



SPECTRUM OF PALPABLE HEAD AND NECK SWELLINGS ON FINE NEEDLE ASPIRATION CYTOLOGY-A TERTIARY CARE STUDY.

Pathology

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ABSTRACT

The head and neck swellings are relatively common pathology presentation in our setup. These swellings are evaluated by clinical history and examination with the aid of investigations like Fine Needle Aspiration Cytology (FNAC), USG and CT of the region and excision biopsy. FNAC is a very simple, quick, inexpensive and minimally invasive technique used to diagnose different types of swellings like lymph node, thyroid, skin and soft tissue and salivary glands in head and neck region. This study was taken up to assess the frequency and incidence of palpable swellings on basis of sites, age, sex and distribution of inflammatory, benign and malignant lesions. It was found that lymph nodal swellings (41.57%) are the most common followed by thyroid (31.54%), skin and soft tissue (16.48%) and salivary gland (10.39%) pathologies in that order. Study indicated presence of more non-neoplastic lesions (79.56%) are more prevalent than neoplastic lesions (20.43%). Histopathological correlation was not done in the cases of the study.

KEYWORDS

Fine needle aspiration, palpable swellings, head and neck, lymph node.

INTRODUCTION.

A palpable swelling is the most likely clinical problem to be encountered in the head and neck region¹. Palpable swellings in the region of the head and neck include a wide differential diagnosis including inflammatory lesions and neoplasms, both benign and malignant. In many instances, fine-needle aspiration (FNA) plays a major role in the evaluation and surgical planning of these lesions. Fine Needle Aspiration Cytology (FNAC) is a simple and a rapid diagnostic technique and it is now being considered as a valuable diagnostic aid because of the early availability of results, simplicity, minimal trauma and absence of complications such as in the thyroid, lymph nodes, major salivary glands and other neoplasm's. FNAC is of great value in the head and neck regions because of the multiplicity of accessible organs and heterogeneous pathologies encountered². In general, FNA cytology (FNAC) permits a rapid diagnosis with the additional availability of ancillary techniques such as flow cytometry, cytogenetics, electron microscopy (EM), and cell block preparation with immunocytochemistry. The differential diagnosis in a patient presenting with head and neck mass/swelling is often extensive and will vary with age, sex and site.

These neck masses are evaluated by a detailed clinical history and examination with the aid of investigations like FNAC, USG and CT of the region and excisional biopsy. The common pathologies encountered in the head and neck region presenting as a lump are lymphadenitis (specific and non-specific, acute, and chronic and reactive), metastatic carcinoma, lymphoproliferative lesions, thyroid swellings (goitre, nodules and cysts and carcinoma), salivary gland swellings (sialadenitis, adenomas and carcinomas) and the skin and soft tissue lesions like lipoma, epidermal (keratinous, dermoid) cysts, benign adnexal tumours, etc.

It causes minimal trauma to the patient and carries virtually no risk of complications. Masses located within the region of the head and neck, including salivary gland and thyroid gland lesions can be readily diagnosed using this technique^{3,4}. This retrospective study was designed to review the diversity of lesions that can occur in the head and neck region in patients.

MATERIALS AND METHODS

The present study is a retrospective study of 2 years carried out in Department of Pathology, Government Medical College, Baramulla from August 2020 to September 2022.

Inclusion Criteria.

All outdoor and indoor cases of palpable head and neck swelling in department of pathology, government medical college, Baramulla. All

age and sex were included with proper clinical history was taken. A 5cc or 10cc plastic disposable syringe with an attached 22-to-26-gauge needle was placed inside the mass. Aspirated material from needle was smeared on clean glass slide with the help of another slide and two to four smears were prepared air-dried smear stain with May Grunwald Giemsa and ethyl alcohol fixed smears were stained with Papanicolaou stain.

Exclusion criteria.

The cases of head and neck swellings which were inaccessible were excluded from the study and cases with inadequate aspirate for evaluation. Histopathological Correlation was not done in the cases.

RESULTS.

Fine needle aspiration cytology was done in total 558 cases of palpable superficial head and neck swellings out of 2975 cases of all FNACs during the period with an incidence of 19.76%, out of which majority were females accounting for 58.26% (325) were females and 41.75% (233) were males.

