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STUDY OF ORAL AND OROPHARYNGEAL MASS LESIONS THROUGH FNAC

Neurosurgery

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ABSTRACT

INTRODUCTION- Fine needle aspiration cytology (FNAC) is a procedure to obtain cells and tissue fragments through a needle introduced into abnormal tissue and its study.

METHODOLOGY- Smears were air-dried, methanol fixed and May-Grunwald Giemsa(MGG) stained. Whenever needed, Ziehl-Neelsen staining was performed.

RESULT AND CONCLUSION-. It is concluded that FNAC serves as an important tool to screen and diagnose oral and oropharyngeal mass lesions and provides sufficient information for the initiation of treatment without need for an open biopsy in most cases.

KEYWORDS

Fnac,pleomorphic Adenoma,Squamous Cell Carcinoma

INTRODUCTION

Fine needle aspiration cytology (FNAC) is a procedure to obtain cells and tissue fragments through a needle introduced into abnormal tissue and its study[1].

The clinical value of FNAC is not limited to neoplastic conditions. It is also valuable in diagnosis of inflammatory conditions, infections and degenerative conditions. Oral and oropharyngeal mass lesions are commonly diagnosed by biopsy. But FNAC is a less invasive, less traumatic and cheap method for diagnosis of such lesions.

AIMS AND OBJECTIVES

1. To study the adequacy of material obtained on needle aspiration of oral and oropharyngeal mass lesions.
2. To study the cytological features in the aspirate so obtained.
3. To correlate histologically, wherever available.

MATERIAL AND METHOD

Aspiration was performed with 22 gauge needle attached to a 20ml disposable syringe. The needle moved back and forth four to five times in same plane to ensure minimal bleeding. Aspiration was taken from proliferative or ulcero-proliferative lesions. Smears were air-dried, methanol fixed and May-Grunwald Giemsa(MGG) stained. Whenever needed, Ziehl-Neelsen staining was performed.

OBSERVATIONS

The present study was conducted in our hospital for cytological evaluation. Total fifty-six (56) cases of oral and oropharyngeal mass lesions were evaluated cytologically.

AGE GROUP:

Present study had subjects ranging from 2 – 80 years. Maximum number of cases fell in age range between 31-40 years and 51-60 years i.e. 23.2%. Minimum number of cases were from age range 0-10years ,11-20 years ,71-80 years i.e. 3.6%. It inferred that maximum cases were between 3rd and 5th decade of life.

GENDER :

Males were more prone to oral and oropharyngeal mass lesions according to present study with 80.4% and females accounted for 19.6%.

ADEQUACY

The aspirates were considered adequate if the cellular elements were sufficient for rendering diagnosis.54 out of 56 (96.4%) aspirates were sufficient for rendering diagnosis. 2 out of 56 cases (3.6%) were inadequate to reach the diagnosis.

Table – :1 Distribution of different cytological diagnosis of oral cavity and oropharynx:-

S. No.	Lesions	No. of cases	Percentage (%)
1	Squamous cell carcinoma	34	60.9
2	Small cell carcinoma	01	1.7
3	Spindle cell carcinoma	01	1.7
4	Malignant spindle cell neoplasm (not otherwise specified)	01	1.7
5	Large cell non-hodgkin's lymphoma	02	3.5
6	Undifferentiated carcinoma	01	1.7
7	Paraganglioma	02	3.5
8	Giant cell granuloma	02	3.5
9	Tuberculosis	01	1.7
10	Mucocele	01	1.7
11	Acute/ subacute inflammation	01	1.7
12	Hematoma/ hemangioma	01	1.7
13	Pleomorphic adenoma	03	5.3
14	Mucoepidermoid carcinoma	02	3.5
15	Dedifferentiated polymorphous low grade adenocarcinoma	01	1.7
16	Inadequate	02	3.5
Total		56	100

