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Original Research Article

Crucial Role of Fine Needle Aspiration Cytology in Cytomorphological Diagnosis of Head & Neck Lesions in Tertiary Health Care Centre

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Abstract

Introduction: Cytopathology is a specific subspeciality of Pathology in which Fine needle aspiration cytology (FNAC) always play a crucial role in early detection abnormal cell morphology. FNAC Procedure is fast, safe and help in early detection of Head and Neck Lesions with more than 90% accuracy.

Material and Methods: This is retrospective observational study including 415 cases having Head and neck Lesions. This study was conducted in Department of Pathology, ASMC Firozabad. FNAC procedure was performed by aspiration and non-aspiration techniques and cytological diagnosis was given and confirmed by Histopathology where ever it is indicated. Findings were also correlated with Clinic radiological findings.

Results: The most common age group affected was 05-78 years with mean age group 41.8 years. Male to female ratio was 0.87 spectrum of these lesions was including ReactiveLymphadenitis132(65.3%), GranulomatousLymphadenitiswasfoundin70 (34.6%), Epidermal inclusion cyst 98, Necrotising Lymphadenitis 49 followed by salivary gland Lesions 14 cases. Out of theses 14 cases pleomorphic Lesions were most common (09). This study shows 380 cases (91.56%) were benign and the malignancy was seen only in 35 cases (8.43%).

Conclusion: This study concluded out that role of FNAC in finding out early pathological changes in Head and Neck Lesions is very crucial. FNAC is very simple, safe and with minimal invasive procedure is sufficient to differentiate between Benign and Malignant Lesions and avoid unnecessary Tests and Financial burden on patients

Keywords: FNAC, Head and Neck Lesions, Lymph Node, Thyroid.

Introduction

Today, Head and neck lesions have become much more common in the country. As the disease prevalence is increasing so it becomes crucial to detect the disease as early as possible to expedite management. Today we have many advance techniques to detect the disease in its early stage but screening and diagnosis by FNAC Play a crucial role.

Fine needle aspiration cytology (FNAC) is a well-established rapid diagnostic technique which is simple, accurate, and safe [1]. It is now considered as the first line diagnostic tool [2]. Fine needle aspiration cytology is well used technique for evaluation of palpable head and neck lesions.

Currently, this technique is the most practicing investigation of choice in head and neck swellings and other palpable swellings of body. Most of the patients in surgical OPD come with variable head and neck swelling. Variable sites of head & neck involved scalp as orbital region, nasal region, lymph nodes, soft tissue and oral cavity.

The inclusion criteria for this study were patients with complete Bio data who had head and neck lesion and underwent FNAC. Out of these lesions, histopathology done in clinically indicated cases. Exclusion criteria were patients with Thyroid swellings, Oral cavity lesions with incomplete data. For the sake of this study, the lesions were grouped

into; Benign, Malignant and Suspicious. (FNAC, incisional biopsy, excisional biopsy or surgical resection specimen), anatomical site of the lesion, FNAC and Histopathological diagnosis of the lesion were obtained and included in the final analysis. FNAC and Histopathological diagnosis results were available, while cases with incomplete records were excluded.

It is a Retrospective observational study which has been conducted in the department of pathology, Autonomous State Medical College, Firozabad. We utilized historical data obtained from case notes and histopathology records of 415 patients that had FNAC and HPE (where clinically indicated)

Aims and Objectives:

1. To study the spectrum of lesions in head and neck in patients of ASMC Firozabad
2. To assess the role of FANC in diagnosing the palpable head and neck swelling

Materials and Methods:

A retrospective observational study was conducted in the Department of Pathology, Autonomous State medical College, Firozabad (UP) a tertiary care hospital, from January 2022 to December 2022. Ethical clearance was obtained from the Institutional Review Committee. After receiving the consent from the patient or guardian (in case of minor), Fine needle aspiration procedure was done in patients, who were presented with superficially palpable head and neck lesions in the clinical department (Medicine, Surgery, Pediatrics, ENT etc). While taking the sample the patients were placed in a comfortable position, the swellings were made prominent and fixed between fingers, the area was cleaned with isopropyl alcohol and the aspiration was done aseptically. Smears were prepared from the materials which were aspirated in the syringes.

After the procedure, we fixed the smear and stained with Giemsa stain. Smears were evaluated for cellularity and morphology with background material.

Results & Observation:

A total of 415 cases involving the head and neck region were included in the study group, among which 194 (46.7%) were males and 221 (53.3%) were females.

In this study, the age range of the patient was between 05 year to78 years with a mean of 41.8 years. The peak incidence was noted in the fourth decade 70 (18.4%) followed by the second decade 59 years.

Table 1: Site and gender wise distribution of head and neck lesion

S.No.	Site of lesion	Female	Male	Total
1.	Neck swelling	17	10	27
2.	Cervical lymph node	118	84	202
3.	Submandibular swelling	14	15	29
4.	Parotid swelling	5	9	14
5.	Post auricular	6	8	14
6.	Scalp	12	14	26
7.	Submental	5	5	10
8.	Angle of mandible	4	6	10
9.	Occipital	4	4	8
10.	Supraclavicular	10	19	29
11.	Pre auricular	6	5	11
12.	Orbital	2	5	7
13.	Face	18	10	28
	Total	221	194	415

This Study shows highest number of cervical lymph node lesion 202 (48.6%) of which female predominance 118(58.4%) can be seen .occipital lesions 8(1.9%), orbital lesions7 (1.6%) were seen on a lower side.

