

Study of diagnostic accuracy of FNAC in head neck face tumors

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Abstract

Introduction: FNAC is an easily done procedure with minimal incidence of complication and no risk of implantation of tumor cells (<1%). The complications are rare and bleeding or inflammatory reaction in the region of the puncture. The impairment of the involved nerves has been reported as a very rare complication. FNAC has its proponents and opponents. It is regarded as a diagnostic procedure to be superior to the combination of physical examination and radiological evaluation. Many authors claimed that it is accurate, safe and cost effective. It can also be performed in children older than seven years. **Aims and Objective:** to study the Diagnostic Accuracy of FNAC in Head Neck Face Tumors. **Methodology:** It was a hospital based prospective study in 273 patients presented with Head Neck Face Swelling. FNAC was done on 273 patients who presented with palpable head and neck masses in a tertiary hospital for a period of 1 years from March 2014 to March 2015. **Result:** Most of the patients from Head Neck face tumors were of Thyroid 140 (51.28%), Followed by Salivary Gland 90(32.96%), Soft tissue 25(9.15%) and Miscellaneous were 4 (1.4%). Out of eligible samples for FNAC were 120 cases in that the sensitivity was 100%, the specificity was 96.19%, the positive predictive value was 78.19%, the negative predictive value was 96.19% and Percentage of False negatives were 0 % and Percentage of False positive were 3.80%. **Conclusion:** Our study shows that preoperative FNAC plays an important role in the accurate diagnosis of Head Neck Facetumors. It is a safe and effective modality for the treatment of patients with Head Neck Face Tumors.


Keywords: Fine Needle Aspiration Cytology (FNAC), Head Neck Face Tumors.

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INTRODUCTION

FNAC is an easily done procedure with minimal incidence of complication and no risk of implantation of tumor cells (<1%). The complications are rare and bleeding or inflammatory reaction in the region of the puncture. The impairment of the involved nerves has been reported as a very rare complication^{1,2}. FNAC has its proponents and opponents. It is regarded as a diagnostic procedure to be superior to the combination of physical examination and radiological evaluation^{3,4}. Many authors claimed that it is accurate, safe and cost effective^{5,6,7}. It

can also be performed in children older than seven years⁸. However, Batsakis and colleagues were of the opinion that preoperative FNAC has little influence on the clinical management since most of the parotid masses ultimately require surgery⁹. This point of view ignores a considerable number of benign salivary tumors that do not necessitate surgery. Fine needle aspiration cytology (FNAC) is one of the most valuable tests available in the initial assessment of the patient who presents with a mass in the head and neck region or where a recurrence is suspected after previous treatment¹⁰.

MATERIAL AND METHODS

It was a hospital based prospective study in 273 patients presented with Head Neck Face Swelling. FNAC was done on 273 patients who presented with palpable head and neck masses in a tertiary hospital for a period of 1 years from March 2014 to March 2015. Prior to FNAC, the patients were examined in detail, which included the recording of their pertinent clinical history and significant clinical findings. Relevant investigations were carried out as per requirements. After a brief explanation of the

technique, an informed consent of the patient was obtained. FNAC was performed at our pathology department using a 22-gauge needle attached to a 10mL syringe holder by a free hand technique. A minimum of two needle passes were made in each case. The specimens were expelled onto two or three slides, and thin smears were prepared between two slides and immediately fixed. The slides were generally stained with The rest of the slides were fixed in methanol and stained by the Papanicolaou stain. The Zeihl-Neelsen's stain for AFB was done in those cases with lymph node swelling, where the clinical suspicion or diagnosis was tuberculosis and /or in those cases where purulent or cheesy material was aspirated. None of the FNAC was carried out with ultrasonography. We classified our FNAC results into the following categories: true-negative (absence of malignancy correctly diagnosed), true-positive (presence of malignancy correctly diagnosed), false-negative (cytological specimen failed to diagnose a malignancy), and false-positive (cytological specimen was incorrectly considered or suspect for malignancy). We also compared the histopathology of the surgical specimens with the preoperative cytology of the FNAC specimens and evaluated the sensitivity, specificity, positive predictive value (PPV), negative predictive value (NPV), and overall accuracy of FNAC to differentiate between benign and malignant disease.

