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Fine needle aspiration cytology of head and neck lesions: A study at tertiary care hospital of Gujarat

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Abstract

Background and Objectives: A frequent presentation of wide variety of head and neck masses ranging from inflammatory, cystic or infective; being non-neoplastic to neoplastic in nature is noted. Fine Needle Aspiration Cytology (FNAC) is easy to perform, quick and minimally invasive procedure applied for diagnosing different types of swellings like cervical lymph nodes, thyroid, soft tissue and salivary glands in head and neck region. This study is done to assess the role of FNAC and its benefits in diagnosis of head and neck masses.

Materials and Methods: A hospital based observational study was conducted among 488 patients with palpable head and neck swellings in Department of Pathology from January 2022 to December 2022 at Sheth L.G General Hospital, Ahmedabad, Gujarat. Detailed clinical history of patient was noted and correlated with other investigations. FNAC was performed from palpable masses of head and neck regions and smears were prepared and stained with Haematoxylin and Eosin stain.

Results: Total 488 patients with palpable head and neck lesions were studied. Out of these, lymph node (75.82%) was the commonest involved site followed by thyroid lesions (17.22%), salivary gland lesions (3.07%), soft tissue lesions and miscellaneous (3.89%). Out of total 488 lesions, 377(77.25%) were inflammatory, 82(16.80%) were benign, 27(5.53%) were malignant and 02(0.4%) were indecisive.

Conclusion: FNAC is simple, cost effective and first line procedure for diagnosis of palpable masses in head and neck region.

Keywords: FNAC, head and neck, diagnostic, needle aspiration

Introduction

Fine Needle aspiration cytology is a quick, simple, safe and inexpensive technique in diagnosis with minimum trauma and high specificity ^[1]. In 1930, Martin and Ellis had introduced the modern method of FNAC and now it has become a popular procedure in assessment of various palpable lumps ^[2]. FNAC is suitable for disabled or debilitated patients because of low risk of complications, speedy results and painless procedure. FNAC is appropriate for palpable lesions of head and neck region including various neoplastic and non-neoplastic lesions of lymph node, salivary gland, thyroid gland and other soft tissues ^[3]. The head and neck masses are evaluated by detailed clinical history and examination along with radiological investigations. With the help of newer radiological techniques such as USG, CT Scan, FNAC of deeper structures is easily possible. Head and neck neoplasm is a major form of cancer in India accounting for 23% of all cancer in male and 6% in female ^[4, 5]. The common pathologies encountered in the head and neck region presenting as a lump are lymphadenitis, goiter, sialadenitis, epidermal cyst, etc. Early diagnosis and differentiation of head and neck lesions with the help of FNAC, play a vital role in determining the mode of intervention ^[6]. The intention of present study is to determine the efficacy and role of FNAC in diagnosis of various head and neck swellings and to find distribution of different pathologies diagnosed by FNAC.

Materials and Methods

An observational study was conducted in Department of Pathology of Narendra Modi Medical College, Sheth L.G. General Hospital, Ahmedabad, Gujarat from January 2022 to December 2022 which included 488 patients with palpable head and neck swellings.

Patients of all age and sex were included with relevant clinical history. After explanation of procedure, informed consent from each individual was taken. FNAC was done using 10 ml disposable syringe and 22/23-gauge needle which was placed inside mass taking all aseptic precautions. Several rapid strokes were made in different directions in mass and needle is withdrawn after release of negative pressure and pressure was applied to area of aspiration to avoid bleeding or hematoma formation. Aspirated material was smeared on clean glass slide with help of another slide. About three or four smears were prepared. Smears were fixed in 95% alcohol and were stained with Hematoxylin-Eosin(H&E) stain. Special stain used was Ziehl-Neelsen stain for acid-fast bacilli, wherever required. The collected data were recorded in Microsoft Excel and data analysis was done in same.

Results

The present study was carried out over a period of one year which includes 488 cases with palpable head and neck swelling. Out of 488 FNAC, 61.06% (N=298) were females and 38.93% (N=190) were males (Table: 1). Incidence of occurrence of benign and malignant pathologies in present study was 16.80% and 5.53% respectively.

Lymph node lesions (N=370, 75.82%) were predominant of all head and neck masses followed by thyroid (17.22%), soft tissue & miscellaneous (3.89 %) and salivary gland (3.07%) lesions (Table 1). Out of total 370 (75.82%) cases of lymphnode lesions, most common lesion was tuberculous lymphadenitis (53.78%) followed by granulomatous lymphadenitis (16.50%). Among malignant lymphnode lesions, only metastatic squamous cell carcinoma was noted. (Table 2). Thyroid gland was the second common site to be involved, comprised of 84 (17.22%) cases of all head and neck lesions with female preponderance. Most common lesion was colloid goiter (N=25, 29.78%) followed by follicular neoplasm (N=20, 23.80%) (Table 3).

Total 15 cases of salivary gland lesions were observed, out of which most common salivary gland lesion observed was Pleomorphic Adenoma (N=12, 80%) followed by Warthins tumour (N=2, 13.33%) and Mucoepidermoid carcinoma (N=1, 6.67%) (Table: 4). Among miscellaneous lesions; most common lesion was lipoma (N=12, 63.15%), followed by epidermal cyst (N=7, 36.84%) (Table: 5). Out of total 488 FNAC cases, 02 were indecisive probably due to inadequate aspirated material in small sized lesion.