Table 2: Benign and Malignant Head and Neck lesions

Benign	Malignant
380 (91.56%)	35 (8.43%)

In the retrospective study of head and neck lesions it was observed that among the total 415 patients majority of the lesions are benign 380 cases (91.56%) and the malignancy was seen only in 35 cases (8.43%).

Table 3: Specifications of lesion

1.	Reactive Lymphadenitis	132
2.	Granulomatous Lymphadenitis	70
3.	Necrotising Lymphadenitis	49
4.	Epidermal inclusion cyst	98
5.	Lipoma	21
6.	Squamous cell carcinoma	20
7.	Hodgkins Lymphoma	1
8.	Non-Hodgkins Lymphoma	1
9.	Salivary gland Lesion Pleomorphic adenoma Warthin tumor Mucoepidermal carcinoma Granulomatous parotitis	**(14)** 09 03 01 01
10.	Orbital Lesion Sebaceous gland carcinoma Basal cell carcinoma Hemangioma	**(7)** 01 02 04
11.	Skin Adenexal tumor Eccrine poroma Benign Hydroadenoma	**(02)** 01 01
	Total	**415**

In the retrospective study it was found that among the cervical lymph node lesion 202 (48.6%), Reactive Lymphadenitis 132 (65.3%) were found in majority after that Granulomatous Lymphadenitis was found in 70 (34.6%) patients. Epidermal inclusion cyst, Necrotising Lymphadenitis, Lipoma is some other benign lesions which were also present in significant percentage. Among the malignant cervical lesion Squamous cell carcinoma comprises the maximum and Hodgkins Lymphoma and Non-Hodgkins Lymphoma were on a lesser side. Among the salivary gland Lesion, Pleomorphic adenoma 9 cases (64.2%) comprises the most followed by Warthin tumour 3 cases (21.4%) and Mucoepidermal carcinoma1 case (7.1%) and Granulomatous parotitis 1 case (7.1%).

Among the oral lesions, Hemangioma (57.1%) were seen in most after that Basal cell carcinoma (28.5%), Sebaceous gland carcinoma (14.2%) were seen. Skin adnexal tumors 2 cases (Eccrine poroma 1 case and Benign Hydroadenoma 1 case) were least in prevalence among the patients.

Discussion

Head and neck region is a common site for occurrence of many types of lesions and it poses a challenging diagnostic problem for the clinician.[2] The mass lesions in children can be of infective, reactive, cystic, developmental aberrations, or neoplastic in origin.[8,9]

During a 1-year period, FNA cytology was performed in 415 patients with H&N masses in our department. The most frequent cytological diagnosis was reactive lymphoid hyperplasia, metastatic carcinoma and lymphoma, like in other similar studies [2-4] for all of head and neck lesions we performed FNAC and for some cases we performed HPE to confirm the diagnosis and rule out other causes. Out of 70 Granulomatous Lymphadenitis HPE was performed for 15 lesions out of 13 are true positive and 2 are false positive. out of 49 Necrotising Lymphadenitis HPE was performed for 15 lesions of which 14 shows true positive and 1 show false positive. HPE was performed for 25 Epidermal inclusion cyst from which 23 turns out to be true positive and 2 false positive. For Lipoma HPE was performed for 11 out of which 9 shows true positive.

HPE was done for 14 Squamous cell carcinoma 13 shows true positive, of the remaining 2 one showed Neurofibroma and other one showed Deltoid cyst. HPE was performed for 1 Hodgkins Lymphoma and the accuracy of this test in it is 100%. HPE was performed for 5 Parotid adenoma samples out of which 3 are true positive of the remaining two, 1 shows sialadenitis and other 1 shows monomorphic adenoma. HPE was done for 3 Warthin tumors and all was confirmed as warthin tumor stating 100% accuracy. HPE was also done for 1 Mucoepidermal carcinoma and 1 Granulomatous parotitis both shows 100% true positive.

Female predominance was noted in the present study with female-to-male ratio of 1:0.8. These findings were not concordant with other studies conducted by S Prathima et al. [5] and Mohan A et al.[4] with male to female ratio of 1.15:1 and 1.52:1, respectively.

Table 4: Comparative study of anatomic site of aspirate

Authors	M. Koteswari et al.[11] (2017)	Kumar M et al.[10] (2018)	Present study (2023)
No of cases	300	200	415
Lymph node	210 (70.0%)	164 (82.0%)	202 (48.6%)
Salivary gland	8 (2.67%)	2 (2.0%)	14 (3.37%)
Soft tissue and bone	11 (3.67%)	-	-

In the present study, the commonest anatomic site of aspirate in head and neck region was lymph nodes (48.6%). This finding was synchronous with the studies conducted by M. Koteswari et al.[11,12] and Kumar MR et al.[10] [Table:4].

Table 5: Comparative features of type of lesion in head and neck region

Authors	Rapkiewicz et al.[7]	Agarwal D et al.[2]	Mohan A et al.[4]	Present study
Year of study	2006	2010	2016	2023
No. of cases	85	639	215	415
Type of Lesion				
Inflammatory	69 (81.18%)	571 (89.35%)	183 (85.1%)	251 (60.4%)
Benign		32 (5.0%)	19 (8.8%)	118(28.4%)
Malignant	14 (16.47%)	11 (1.72%)	5 (2.33%)	26(6.2%)

Most of the lesions aspirated in head and neck region in our study were inflammatory (73.5%) in nature followed by benign lesions (13.0%). Similar results were reported by Rapkiewicz et al.,[6,7] Agarwal D et al.,[2] and Mohan A et al.[4] where maximum aspirates were inflammatory in nature [Table :5].

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