Original Research Article

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Spectrum of Head and Neck Lesions Diagnosed by Fine Needle Aspiration Cytology in Tertiary Care Hospital

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Abstract

Background and Objectives: Fine need aspiration cytology (FNAC) has become a rapid, cost effective investigative method for obtaining reliable tissue diagnosis especially for the site like head and neck where considerable overlapping of various structures makes it difficult to reach exact diagnosis. The present study is taken up to evaluate role of FNA in management and diagnosis of various head and neck lesions and to study the spectrum of various lesions encountered. *Materials and Methods*: Present study is a retrospective descriptive study. A total of 570 cases of palpable head and neck masses were subjected to FNAC at cytology OPD using 23-24 gauge needle and 10 ml syringe. Detailed cytological assessment was done. *Results:* Out of 570 cases, thyroid lesions accounted for 38.07%, lymph node lesions were 33.19%, salivary gland lesions were 9.29% and skin/soft tissue and miscellaneous were 19.47%. Among thyroid lesions goitre (66.8%) accounted for maximum number of cases, metastatic carcinoma(33.86%) was the commonest lymph node lesion followed by tubercular lymphadenitis (19.57%) and pleomorphic adenoma (38.07%) was the commonest among salivary gland lesions. *Conclusion*: This study concludes that FNAC is quite effective, simple investigative procedure with very good patient compliance. Use of FNAC should be encouraged as an investigation for initial diagnostic evaluation of head and neck lesion and as a tool to avoid unnecessary surgical procedure and its complications.

Keywords: Head and Neck Lesions; Diagnostic Tool; Thyroid Lesions; Tubercular Lymphadenitis.

Introduction

Neck lesions often pose a challenging diagnostic problem to the clinician. A variety of inflammatory and neoplastic diseases involving the diverse neck structures may present as visible head and neck lesions. In spite of easy accessibility and because of considerable anatomic overlap of the various neck structures, the accuracy of clinical diagnosis approaches only 50% [1].

The accurate identification of the lesion is very essential for the proper management of patients. Radiology does not always help and may not be cost effective. Although biopsy gives reliable tissue diagnosis, it carries the complications of surgical intervention, may require hospitalization and it leaves behind unsightly scars.

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It was Kun(1847) who realized for the first time that tissue samples obtained through syringe and needle could be utilized for the diagnosis of malignancy. FNAC is now established as a rapid, reliable, cost effective and excellent alternative method of obtaining tissue diagnosis with good patient acceptance to decide best line of management both in benign and malignant diseases. The present study has been taken up to evaluate the role of FNAC and its utility in diagnosing palpable head and neck lesions and to study the spectrum of head and neck lesions encountered at our institution.

Material and Methods

The present study is a retrospective descriptive study. A retrospective analysis of cases and slide archives were done from January 2016 to June 2017 including the cases which had presented with palpable head and neck masses. Five hundred and seventy patients with head and neck masses were subjected to FNAC. Aspirations taken from various

sites included lymph node, thyroid, salivary gland, skin and soft tissue. Detail clinical history and significant findings were noted. FNA were performed in cytology OPD of the pathology department. The material was obtained by using a 2.5 cm long, 23-24 gauge needle attached to a 10ml disposable syringe. From the aspirate multiple smears were prepared. The smears were immediately fixed with 95% ethanol and stained by Hematoxylin and eosin stain. Ziehl Neelsen stain was done were ever necessary.

Results

A total of 570 FNA were performed on head and neck swellings during the period January 2016 to June 2017. A detailed cytological assessment was done on all the FNA smears. All the smears were satisfactory for evaluation.

Out of 570 cases males accounted for 37.01% and females accounted for 62.99%. Among these 570 cases thyroid lesions were highest accounting for 217(38.07%) cases followed by lymph node lesions in 189(33.19%) cases, salivary gland lesions were 53(9.29%) and skin /soft tissue /oral cavity and miscellaneous lesions were 111(19.47%) (Table 1).

Among the studied head and neck lesions maximum cases were of thyroid. These thyroid lesions were evaluated as per the Bethesda system of reporting thyroid cytology. Goitre (Diffuse and nodular) were the predominant lesions seen. Among malignant thyroid lesions papillary carcinomas were the predominant and 2 cases were associated with lymph node involvement (Table 2).

Among 189 cases of lymph node lesions, metastatic carcinoma (33,86%) was the commonest followed by tubercular lymphadenitis accounting for 19.57%, out of which 18.51% were AFB (Acid fast bacilli) positive (Table 3).