Discussion

FNAC is quick, simple, economically cost effective, easily repeatable and valuable tool that helps in triaging the patient with head and neck palpable and non-palpable swelling whether surgical excision is required or not. Also, ancillary techniques can be performed on FNAC smears [7].

In present study, various parameters like site, sex and cytological diagnosis were studied and compared with other similar studies. In present study, commonest site involved was lymph node followed by thyroid which was comparable to other studies done by Sreedevi *et al.* [8], Shekhar *et al.* [9] and Sanghavi AKB *et al.* [10] (Table: 6). In present study, tuberculous lymphadenitis was the commonest pathology among aspirated lymphnode swellings which was comparable with the study carried out by Bhagat VM *et al.* [11] and Ahmad *et al.* [12]. This was discordant with study done by El Hag *et al.* [16] who observed reactive lymphadenitis (33%) as the most common lymphnode cytological diagnosis. The geographical variation and socioeconomic status could be the reason of this deviation. (Table 7). Among the thyroid FNAC, colloid goiter was the commonest lesion found in present study. This was similar to the results of V K Poorey *et al.* [18].

In present study, female cases were more than males. Similar findings were obtained in study done by Sanghvi AKB *et al.* [10]. In present study, salivary gland lesions reported were less frequent. Pleomorphic adenoma was the most common encountered lesion among the FNAC of salivary glands in present study which was similar to Bhagat VM *et al.* [11], Padia *et al.* [12] and AfnanGul *et al.* [13]. Arvind Kumar *et al.* [17] had observed male gender inclination in malignant salivary gland lesion which is comparable with present study. Study done by SanghviAKB *et al.* [10] and S. Khetrpal *et al.* [14] also coincided with present study where maximum inflammatory cases were noted.

In present study, soft tissue & other lesions (miscellaneous group) was the third common lesion after lymphnode and thyroid lesions which was similar to the study done by Arvind kumar *et al.* [17]. Lipoma was the most common soft tissue lesion in present study which was in concordance with study done by Meenai *et al.* [15]. Metastasis was the commonest malignant lesion in present study, which is comparable to studies conducted by Sanghvi AKB *et al.* [10] and AfnanGul *et al.* [13].

Table 1: Distribution of head and neck lesions according to site and gender:

Site of lesion	Male	Female	No of cases	Percentage %
Lymph node	163	207	370	75.82
Thyroid	08	76	84	17.22
Salivary Gland	10	05	15	3.07
Soft tissue and Miscellaneous	09	10	19	3.89
Total	190	298	488	100

Table 2: Gender wise distribution of lymph node lesions according to cytological diagnosis

Cytological diagnosis	Male	Female	Total	Percentage %
Nonspecific lymphadenitis	19	14	33	8.92
Reactive lymphadenitis	25	25	50	13.51
Tuberculous lymphadenitis	89	110	199	53.78
Granulomatous lymphadenitis	14	47	61	16.50
Metastatic squamous cell carcinoma	16	10	26	7.02
Inadequate	00	01	01	0.27
Total	163	207	370	100

Table 3: Distribution of thyroid lesions according to cytological diagnosis

Cytological diagnosis	Male	Female	Total	Percentage %
Follicular Nodular Disease-Colloid cystic nodule	02	13	15	17.85
Follicular Nodular Disease-Colloid goiter	03	22	25	29.78
Follicular neoplasm	01	19	20	23.80
Granulomatous thyroiditis	00	06	06	7.14
Follicular Nodular Disease-Adenomatoid nodule	01	10	11	13.09
Atypia of Undetermined Significance	01	05	06	7.14
Inadequate	00	01	01	1.20
Total	08	76	84	100

Table 4: Distribution of Salivary gland lesions according to cytological diagnosis

Cytological diagnosis	Male	Female	Total	Percentage %
Pleomorphic adenoma	08	04	12	80.00
Warthins tumour	01	01	02	13.33
Mucoepidermoid carcinoma	01	00	01	6.67
Total	10	05	15	100

Table 5: Gender wise distribution of soft tissue and miscellaneous lesions according to cytological diagnosis

Lesions	Male	Female	Total	Percentage %
Epidermal cyst	03	04	07	36.85
Lipoma	06	06	12	63.15
Total	09	10	19	100

Table 6: Comparison of site distribution of head and neck lesions

Study	Lymphnode (%)	Thyroid (%)	Salivary gland (%)	Soft tissue and miscellaneous (%)
Present study	75.82	17.22	3.07	3.89
Shekhar <i>et al.</i> [9]	42	18	15.5	17.5
Sreedevi <i>et al.</i> [8]	50.32	44.07	3.28	2.3
Sanghavi AKB <i>et al.</i> [10]	41	37	5	7

Table 7: Comparison study of frequencies of lymph node pathology:

Study	Reactive lymphadenitis (%)	Tuberculous lymphadenitis (%)	Metastatic squamous cell carcinoma (%)
Our study	13.51	53.78	7.08
El Hag <i>et al.</i> [16]	33	21	10
Bhagat VM <i>et al.</i> [11]	21	67	08

Conclusion

FNAC technique is simple, safe, convenient and an accurate method for tissue diagnosis and that can be done on outpatient basis. The procedure is safe and free from complications and is well tolerated by the patients. There is no need of anaesthesia and speedy results are obtained. Here we conclude that FNAC is a highly effective diagnostic procedure in diagnosis and management of head and neck masses.

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Conflict of Interest:

Not available

Financial Support:

Not available

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