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Original Research Article

Diagnostic efficacy and limitations of fine needle aspiration cytology in oral and jaw swelling patients

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Abstract:
Background & Method: The aim of the study is to diagnose efficacy and limitations of fine needle aspiration cytology in oral and jaw swelling patients. FNAC was done with proper cleaning of the lesion, swelling was properly fixed, then proper gauze needle and appropriate angle FNAC was performed with a to and fro needle movement. Case records were retrieved from the archives and each patient's age, sex, and pertinent clinical history were recorded. Routine radiographic or computed tomography findings (wherever required) were utilized to aid in the diagnosis.
Result: On our study we found maximum cases in Jaw bone swellings i.e. 26.2%, chi-square statistic is 28.3193. The p-value is .039701. On our study we found maximum cases in Mucocele/retention cyst i.e. 53.7%, chi-square statistic is 1.9895. The p-value is .048396.
Conclusion: The present study confirms the usefulness of FNAC as a safe and economic procedure in distinguishing benign and malignant cytology in oral and jaw swelling patients which are of utmost value in planning the further management of the patient.

Keywords: efficacy, FNAC, oral and jaw.

Study Designed: Observational Study.

1. Introduction

Various techniques used in the diagnosis of oral cavity lesions include incisional and excisional biopsy, curettage, and exfoliative cytology[1]. The role of exfoliative cytology using scraping or irrigation techniques as a screening or diagnostic procedure for oral cancer is difficult to assess because of its high false-negative rate and limited utility in nonepithelial and submucosal tumors[2]. Though fineneedles aspiration cytology (FNAC) of head and neck region was pioneered in the early 1930s, it has not been widely utilized for diagnosis of oral and jaw lesions due to rarity and diversity of lesion types, limited experience, heterogeneity of cell populations, and difficulty in accessing and aspirating these lesions[3]. Very few studies have explored the potential of transmucosal FNAC for the diagnosis of oral cavity and jaw lesions and have reported variable outcomes[4]. Keeping in view these considerations, this study was planned to determine the role and limitations of FNAC in the diagnosis of oral and jaw lesions[5].

ISSN: 0975-3583, 0976-2833 VOL14, ISSUE6, 2023

Fine needle aspiration cytology (FNAC) has gained popularity as a rapid cost-effective, relatively painless, precise and effective means to diagnose thyroid and salivary gland lesions and other masses in head & neck[6]. However its use in the diagnosis of oral & oropharyngeal lesions is not being commonly practiced[7&8]. Almost all of the oral & oropharyngeal lesions are subjected to punch biopsy in many centers.

2. Material & Method

FNAC was performed in 150 patients at Tertiary Care Centre for 01 Year, after detailed clinical history of all the patients were taken and relevant questions were asked to extract the aetiology and also about present, past and family history. Case records were retrieved from the archives and each patient's age, sex, and pertinent clinical history were recorded. Routine radiographic or computed tomography findings (wherever required) were utilized to aid in the diagnosis.

The sample size was taken based on the convenience of the study. Whole procedure of FNAC was explained in detail with its advantages to patients and their written consent about the same was taken. FNAC was done with proper cleaning of the lesion, swelling was properly fixed, then proper gauze needle and appropriate angle FNAC was performed with a to and fro needle movement. The needle was removed after releasing the negative pressure and then pressure was applied to the FNAC site with dry cotton swab to avoid bleeding or haematoma formation. The material obtained was used for making smear and then stained with haematoxylin and eosin stain, or the stains required as per the tissue content. All age groups of patients with swelling in head and neck area were included and patients with lesions in the oral cavities were excluded from the study.

Inclusion criteria:

1. Palpable and nodular lesions of the oral and jaw swelling patients. Nodular and superficial lesions like: pleomorphic adenoma, carcinoma and salivary gland tumors which were visible clinically were included.