Male to female ratio was 1:1.39. Site wise distribution of all the head and neck swellings [Table1] shows lymph node swelling (41.57%) was the predominant site followed by thyroid swelling (31.54%), skin and soft tissue swellings (16.48%) and salivary gland swellings (10.39%). The youngest patient in the study was 1 year old and the oldest was 80 years of age.

Head and neck lesions were categorised cytologically into nonneoplastic (79.56%), neoplastic (20.43%) (Figure 1). In non-neoplastic lesion, reactive lymphadenitis (27.9%) was predominant lesion followed by epidermal inclusion cyst, lymphocytic thyroiditis and granulomatous lymphadenitis [Table 8]. Neoplastic lesions were further classified into benign and malignant lesion depending upon the tissue involved. Cases of reactive lymphadenitis were more in overall FNAC of head and neck lesion in present study. In malignant neoplastic lesion papillary carcinoma of thyroid (3.40%) was predominant followed by metastatic deposits in lymph node and mucoepidermoid carcinoma of salivary gland.

Table 1: Distribution of swellings based on Site/Tissue

Site/Tissue	Male	Female	Total	Percentage
Lymph Node	110	122	232	41.57%
Thyroid	72	104	176	31.54%
Skin and Soft Tissue	27	65	92	16.48%
Salivary Gland	24	34	58	10.39%
Total	233	325	558	100%

Out of 232 cases of lymph node swellings, 156 (67.24%) cases were of reactive lymphadenitis followed by chronic granulomatous lymphadenitis (15.94%) and Suppurative Lymphadenitis (4.31%). In Neoplastic lesions, metastatic deposits were the predominant finding (6.89%) followed by lymphoproliferative disorder (lymphoma) (5.60%) [Table 2].

Diagnosis	No. of Cases	Percentage	Overall Percentage
Non-Neoplastic			
1. Reactive Lymphadenitis	156	67.24%	27.9%
2. Chronic Granulomatous Lymphadenitis	37	15.94%	6.63%
3. Suppurative Lymphadenitis	10	4.31%	1.79%
Total	203	87.5%	36.37%
Neoplastic			
1. Lymphoproliferative Disorder	13	5.60%	2.32%
2. Metastatic Deposits	16	6.89%	2.86%
Total	29	12.5%	5.19%
Total	232	100	41.57%

Lymph node swellings were predominant in third decade (31.03%) and M: F ratio was 1:1.19. [Table 3]

Age	Cases	Percentage	Overall Percentage
<18	56	24.13%	10.03%
19-30	72	31.03%	12.90%
31-40	36	15.51%	6.45%
41-50	28	12.06%	4.76%
51-60	18	7.75%	3.22%
61-70	12	5.17%	2.15%
>70	10	4.31%	1.79%
Total	232	100%	41.54%

Thyroid swellings comprised of 176 cases (31.54 %) cases of all head neck swellings. Most common pathology in non-neoplastic lesions was Colloid Goitre comprising of 80 cases (45.55%) followed by Lymphocytic thyroiditis (21.59%), Adenomatoid Nodule (5.68%) and thyroglossal cyst (3.97%). In neoplastic category most common was Papillary Carcinoma Thyroid (PCT) (10.79%) followed by Follicular Neoplasm (9.09%) and Hurthle cell Neoplasm (3.40%). [Table 4].

Diagnosis	No. of Cases	Percentage	Overall Percentage
Non-Neoplastic			
1. Colloid Goitre	80	45.45%	14.33%
2. Lymphocytic Thyroiditis	38	21.59%	6.81%
3. Adenomatoid Nodule	10	5.68%	1.79%
4. Thyroglossal Cyst	7	3.97%	1.25%
Total	135	76.70%	24.19%
Neoplastic			
1. Papillary Carcinoma of Thyroid	19	10.79%	3.40%
2. Follicular Neoplasm	16	9.09%	2.86%
3. Hurthle Cell Neoplasm	6	3.40%	1.07%
Total	41	23.9%	7.34%
Total	176	100	31.54%

In present study, it was observed thyroid swellings were predominant in third decade (28.97%) more common in females with M: F ratio of 1:1.44. [Table 5]