Table – 2: Distribution of different lesions according to site :-

S. No.	Site	Lesions
1	Lip (1)	Inadequate (1)
2	Buccal mucosa (10)	Squamous cell carcinoma (9) , giant cell granuloma (1)
3	Angle of mouth (2)	Squamous cell carcinoma (2)
4	Alveolus (5)	Squamous cell carcinoma (3) , malignant spindle cell neoplasm (not otherwise specified) (1), tuberculosis (1)
5	Floor of mouth (2)	Squamous cell carcinoma (1) , giant cell granuloma (1)
6	Tongue (22)	Squamous cell carcinoma (17) , spindle cell carcinoma (1), small cell carcinoma(1), mucoepidermoid carcinoma (1), acute / subacute inflammation (1), inadequate (1)
7	Sublingual (1)	Hematoma / hemangioma (1)
8	Palate (8)	Paraganglioma (1) , large cell non-hodgkin's lymphoma (1), pleomorphic adenoma (3), mucoepidermoid carcinoma (1), dedifferentiated polymorphous low grade adenocarcinoma (1), mucocoele (1)
9	Tonsil (2)	Undifferentiated carcinoma (1), large cell non-hodgkin's lymphoma (1)
10	Tonsillo- lingual sulcus (1)	Squamous cell carcinoma (1)
11	Oropharynx (1)	Paraganglioma (1)
12	Pharynx (1)	Squamous cell carcinoma (1)

Cytomorphology of Squamous Cell Carcinoma:-

Aspirates from 34 cases out of 56 cases (60.9%) were diagnosed as

squamous cell carcinoma. Most of the cases were well differentiated (16 out of 34 i.e. 47.0%). Moderately and poorly differentiated squamous cell carcinoma accounted for 29.4% and 23.6% of cases respectively.

WELL DIFFERENTIATED SQUAMOUS CELL CARCINOMA:-
Cellularity was moderate to high. Most of the cells were singly scattered and in sheets. Few clusters of cells were also seen. Cells had abundant cytoplasm and were well keratinised

MODERATELY DIFFERENTIATED SQUAMOUS CELL CARCINOMA:-
Cellularity was moderate to high with cells scattered singly, in sheets and in clusters. Cytoplasm was moderate to scant with keratinisation in some cells.

POORLY DIFFERENTIATED SQUAMOUS CELL CARCINOMA:-
Cellularity was low to moderate. Cells were mostly in clusters and few were seen scattered singly or in sheets. There was sudden change in chromasia. Scanty cytoplasm and concomitant keratinisation were seen. Pleomorphic cells with high nuclear : cytoplasmic ratio were also noted.

Cytomorphology of Spindle Cell Carcinoma:-
A case was diagnosed as spindle cell carcinoma. Smear was highly cellular. Nuclei were plump spindle with high nuclear : cytoplasmic ratio and marked nuclear irregularity. Nucleoli were prominent and high mitotic activity was easily discernable.

Cytomorphology of Malignant Spindle Cell Neoplasm (not otherwise specified):-
smear revealed mitotically active plump spindle cells with rather scanty, somewhat vacuolated cytoplasm. Some of these cells were so plumped that they appear oval to round. In the absence of cytologic features supportive of epithelial differentiation or melanoma, this could only be diagnosed as a malignant spindle cell neoplasm.

Cytomorphology of Undifferentiated Carcinoma:-
A case of undifferentiated carcinoma was diagnosed which had high cellularity with cells in clusters and few singly dispersed cells .Cells were oval to round with scant to moderate amount of pale basophilic cytoplasm. Intracellular keratin was absent. Nuclei were oval to round with irregular nuclear membrane. Chromatin was coarse granular.

Cytomorphology of Small Cell Carcinoma:-
A solitary case of small cell carcinoma was diagnosed. Smear was highly cellular cells were small to medium with round to oval shape. Cytoplasm was scant to virtually absent. Nucleus was round to oval with high nuclear :cytoplasmic ratio. Chromatin was finely granular.

Cytomorphology of Large Cell Non-Hodgkin's Lymphoma:-
2 cases of large cell non-hodgkin's lymphoma (3.5%) were diagnosed out of 56 cases. Smears were highly cellular and cells were scattered singly.Lympho-glandular bodies were present in the background. Cells were large with pale and just discernible cytoplasm. Nucleus had prominent nucleoli. A variable number of indented/ cleaved nuclei were seen.

