ORIGINAL ARTICLE

Diagnostic Utility of Fine Needle Aspiration Cytology in Oral Cavity and Oropharyngeal Lesions

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ABSTRACT

Fine needle aspiration cytology is being commonly used for initial diagnoses of oral cavity and oropharyngeal lesions. The aim of this study was to assess the role of Fine Needle aspiration cytology in diagnosis of intraoral and oropharyngeal lesions and to compare with histopathological findings in those cases which underwent biopsy examination. This is a tertiary care center based retrospective study done over a period of two years. Out of total 660 fine needle aspiration cytology in two years; 133 cases were of oral and oropharyngeal region. 54 were male and 79 were of female. Frequently involved site was tongue (n=45). Predominant non neoplastic cases were of chronic inflammation (n=43) and neoplastic cases of squamous papilloma (n=15). Among neoplastic cases most common malignant cases were of squamous cell carcinoma (n=4). Sensitivity of the FNAC method was found to be 80% and specificity was identified as 100% comparing with gold standard histopathological examination. No significant complications were seen in patients undergoing these FNAs. It can be concluded that FNA is a simple and rapid diagnostic test that can be useful for preliminary assessment of oral and oropharyngeal lesion.

***Key words**: Fine needle aspiration, oral cavity, oropharynx*

INTRODUCTION

Due to wide variation of oral and oropharyngeal lesions, correct diagnosis helps for proper management[1]. Fine needle aspiration cytology (FNAC) is used for assessment of detectable superficial and deep lesions. Oral and oropharyngeal lesions may arise from surface mucosa, minor salivary glands, mesenchymal tissue, and lymphoid structures. A diversity of lesions including non neoplastic commonly presenting as inflammatory or cystic and neoplastic as benign or malignant neoplasms can occur within the oral cavity and oropharynx which requires a proper diagnosis for further management[2]. Advantage of aspiration in oral cavity and oropharynx are easy follow up of previously diagnosed cases and preoperative diagnosis of lesion, helping clinicians and patient to discuss and plan better for further management[3]. Disadvantage reported for FNAC procedure in oral and oropharyngeal region is due to space inadequacy for performing fine needle aspiration[4].

Although oral cavity, floor of mouth, tongue, palate, tonsils and posterior pharyngeal wall can be needled under visual inspection, there was only rare study done to evaluate the role of FNAC in intraoral and oropharyngeal lesions to evaluate diagnostic utility over the country with variable outcomes[5].

The present study was undertaken to evaluate the significance as well as diagnostic value of FNAC in oral cavity and oropharyngeal lesions.

MATERIALS AND METHODS

This is a tertiary care centre based descriptive study done over a period of two years from 13th April 2016 (1st Baisakh 2073 BS) to 13th April 2018 AD (30th Chaitra 2074 BS) at Jeevan Raksha Hitech Diagnostic centre. Sample size was calculated according to this formula:

$$\frac{\frac{z^2 \times p(1-p)}{e^2}}{1+\left(\frac{z^2 \times p(1-p)}{e^2 N}\right)}$$

All patients who underwent aspiration from oral cavity and oropharynx were included in this study. Aspiration was done as an outpatient procedure in supine posture. Deeply located lesions in oral cavity, oropharynx and posterior tongue were visualized with head lamps. Tongue depressor and sterile gauze was used for better assessment of lesions. Local anesthesia as lignocaine spray was used to avoid gag reflex in oropharyngeal lesions. FNAC was done through transoral route. Aspiration was done with 22–23 G needle attached to five ml syringe. Two to three passes of needle were made per case. Hemostasis

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after FNAC procedure was achieved by tight packing with sterile gauze in the mouth and swallowing. The smears were air dried for Giemsa stain and wet fixed in 95% alcohol for Rapid Pap stain. Special stains like Ziehl Neelsen stain and periodic-acid-Schiff (PAS) were done wherever required. The cytological diagnoses were assessed and compared with the histopathological diagnoses in those cases that underwent excision followed by histopathological examination. Sensitivity and specificity of the FNAC method was identified comparing with gold standard histopathological examination.