Parotid was the most common salivary gland involved followed by submandibular gland. Pleomorphic adenoma was the most common salivary gland lesion accounting for 39.62% followed by sialadenitis. Among malignant category mucoepidermoid carcinoma was the most common constituting 3.77% of cases, and all the cases of mucoepidermoid carcinoma were seen in submandibular gland (Table 4).

FNAC of skin, soft tissue and miscellaneous constituted 19.37% cases with various pathological lesions like lipoma, epidermoid cyst, thyroglossal cyst and malignant neoplasm including squamous cell carcinoma, sarcoma, NHL and secondaries. Majority of the cases were benign cystic lesions, 2 cases of giant cell reparative granuloma were reported and both cases were seen in mandible (Table 5).

Table 1: Distribution of various lesions of head and neck FNA

Various sites	Percentage of cases
Thyroid	38.07% (217)
Lymph node	33.19% (189)
Salivary gland	9.29% (53)
Skin /Soft tissue /Oral cavity	19.47% (111)
Total	n=570

Table 2: Distribution of various thyroid lesions

Thyroid Lesions (n=217)	Percentage
Colloid goiter	14.28% (31)
Nodular goiter	52.53%(114)
Adenomatoid goiter	3.68% (8)
Primary hyperplasia	0.46% (1)
Granulomatous thyroiditis	0.46% (1)
Hashimotos thyroiditis	8.75% (19)
Lymphocytic thyroiditis	11.5% (25)
Follicular neoplasms	4.14% (9)
Papillary carcinoma	2.76% (6)
Medullary carcinoma	0.46% (1)
Anaplastic carcinoma	0.92% (2)

Table 3: Distribution of various lymph node lesions

Lymph node lesions (n=189)	Percentage
Reactive lymphadenitis	10.58% (20)
Acute suppurative lymphadenitis	6.45% (14)
Chronic lymphadenitis	11.11% (21)
Granulomatous lymphadenitis	10.58% (20)
Tubercular lymphadenitis	19.57%(37)
With AFB positivity	18.51%(35)
Without AFB positivity	1.05% (2)
Rosai Dorfmann syndrome	0.52% (1)
Malignant	
Lymphomas	5.82% (11)
Hodgkin lymphoma	3.70% (7)
Non Hodgkin lymphoma	2.11% (4)
Metastasis	33.86% (64)
Squamous cell carcinoma	19.04% (36)
Adenocarcinoma	4.23% (8)
Poorly differentiated carcinoma	6.87% (13)
Adenosquamous carcinoma	0.52% (1)
Others	3.17% (6)

Table 4: Distribution of various salivary gland lesions

Salivary gland lesions (n=53)	Percentage
Parotid (33)	
Submandibular (16)	
Submental (1)	
Others (3)	
Acute sialadenitis	11.3% (6)
Chronic sialadenitis	13.2% (7)
Acute on chronic sialadenitis	11.3% (6)
Granulomatous sialadenitis	3.77% (2)
Lymphoepithelial cyst	3.77% (2)
Sialadenosis	5.66% (3)
Pleomorphic adenoma	39.62% (21)
Warthin tumor	3.77% (2)
Oncocytoma	1.88% (1)
Basal cell adenoma	1.88% (1)
Mucoepidermoid carcinoma	3.77% (2)

Table 5: Distribution of various lesions of skin / soft tissue / oral cavity

Skin /Soft tissue /Oral cavity	N=111
Epidermoid cyst	35.13%(39)
Dermoid cyst	4.50% (5)
Thyroglossal cyst	5.40% (6)
Branchial cyst	2.70% (3)
Abscess	0.900% (1)
Giant cell reparative granuloma	1.80% (2)
Lipoma	28.82% (32)
Hemangioma	4.50% (5)
Benign spindle cell tumor	6.30% (7)
Sternocleidomastoid tumor (Fibromatosis)	0.90% (1)
Squamous cell carcinoma	1.80% (2)
Soft tissue sarcoma	0.90% (1)
Non Hodgkin lymphoma -Tonsil	0.90%(1)
Metastatic Hepatocellular carcinoma	0.90% (1)
Metastatic Follicular carcinoma	0.90%(1)