Age	Cases	Percentage	Overall Percentage
<18	10	5.68%	1.79%
19-30	51	28.97%	9.13%
31-40	41	23.29%	7.34%
41-50	31	17.61%	5.55%
51-60	19	10.79%	3.40%
61-70	16	9.09%	2.86%
>70	8	4.54%	1.43%

Skin and Soft Tissue swellings were accounted for 92 (16.48%) cases, in which most common swelling in non-neoplastic category was

Epidermal Inclusion Cyst consisting of 62 (67.39%) cases followed by cystic lesion (9.78%). In neoplastic category most common swelling was Lipoma comprising of 10 (10.86%) cases, followed by Benign Adnexal Lesion of 08 (8.69%) cases and Pilomatrixoma in 03 (3.26%) cases were seen. [Table 6]. No malignant cases of skin and soft tissue were detected on FNAC during the study period. Most common site for epidermal inclusion cysts was scalp. 3 cases of pilomatrixoma were located around posterior aspect neck and in younger age group. There was female predominance with a M:F ratio of 1:2.4.

Diagnosis	No. of Cases	Percentage	Overall Percentage
Non-Neoplastic			
1. Epidermal Inclusion Cyst	62	67.39%	11.11%
2. Cystic Lesion	09	9.78%	1.61%
Total	71	77.17%	12.72%
Neoplastic			
1. Lipoma	10	10.86%	1.79%
2. Benign Adnexal Lesion	08	8.69%	1.43%
3. Pilomatrixoma	03	3.26%	0.53%
Total	21	22.82%	3.76%
Total	92	100	16.48%

A total of 58 (10.39%) cases of salivary gland swellings were observed in third decades having slight female predominance with M:F ratio of 1:1.41. Most common non-neoplastic salivary gland lesion observed was sialadenitis 27 (45.55%) cases, followed by cystic lesion of salivary gland 08 cases (13.79%) including mucous and retention cysts. In neoplastic category Pleomorphic adenoma was common benign neoplasm comprising of 16 (27.58%) cases of all salivary gland swellings with female predominance, followed by 4 cases of Warthin's tumour consisting of 04 (6.89%) cases. A total of 03 cases (5.17%) were diagnosed as Mucoepidermoid Carcinoma. [Table 7]. Most of the swelling were in submandibular region followed by parotid region (preauricular area).

Diagnosis	No. of Cases	Percentage	Overall Percentage
Non-Neoplastic			
1. Sialadenitis	27	45.55%	4.83%
2. Cystic Lesion	08	13.79%	1.43%
Total	35	60.34%	6.27%
Neoplastic			
1. Pleomorphic Adenoma	16	27.58%	2.86%
2. Warthin's Tumour	04	6.89%	0.71%
3. Mucoepidermoid Carcinoma	03	5.17%	0.53%
Total	23	39.65%	4.12%
Total	58	100	10.39%

S.No.	Cytological Diagnosis	Incidence
1	Reactive Lymphadenitis	27.90%
2	Colloid Goitre	14.33%
3	Epidermal Inclusion Cyst	11.11%
4	Lymphocytic Thyroiditis	6.81%
5	Chronic Granulomatous Lymphadenitis	6.63%
6	Sialadenitis	4.83%
7	Papillary Carcinoma Thyroid	3.40%
8	Metastatic Deposits	2.86%
9	Follicular Neoplasm	2.86%
10	Pleomorphic Adenoma	2.86%
11	Lymphoproliferative Disorder (Lymphoma)	2.32%
12	Suppurative Lymphadenitis	1.79%
13	Adenomatoid Nodule	1.79%
14	Lipoma	1.79%
15	Cystic Lesion	1.61%
16	Benign Adnexal Lesion	1.43%
17	Cystic Lesion of Salivary Gland	1.43%
18	Thyroglossal Cyst	1.25%
19	Hurthle Cell Neoplasm	1.07%

20	Warthin's Tumour	0.71%
21	Pilomatrixoma	0.53%
22	Mucoepidermoid Carcinoma	0.53%

DISCUSSION.