Cytomorphology of Paraganglioma:-
2 cases out of 56 cases were diagnosed paraganglioma. Smear had moderate to high cellularity. Cells were seen singly and loosly clustered forming vague acinar pattern. Cells were plump spindle to oval with moderate to scant light blue cytoplasm.

Cytomorphology of Giant Cell Granuloma:-
2 cases out of 56 (3.5%) cases were of giant cell granuloma. Cellularity was moderate. Background was inflammatory with variable number of lymphocytes, neutrophils, occasional eosinophils and giant cells.

Cytomorphology of Mucocele:-
One aspirate (1.7%) was given diagnosis of mucocele. . Smear had low cellularity and necrotic background Few foamy macrophages, histiocytic giant cells sparse neutrophils and characteristic crystalline structures (tyrosine) were seen.

Cytomorphology of Tuberculosis:-
An Aspirate from alveolus was diagnosed as tuberculosis. It accounted for 1.7%(1 case out of 56). Smear was dilute showing presence of histiocytic giant cells and few granulomas. Histology of the tissue was consistent with the cytological diagnosis due to presence of giant cells and granulation tissue.

Cytomorphology of Hemangioma / Hematoma:-
1.7% of case(1 in 56 cases) was diagnosed hemangioma / hematoma. About 2ml of blood containing erythrocytes along with few foamy macrophages and a solitary aggregate of benign spindle cells was aspirated.

Cytomorphology of Acute / Sub-acute Inflammation:-
A case of Acute /sub-acute inflammation was diagnosed in 56 cases(1.7%). Smear revealed numerous polymorphs, few lymphocytes and plasma cells along with sparse macrophages.

Cytomorphology of Pleomorphic Adenoma:-
3 cases out of 56 were diagnosed as pleomorphic adenoma(5.3%). Cellularity was moderate to high with hemorrhagic background in one case. Cells were lying singly and in poorly cohesive clusters and sheets . Foci of chondromyxoid stroma were seen with embedded spindle

Cytomorphology of Mucoepidermoid Carcinoma:-
2 cases of mucoepidermoid carcinoma were diagnosed. Smears were moderately cellular with dirty background of mucin and debris. Cluster and sheets of epithelial cells were seen.Some mucin secreting cells and squamous epithelial cells were seen with bland nuclei. Extracellular and intracytoplasmic mucin were observed

Cytomorphology of Dedifferentiated Polymorphous Low Grade Adenocarcinoma:-
Solitary case of dedifferentiated polymorphous low grade adenocarcinoma was diagnosed,Smears had high cellularity. Smears revealed dual population of cells. Cells were moderately pleomorphic with high nuclear:cytoplasmic ratio. Cells formed acinar pattern. Nuclei were round to oval with coarse granular chromatin and occasional nucleoli were observed.

CYTO-HISTOLOGICAL CORELATION:-
Total 56 cases were considered. Histology was available for 8 cases out of 56.TABLE -3

Number of cases	Histologic diagnosis	Cytologic diagnosis
1	Verrucous carcinoma	Benign squamous cells
3	Squamous cell carcinoma	1Benign squamous cells 2 squamous cell carcinoma
2	Pleomorphic adenoma	2 Pleomorphic adenoma
1	Tuberculosis	1 Tuberculosis
1	Malignant spindle cell neoplasm	Malignant mesenchymal neoplasm

DISCUSSION
A total of 56 cases with oral and oropharyngeal mass lesions were subjected to fine needle aspiration for cytological study.

ADEQUACY:-
Adequacy of present study is nearly the same as was found in other studies. Smears with scant cellularity, which were not sufficient to make precise diagnosis were categorised as inadequate. In the present study, 2 cases out of 56 were inadequate.

AGE OF THE SUBJECTS:-
A wide range of age was observed in the present study. Previous studies (2, 3, 4, 5) also yielded subjects with wide range of age.

SITE:-
The present study had maximum aspirates from tongue. All studies differ in this context except work done by Scher et al 1988. This may be due to random aspiration done by the workers not keeping in mind about some specific site.

MALIGNANT LESIONS:-
Squamous cell carcinoma was the most common oral and oropharyngeal lesion which was aspirated in the current study.