RESULTS

Out of total 660 fine needle aspiration cytology in two years; 133 cases were of oral and oropharyngeal region. 7 cases were of oropharyngeal region and all were from tonsil. Among 133 cases; 54 were male and 79 were of female. Male to female ratio was of 1:1.5. Age of the patient ranged from one year to seventy six years with mean age of 34.6. Maximum numbers of patient were in the age group of 31 to 40 (39 patients) (Table I). Most commonly involved site was the tongue (n=45), followed by buccal mucosa (n=36), mucosal surface of lips (n=13), palate (n=12), floor of mouth (n=11), retromolar trigone (n=9) and tonsil (n=7) (Table II). FNAC results show highest cases of chronic inflammation (n=43) (Table III). Among diagnosed cases; predominant non neoplastic cases were of chronic inflammation (n=43) and neoplastic cases of squamous papilloma (n=15) (Table IV). One of the neoplastic cases was diagnosed as pleomorphic adenoma from palate region (Figure 1). Among neoplastic cases most common malignant cases were of squamous cell carcinoma (n=4). 2 cases of squamous cell carcinoma were located in buccal mucosa; two cases each were in tongue and mucosal surface of lower lip region respectively (Figure 2). One case of low grade mucoepidermoid carcinoma was located in palate. Among five cases which underwent histopathological examination, four cases were diagnosed as squamous papilloma and also final diagnosis as squamous papilloma in histopathology. One case diagnosed as Lichenoid changes in cytology was found to be Lichen Planus in histopathology.

AGE GROUP (in years)	NUMBER OF CASES
0 – 10	10
11-20	17
21 – 30	29
31 – 40	39
41 – 50	15
51 – 60	11
61 – 70	10
71 – 80	2

Table I: Distribution of cases according to age

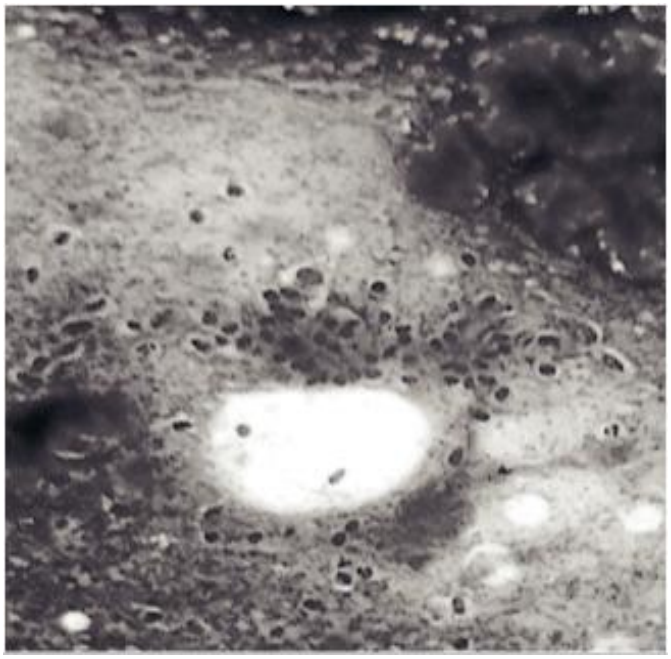
SITE OF LESIONS	NUMBER OF CASES (%)
Lip (mucosa)	13 (9.7%)
Palate	12 (9%)
Tongue	45 (33.9)
Tonsil	07 (5.3)
Floor of mouth	11 (8.3)
Buccal mucosa	36 (27.1%)
Retromolar trigone	09 (6.7)

Table II: Distribution of cases according to site of lesions

FNAC DIAGNOSIS	NUMBER OF CASES (%)
Hemangioma	06 (4.5)
Chronic Inflammation	43 (32.3)
Acute inflammation	14 (10.5)
Squamous papilloma	12 (9)
Sialocyst / mucus retention cyst	20 (15)
Benign polypoidal lesion	08 (6)
Squamous cell carcinoma	04 (3)
Mucoepidermoid carcinoma (low grade)	01 (0.8)
Leukoplakia	06 (4.5)
Spindle cell lesion – fibroma / irritation fibroma	05 (3.8)
Lichenoid changes	04 (3)
Chronic sialadenitis(minor salivary gland)	02 (1.5)
Pleomorphic adenoma	01 (0.8)
Chronic tonsillitis (follicular tonsillitis)	07 (5. 3)