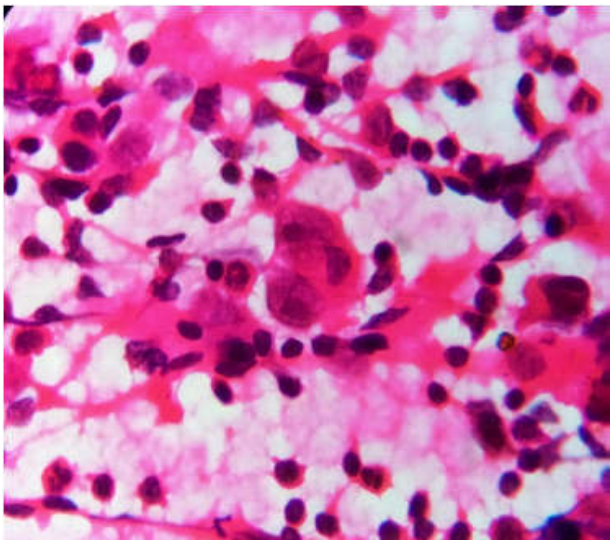

Fig. 1: Microphotograph of Hodgkin lymphoma with classical Reed Sternberg cell and surrounding mixed inflammatory cells (H&E, 40X)

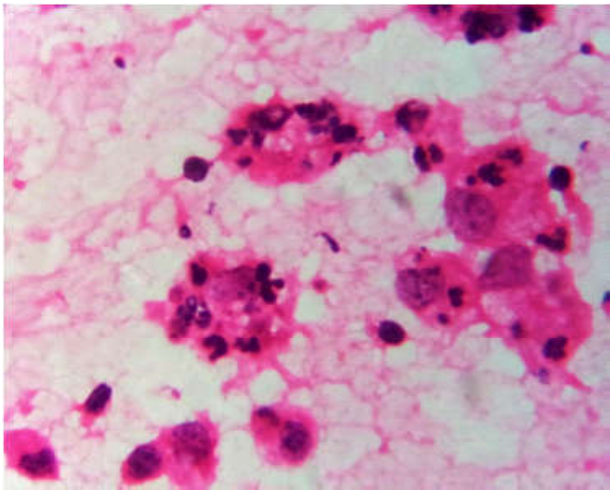

Fig. 2: Microphotograph of Sinus histiocytosis with massive lymphadenopathy showing histiocytes with emperipolesis (H&E, 40X)

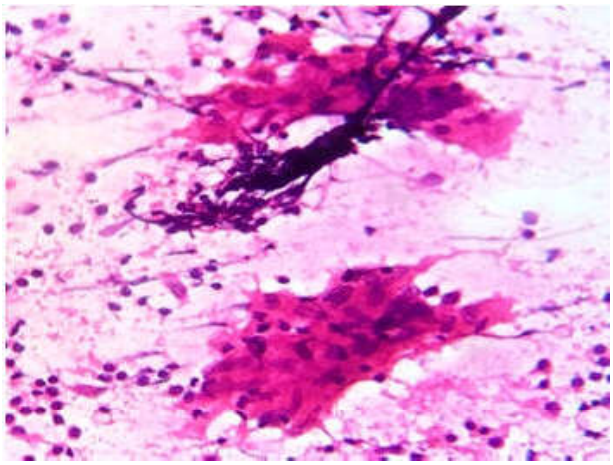

Fig. 3: Microphotograph of tubercular lymphadenitis with well formed granulomas and AFB positivity (H&E, 10X)

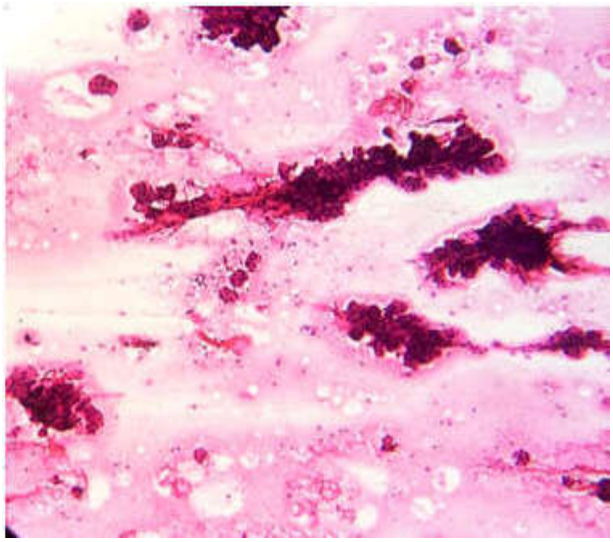

Fig. 4: Microphotograph of sialadenosis with wellFormed acini and ducts(H&E, 10X)