Exclusion criteria:

1. External facial lesions, cervical lymph nodes, and major salivary glands were excluded from the study

3. Results

Table 1: Age Distribution

Age	No.	Percentage	P Value
12-30	24	16	.778856
31-50	33	22	
51-70	37	24.7	
More than 70	56	37.3	

The chi-square statistic is 0.0789. The p-value is .778856. The result is not significant at $p < .05$.

Table 2: Sites Involved

Sites Involved	No.	Percentage	P Value
Angle of mouth	23	15.3	
Lip	34	22.7	

ISSN: 0975-3583, 0976-2833 VOL14, ISSUE6, 2023

Mandible	22	14.6	.013003
Maxilla	19	12.7	
Palatine bone of maxilla	18	12	
Hard palate	07	4.7	
Lower lip	09	06	
Buccal mucosa	18	12	

The chi-square statistic is 10.7756. The p-value is .013003. The result is significant at $p < .05$.

Table 3: Non-salivary gland lesions

Non-salivary gland lesions	**No.**	**Percentage**	**P Value**
Inflammatory lesions	22	22.9	.039701
Cysts	04	4.1	
Neoplasms	21	21.8	
Jaw bone swellings	25	26.2	
Neoplastic cysts/lesions	24	25	
Total	96	100	

On our study we found maximum cases in Jaw bone swellings i.e. 26.2%, chi-square statistic is 28.3193. The p-value is .039701. The result is significant at $p < .05$.

Table 4: Salivary gland lesions

Salivary gland lesions	**No.**	**Percentage**	**P Value**
Non-neoplastic lesions			.048396
Acute sialadenitis	04	7.5	
Mucocele/retention cyst	29	53.7	
Neoplastic lesions	21	38.8	
Total	54	100	

On our study we found maximum cases in Mucocele/retention cyst i.e. 53.7%, chi-square statistic is 1.9895. The p-value is .048396. The result is significant at $p < .05$.

4. Discussion

Fine Needle Aspiration Cytology is a valuable diagnostic as well as useful therapeutic test. Sometimes Fine Needle Aspiration Cytology may give false-negative and false-positive results, so in every circumstance, we should interpret Fine Needle Aspiration Cytology report with the entire clinical scenario. Lymph node enlargement is the common presentation in head and neck lesions[9]. When patient present with mass in head and neck region Fine Needle Aspiration Cytology is useful as an initial assessment and also when a recurrence is

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suspected after previous treatment. Fine Needle Aspiration Cytology is one type of outpatient department procedure, so patient does not need to be admitted for procedure and no cost of hospitalization[10]. No need for any type of anaesthesia for this procedure so almost no harm to the patients. By doing Fine Needle Aspiration Cytology we are not able to get full information of lesion every time, but it gives idea about benign or malignant nature so according to that treatment can be planned[11]. Immunocytochemistry, molecular testing, immunohistochemistry and core biopsy can be done whenever needed.

Fine Needle Aspiration Cytology is sometimes confused with Fine Needle Aspiration Biopsy, because biopsy is regarded as a procedure of removing the tissue fragment[12]. Fine Needle Aspiration Biopsy yields more amount of tissue but causes more injury and local trauma.

In this study there was only one false negative report which turned out to be a tuberculous granuloma of tongue where the cytopathological diagnosis was normal epithelial cells. Likewise there were two false positives on histological correlation[13]. One was a FNAC from nasopharynx which on histopathological examination showed only chronic inflammatory cells[14-16]. The other aspirate was from tonsil which was reported as NHL but showed only chronic inflammatory cells with normal lymphoid tissue on histopathological examination. Interestingly these patients also had lymph nodes that on aspiration were diagnosed as metastatic squamous cell carcinoma and NHL respectively. Hence FNAC can be a better option sometimes in cases of deeply sited lesions like tonsils where biopsy might be superficial and miss the targeted tissue[17-19].

5. Conclusion

The present study confirms the usefulness of FNAC as a safe and economic procedure in distinguishing benign and malignant cytology in oral and jaw swelling patients which are of utmost value in planning the further management of the patient.

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ISSN: 0975-3583, 0976-2833 VOL14, ISSUE6, 2023

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