Distribution of Differentiation of Squamous Cell Carcinoma on Cytology:-
Cytological features of squamous cell carcinoma had not been described by any worker in their studies. But most of the squamous cell carcinomas are moderately-differentiated on histology [6,7,8]. Since well

differentiated squamous cell carcinomas have relatively better prognosis than poorly differentiated squamous carcinomas, grading should be attempted in cytologic material.

BENIGN LESIONS:-

The results of the current study are in accordance with those of Saleh et al 2008 and Abrari et al 2002, i.e. pleomorphic adenoma. Other lesions reported to be the commonest benign lesion diagnosed on FNA are inflammatory lesions, cystic lesions .

One case was diagnosed as spindle cell carcinoma.The features of the spindle cell squamous carcinoma were the same as had been described by the literature.

Another case was diagnosed as malignant spindle cell neoplasm (not otherwise specified).The smears had predominance of mitotically very active, poorly differentiated spindle cells with absence of an epithelial component.

One case of small cell carcinoma was diagnosed. The cytological appearance noted was fairly characteristic of small cells with negligible cytoplasm, nuclear moulding, inconspicuous nucleoli and apoptotic bodies.

2 cases of paraganglioma were diagnosed. The features of the aspirates were consistent with the diagnosis.

Large cell Non-Hodgkin's Lymphoma was diagnosed in 2 cases out of 56.Features were consistent with the diagnosis showing, singly scattered large monomorphic cells in lymphoglandular bodies rich background [5,10].

Solitary case of undifferentiated carcinoma was diagnosed.

3 cases of pleomorphic adenoma were diagnosed. Pleomorphic adenoma is perhaps the most common problem in the differential diagnosis of adenoid cystic carcinoma.Fair amount of cytoplasm is noted in the myoepithelial cells of pleomorphic adenoma, whereas presence of cells virtually devoid of cytoplasm/ bare nuclei is the hallmark of adenoid cystic carcinoma. Also, in the benign tumours, the cells interdigitate intricately with the fibrillary connective tissue associated with them.

2 cases were diagnosed as mucoepidermoid carcinoma. There was no difficulty in diagnosing these cases.

The solitary case diagnosed as dedifferentiated polymorphous low grade adenocarcinoma.The age, site and long history was entirely consistent with polymorphous low grade adenocarcinoma(PLGA) which is a low grade malignant salivary neoplasm with low metastatic potential, characteristically located in the palate.

3 cases out of 56 cases had multinucleated giant cells.Biopsy from enlarged submandibular lymph node was done which made the definite diagnosis of tuberculosis. The other 2 cases had osteoclastic giant cells. The diagnosis given was giant cell granuloma on FNAC.

An aspirate revealed necrosis along with characteristic crystals (tyrosine), giant cells and foamy macrophages. Diagnosis of mucocele was consistent with findings.

One case of acute/ sub-acute inflammation and solitary case of hemangioma/ hematoma were also diagnosed.

CONCLUSION

In the current study, a total of 56 cases of oral and oropharyngeal mass lesions were subjected to fine needle aspiration cytology (FNAC). Adequate material for cytological diagnosis was aspirated in 96.4% (54 out of total 56) of cases.

Maximum numbers of lesions (13 out of 56 i.e. 23.5%) were encountered in the age group of 31-40years and 51-60 years. Male to Female ratio of 4.1:1 was observed. The most common site for aspiration in present study was tongue (22 out of 56 i.e. 39.2%) followed by buccal mucosa (10 cases out of 56 i.e. 17.8%)

Squamous cell carcinoma was the most common malignant lesion. 34 out of total 56 cases i.e. 60.7% were showing the features conclusive of squamous cell carcinoma constituting well differentiated (16 cases), moderately differentiated (10 cases) and poorly differentiated (8 cases) squamous cell carcinoma.

Pleomorphic adenoma was the most common benign lesion encountered in the present study.

Histology was sought in eight cases (two of them with inadequate aspirates) and correlated with cytology in all the cases where the aspirate was adequate.

It is concluded that FNAC serves as an important tool to screen and diagnose oral and oropharyngeal mass lesions and provides sufficient information for the initiation of treatment without need for an open biopsy in most cases.

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