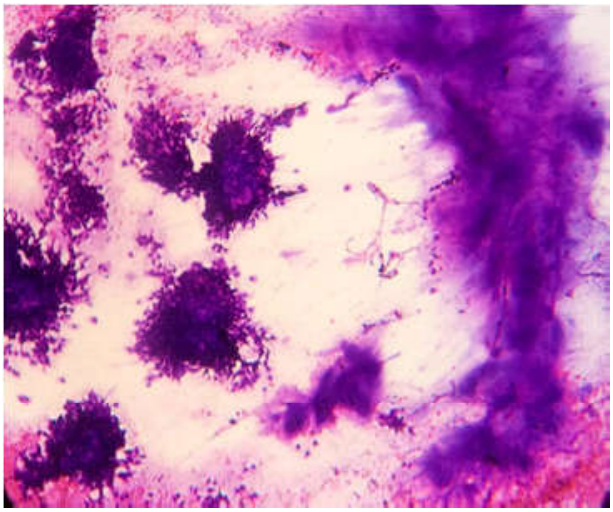

Fig. 5: Microphotograph of Pleomorphic adenoma with epithelia and stromal component (H&E,40X)

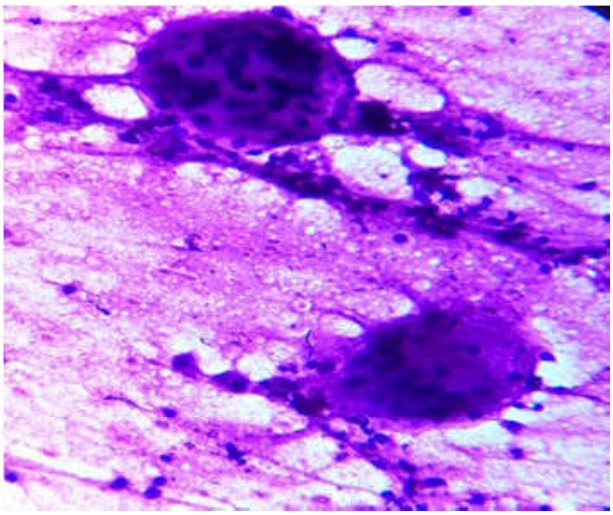

Fig. 6: Microphotograph of giant cell reparative granuloma with giant cells and well formed granuloma (H&E, 40X)

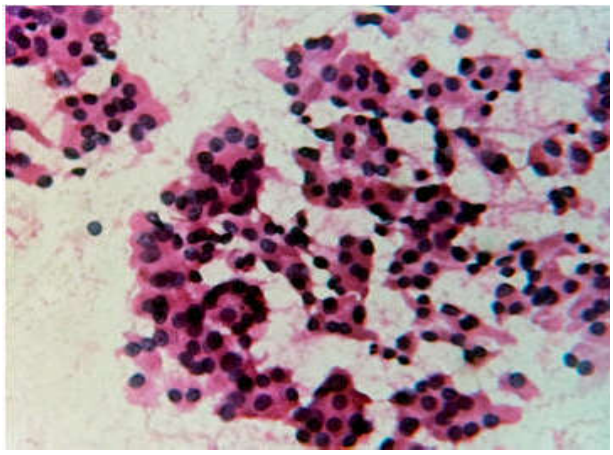

Fig. 7: Microphotograph of follicular neoplasm of thyroid (H&E, 10X)

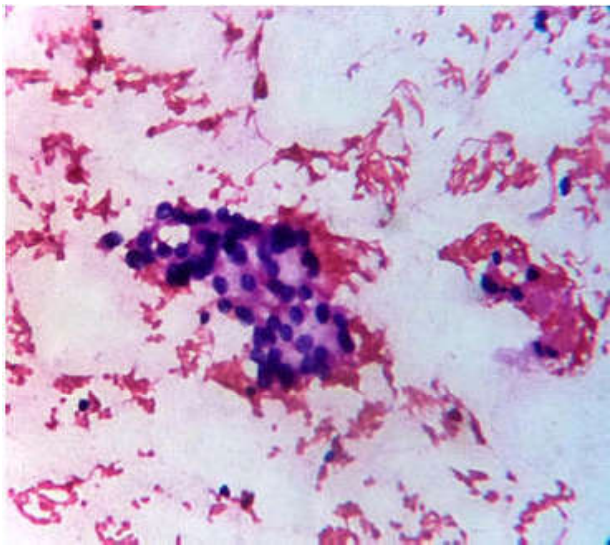

Fig. 8: Microphotograph of Metastatic follicular carcinoma – Lymph node (H&E, 10X)