RESULTS

Table 1: Distribution of Head Neck Face Tumors as per Location

Location	Number of Cases	Percentage
Thyroid	140	51.28%
Salivary Gland	90	32.96%
Soft tissue	25	9.15%
Miscellaneous	4	1.4%
Total	273	100%

From the **Table 1:** It is clear that most of the patients from Head Neck face tumors were of Thyroid 140 (51.28%), Followed by Salivary Gland 90(32.96%), Soft tissue 25(9.15%) and Miscellaneous were 4 (1.4%)

Table 2: Distribution of Patients as per Cytology and Histology

	Malignant Cytology	Benign Cytology	Total
Malignant histology	15 (True positive)	4 (False positive)	19
Benign histology	0 (False negative)	101 (True negative)	101
Total	15	105	120

The correlation between cytological diagnosis and subsequent histological studies in all the 120 Cases are shown in Table 2. In the 120 cases, the sensitivity was 100%, the specificity was 96.19%, the positive predictive value was 78.19%, the negative predictive value was

96.19% and Percentage of False negatives were 0 % and Percentage of False positive were 3.80%.

DISCUSSION

The FNAC has been widely used as a diagnostic tool for the management of various head and neck lesions¹¹. Many authors considered FNAC a superior modality and claimed it accurate and safe^{12,5-7}. In contrast, others argued that it has little influence on clinical management because of its high rates of false-positives and false-negatives and also ultimately patients have to undergo surgery⁹. In our study most of the patients from Head Neck face tumors were of Thyroid 140 (51.28%), Followed by Salivary Gland 90(32.96%), Soft tissue 25(9.15%) and Miscellaneous were 4 (1.4%). Among the salivary gland lesions, the parotid was the most commonly involved gland. Our observation is similar to that of P. O'Dwyer¹² and C. Lussier⁷. Among benign tumors, pleomorphic adenoma was the commonest tumor and among the malignant tumors mucoepidermoid carcinoma was the most common one. This finding is similar to that of Fernandes *et al.*⁸. The overall diagnostic accuracy was 100%. Review of literature shows that the accuracy has ranged from 80.4 to 98%⁸. In the 120 cases, the sensitivity was 100%, the specificity was 96.19%, the positive predictive value was 78.19%, the negative predictive value was 96.19% and Percentage of False negatives were 0 % and Percentage of False positive were 3.80%.The diagnostic errors were most commonly due to inadequate specimens and cystic lesions. One must be careful in committing a false negative diagnostic error in cystic lesions that contain macrophages and scanty material, since these features do not exclude malignancy. Repeat FNAC or thyroidectomy is advised for persistent nodules^{12,13}. Cystic thyroid lesions pose diagnostic difficulties. Cystic change and/or hemorrhage in neoplasms is seen in up to 25% of primary Papillary carcinomas, in 20% of Follicular neoplasms and in 26% of Follicular carcinomas¹⁰. Recurrent cysts, incompletely decompressed lesions, lesions greater than 3-4 cm in diameter in which aspiration of several areas does not give good evidence of the colloid nodule and lesions in young males, have all been recommended as indications for surgical excision. Intranuclear cytoplasmic inclusions and psammoma bodies detected in up to 83% and 24% of cases of Papillary thyroid carcinoma¹ were seen in only three cases (33.3%) and one case (11.1%) respectively, in the present study.

CONCLUSION

Our study shows that preoperative FNAC plays an important role in the accurate diagnosis of Head Neck facetumors. It is a safe and effective modality for the

treatment of patients with Head Neck Face Tumors. This office based procedure is reliable, well tolerated, easy to perform and cost effective. Moreover preoperative differentiation of tumors may help prepare both the surgeon and patient for an appropriate surgical procedure.

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