Table III: Distribution of cases with FNAC diagnosis

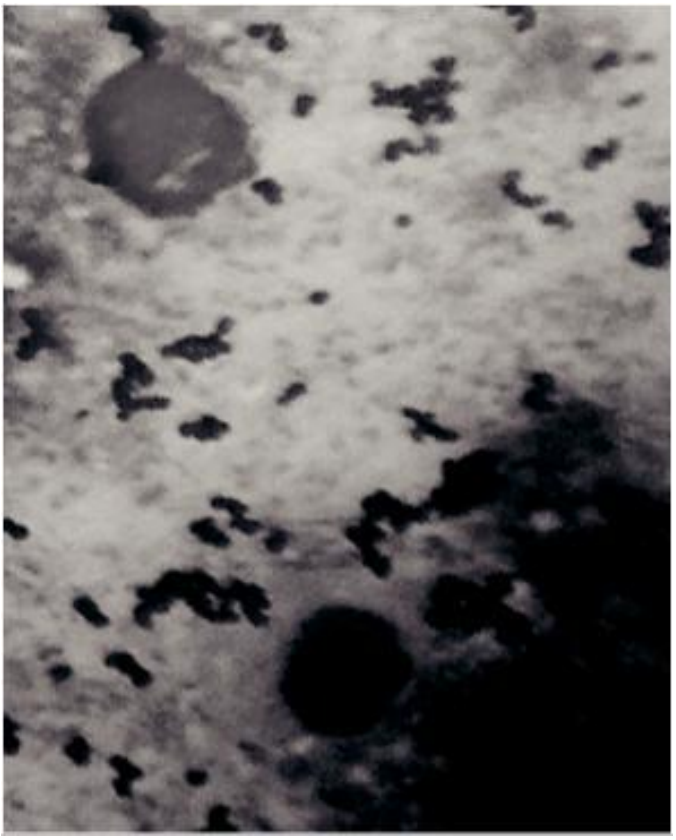
Figure 1: FNAC of palate region: Pleomorphic adenoma. (Giemsa stain X 1000)



Non neoplastic cases (number of cases)	Neoplastic cases (number of cases)
Chronic inflammation (43)	Squamous papilloma (12)
Sialocyst / Mucus retention cyst(20)	Benign polypoidal lesion (08)
Acute inflammation (14)	Hemangioma (06)
Chronic tonsillitis / follicular tonsillitis (07)	Leukoplakia (06)
Lichenoid changes (04)	
Chronic sialadenitis (2)	Pleomorphic adenoma (01)
	Squamous cell carcinoma (04)
	low grade Mucoepidermoid carcinoma(01)
Total number of case = 90	Total number of cases = 43

Table IV: Comparison of non neoplastic and neoplastic cases

Figure 2: FNAC of Mucosal surface of lower lip region: Atypical squamous cells (Giemsa stain X 1000)



Five cases were subsequently excised and submitted for histopathology examination. Comparing FNAC findings with gold standard histopathological observation sensitivity and specificity was found to be 80 and 100% respectively (Table V).

Test	Disease Present	Disease absent	Total
Positive	True Positive (a=4)	False positive (c=0)	a+c = 4
Negative	False Negative (b=0)	True negative (d=1)	b+d = 1
Total	a+b = 4	C+d = 1	Total = 5

Table V: Calculation of sensitivity and specificity of FNAC

Prevalence of disease = T disease / Total X 100 = 4/5 X 100 = 80
Sensitivity = a/a+c X 100 = 4/5 X 100 = 80
Specificity = d/d+b X 100 = 1/1 X 100 = 100

DISCUSSION

Age of presentation in this study was broad ranging from 1 year to 76 years. Similar wide range of age group of 14 month to 86 years was found by Singh D et al[5]. Present study shows female predominance in oral cavity and oropharyngeal lesion and similar findings were observed by Modi D et al[6]. Most common age group in this study was of 31 to 40 years and similar findings was also noted by Sakarwal N et al[7]. This survey showed common lesion over tongue and corresponding data were observed by Bal MS et al[8].Inflammation was the most common presentation in non neoplastic lesion and similar observation was identified by Khan N et al[9]. Frequent malignant lesion in this study is found to be squamous cell carcinoma and similar findings were observed by various studies [4,10](Table VI).

Studies	Most common malignant lesion
Singh D et al.[9]	Squamous cell carcinoma (28%)
Saleh HA et al.[4]	Squamous cell carcinoma (22.2%)
Gillani M et al.[10]	Squamous cell carcinoma (60%)
Present study	Squamous cell carcinoma (3%)

Table VI: Comparison of malignant lesions identified in present study with various studies

CONCLUSION

As sensitivity and specificity are high for oral and oropharyngeal aspiration cytology, so it is concluded that FNAC can be used as routine diagnostic tool for oral and oropharyngeal lesions.

LIMITATION

Adequate space for aspiration is only limitation in oral cavity and oropharyngeal cytology examination.

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