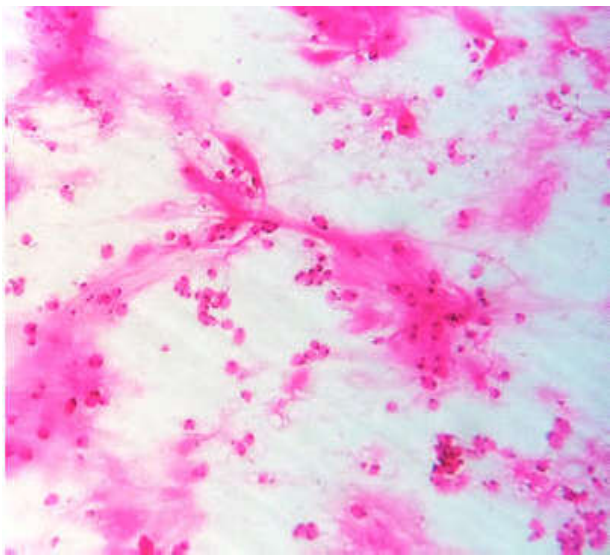

Fig. 9: Microphotograph of metastatic signet ring adenocarcinoma –Lymph node(H &E, 10X, 40X)

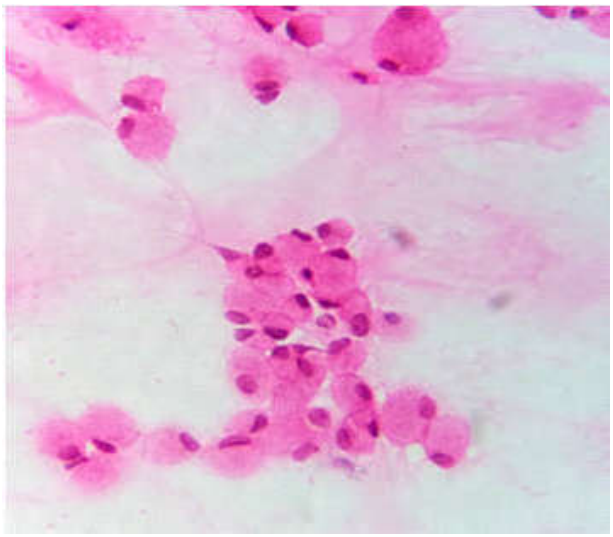

Fig. 10: Microphotograph of metastatic signet ring adenocarcinoma –Lymph node(H &E, 10X, 40X)

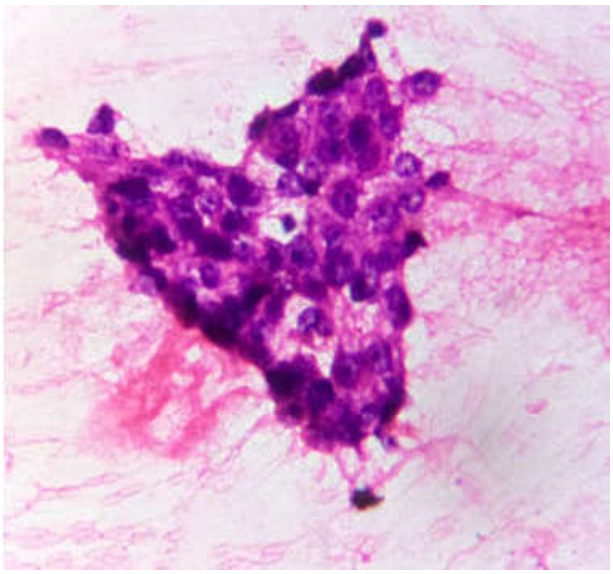

Fig. 11: Microphotograph of metastatic adenocarcinoma-Lymph node (H&E, 40X)

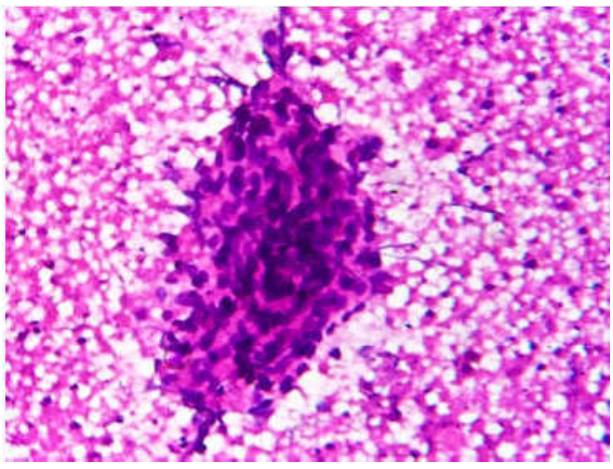

Fig. 12: Microphotograph of metastatic squamous cell carcinoma (H&E, 10X)