Head and neck swellings are the commonly encountered clinical conditions in our setup. In this study the most common sites for the occurrence of head and neck swellings were lymph node enlargement followed by thyroid, skin and other soft tissues and salivary gland [Table 8]. Our findings were comparable to other studies that have shown lymph nodes as the most frequent site for FNAC in head and neck region.^{5,6} Similar observations were also noted by other studies such as Lalji Valiya et al⁷, Deval N Patel et al,⁸ Yogesh Pawade et al⁹ and Bhagat VM et al.¹⁰ Male: Female ratio was 1:1.39 with female preponderance. This result was also reported by other studies such as Kishor H et al, Muddegowda et al,¹² Valiya L et al⁷ and Shaan et al.⁵

Lymph Node Swelling:

In our study, most common lymph node swelling was found to be Reactive Lymphadenitis (27.90%). Similar results were also made by other studies, such as Pradeep Tendon et al,¹³ Gogoi Geetanjali,¹¹ Sreedevi P et al¹⁴ studies. Maximum number of patients in second decade (31.03%) followed by first decade (24.13%) (paediatric age group).

Chronic Granulomatous lymphadenitis was second common cause of lymph node enlargement on cytological examination. All the cases were sampled after wards and sent for r CB-NAAT (Cartridge Based Nucleic Acid Amplification Test) testing to confirm Tubercular aetiology and out of 37 cases, 21 (56.75%) were reported as MTB positive. In present study metastatic deposits accounts for 6.89 % of all lymph node cases and it was the most common cause of malignancy in lymph node followed by lymphoproliferative disorder/lymphoma. Similar findings were also noted by other studies such as Tandon et al,¹⁴ where metastatic lymphadenopathy accounted 10.34%,

Thyroid Swellings:

Thyroid swellings were second most common site in head and neck swellings accounting for 31.54 % (176 cases) in our study. Maximum number of cases were females with predominance in third decade with M: F ratio of 1:1.44. Similar observations of female predominance were made by Afroze N et al¹⁵ and Jain D¹⁶ et al. In present study, most of the thyroid swellings were non neoplastic which were comparable with other studies such as Kishor H et al,¹⁷ M Kate et al¹⁸ and R Goswami et al¹⁹ studies. Colloid goitre was most common finding in present study. Rout et al²⁰, found colloid goitre as the most common among thyroid swelling followed by colloid goitre with cystic degeneration. Colloid goitre was more commonly seen in fourth decade. Distinction between follicular neoplasm and carcinoma is not possible and hence definitive distinction was not made between the two neoplasms. Papillary carcinoma was the most common malignant lesion seen in our study cases. There were 07 cases (3.97%) of thyroglossal cyst which is less than some other studies done.²¹

Skin and Soft Tissue Swellings:

Out of all head and neck swellings Skin and Soft Tissue constitute 16.48% (92 cases) in our study. These swellings were found more common in older age males. Epidermal inclusion cyst was the common finding accounting for 67.39% which was comparable with Valiya L et al,⁷ and Kishor H et al¹⁷ studies. These were followed by adnexal lesions and 03 cases (3.16%) of Calcifying Epithelioma of Malherbe (Pilomatrixoma) in young patients (paediatric) were also seen which is like some studies done previously.²²

Salivary Gland Swellings:

Salivary gland swellings accounted for 10.39% (58 cases) of 558 cases of all head and neck swelling. Majority of cases of non-neoplastic category were sialadenitis constituting 45.55% (27 cases) of all salivary gland swellings followed by benign salivary gland cysts in neoplastic category most common was pleomorphic adenoma constituting 27.58% (16 cases). These findings are like Solanki P et al,²³ M Kate et al,¹⁸ Bhagat VM et al¹⁰ studies. There were total 23(23.47%) cases of pleomorphic adenoma predominantly found in 60-70 age group affecting females. Mucoepidermoid carcinoma was predominant malignant tumour seen in the study.

CONCLUSION

FNAC is recommended as a safe, reliable, quick, inexpensive and

minimally invasive technique in the diagnosis of head and neck swellings like lymph node, thyroid, skin and soft tissue and salivary glands in head and neck region. This study was taken up to assess the frequency and incidence of palpable swellings on basis of sites, age, sex and distribution of inflammatory, benign and malignant lesions. It was found that lymph nodal swellings (41.57%) are the most common followed by thyroid (31.54%), skin and soft tissue (16.48%) and salivary gland (10.39%) pathologies in that order. Study indicated presence of more non-neoplastic lesions (79.56%) are more prevalent than neoplastic lesions (20.43%). Histopathological correlation was not done in the cases of the study.

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