNAC guides surgeon to select guide and modify treatment according to report of FNAC. WE should correlate it with histopathological findings. Most common lesions were . Females were more affected than males. Lymph nodes were most common tissue involved. We could diagnose rare and challenging lesions like Kimura disease, benign fibrohistiocytic tumor, Diffuse large cell B cell lymphoma, Anaplastic carcinoma of thyroid with osteoclast like giant cells on FNAC. However more studies are required for establishing accurate trend of occurrence of head and neck swellings.

Key Message: FNAC is an effective diagnostic tool in the diagnosis of head and neck masses.

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