Discussion

Present study constituted FNA of 570 cases of head and neck palpable lesions. Lesions were found predominantly in females (62.99%) when compared to males (37.01%), this finding was similar to studies done by Fernandes H et al [2], Tilak V et al [3] but male preponderance is seen in study done by Setal C et al [4]. Incidence of thyroid lesions were highest accounting for 38.07% cases which was similar to the findings by Fernandes H et al [2] and Tilak V [3] et al. But in studies done by Chauhan S [1] et al and Patel DN [5] lymph node lesions were highest among head and leck lesions.

Amog lymph node lesions metastatic carcinoma(33.86%) was highest followed by tubercular lymphadenitis (19.57%) and reactive lymphadenitis (10.58%). In study done by Rathod GB et al [6] and Tariq [7] et al tubercular lymphadenitis was found to be the most common lymph node lesion accounting for 42.12% and 36% respecively and reactive lymphadenitis accounted for 18% and 19.3% and metastatic carcinoma was found in 14% and 21.5% of cases. In study done by El Hag et al [8] which was carried out in Saudi Arabia which included 225 patients found reactive lymphadenitis (33%) to be the commonest finding followed by tubercular lymphadenitis (21%) and malignancy (13%). In study done by Cheng [9] et al malignancy was found in 50% of lymph node lesion and Stevenson et al [10] in his study of 120 patients carried out at Christchurch, New Zealand found that 28% of swellings were malignant which are comparable to incidence of metastatic carcionma (33.86%) in our study . This shows an epidemiological variation between developed and developing countries. Tubercular infections are common in developing countries while malignancies are more common in developed countries. As ours is an teritiary refferal center which could be the reason for high incidence of metastatic carcinoma when compared to other indian studies.

FNAC of thyroid lesions was the common site in our study. Goitre (66.8%) was the predominant finding among benign lesions followed by inlammatory lesion consisting of Hashimotos thyroiditis and chronic lymphocytic thyroiditis. Papillary carcinoma was the most common malignancy. These findings were comparable with studies done by Muddegowda et a [11] and Rathod et al [6]. The greatest application of thyroid FNAC is the non surgical alternative provided in the investigation of goitre thus eliminating the need for a purely diagnostic thyroidectomy. Additionally the method may serve a therapeutic function since the evacuation of fluid in cystic lesion may be followed by involution of the lesion.

In present study salivary gland lesions accounted for 9.29% cases. Pleomorphic adenoma (39.62%) was the most common finding followed by sialadenitis (35.7%). Among malignant category mucoepidermoid carcinoma was the most common accounting for 3.7% cases. In study done by Patel DN et al, Rathod GB et al and setal C et al also found that pleomorphic adenoma was the commonest finding among salivary gland lesions. Incidence of mucoepidermoid carcinoma was 8% in Patel DN et al study, 10% in study done by Piyush K et al [12] and Cohen MB [13] reported 35% of mucoepidermoid carcinoma.

In 1930 Martin and Ellis described and first introduced the technique of FNAC for diagnosis of organ lesion [14]. The two fundamental requirement on which success of FNA depends are representative sample and high quality of preparation . These two prerequisites will always remain sine qua non , no matter how sophisticated supplementary techniques. False negative diagnoses can be due to faulty technique, central cystic, hemmorhage and necrotic area devoid of diagnostic cells, small malignant lesion adjacent to dominant mass. Rarely false positive diagnoses by FNAC can be caused by regenerative epithelial hyperplasia and squamous metaplasia in sialadenitis.

Conclusion

In the evaluation of head and neck lesions FNAC is established as a minimally invasive, cost effective and rapid diagnostic tool. Unlike biopsy it has a very high degree of patient acceptance because it does not cause any unsightly scars, inconvenient incision lines. It is an sensitive tool for the detection of malignant lesions and equally effective in the diagnosis of non malignant lesions of head and neck masses.

Ethical Clearance

Approved from ethical committee SIMS Shimoga.

Source of Funding

Department of pathology SIMS Shimoga

Conflict of Interest

NIL

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