

A PROFILE OF PAROTID GLAND TUMORS FROM A TERTIARY CARE HOSPITAL IN PESHAWAR

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ABSTRACT

Objectives: To evaluate the usefulness and accuracy of fine needle aspiration cytology in preoperative diagnosis of parotid gland tumours.

Methodology: This comparative study was done at Department of Ear Nose and Throat, Lady Reading Hospital Peshawar from August 2008 to July 2009 in a total duration of one year. A total of 80 patients presented with masses of parotid glands and 50 patients fulfilling inclusion criteria were included in the study after diagnosing malignant on clinical picture. Fine needle aspiration cytology was performed by using 20 ml syringe attached with 22 G cannula. The results of fine needle aspiration cytology were categorized into: benign, malignant and suspicious. Final diagnosis was made on the basis of biopsy specimen. The diagnostic value of fine needle aspiration cytology in the study was determined in terms of accuracy, specificity and sensitivity.

Results: A total of 80 patients presented with parotid masses. Fifty patients (62%) underwent fine needle aspiration cytology and the distribution of disease on fine needle aspiration cytology in parotid glands revealed as benign 38 (76%), malignant 4 (8%), and suspicious in 8 (16%) cases respectively. The cases positive / suspected for malignancy were confirmed with post operative histopathology. Fine needle aspiration cytology had an accuracy of 78%, sensitivity 53.28%, and specificity 88.57%.

Conclusion: A positive result in fine needle aspiration cytology helps in diagnosing a malignancy. However, a negative result does not rule out malignancy. Therefore these results should be interpreted in conjunction with a critical clinical judgment.

Key Words: Fine needle aspiration cytology (FNAC), Parotid gland-tumors; Histopathology, Sensitivity, Specificity.

INTRODUCTION

Fine needle aspiration cytology (FNAC) has become a well accepted procedure for diagnosing soft tissue tumours of various regions including those of the head and neck.^{1,2} It can be a valuable adjunct to pre-operative assessment of parotid masses. Pre-operative recognition of malignant tumors may help prepare both the surgeon and patient to do appropriate surgical procedure.^{3,4} FNAC is a safe and effective modality in diagnosis and treatment planning of parotid tumors.⁵ Preoperative FNAC for salivary gland lesions is important in planning the most appropriate type of treatment. Dermal analogue

tumors of salivary gland has a distinctive cytomorphologic appearance and diagnosis of this neoplasm by FNAC is possible.⁶ Benign and malignant epithelial parotid tumors can be diagnosed by their clinical presentation supplemented with FNAC. In a study by Sousa et al, it proved to be a reliable method for management of parotid gland tumors.⁸ In another study, FNAC was found superior to other investigation used for diagnosis of salivary gland disease.⁹ It has been shown that FNAC is an ideal, fairly accurate pre-operative procedure for the diagnosis of pleomorphic adenoma.¹⁰ It was found to be highly specific for malignancy but its sensitivity for malignancy was poor. FNAC is

relatively inexpensive and minimally invasive.¹¹ Though the technique is relatively straightforward and free of serious complications, it does have few complications especially in the head and neck region like devastating haemorrhage from the major neck vessels.^{12, 13} The greatest success of FNAC lies in its ability to distinguish benign from malignant.¹⁴ It is capable of providing critical information unobtainable by any other investigation, short of surgical resection. A definitive tissue diagnosis permits the option of non-operative management of patients with benign disease and allows planning of an appropriate surgical strategy when malignancy is demonstrated.^{2, 15} The advantages of FNAC are sum up in the acronym SAFE: it is simple, accurate, fast, economic, and indeed, safe. Performed on an outpatient basis or even at the patient's bedside, FNA biopsy has the best safety record of any method of procuring tissue for a morphologic diagnosis. In contrast, surgical biopsy has potential risks associated with anesthesia and surgery, along with the additional time required for healing.¹⁶ The objective of the present study was to evaluate the usefulness and accuracy of FNAC in preoperative diagnosis of parotid gland tumors in this part of the world.

METHODOLOGY

This descriptive study was conducted on 50 patients and carried out in Ear, Nose, Throat Head & Neck surgery Department of Postgraduate Medical Institute, Lady Reading Hospital, Peshawar for one year from August 2008 to July 2009. The inclusion criteria were patients of age ranging from 20-70 years of both sexes having parotid swelling. The exclusion criteria were patients who were already operated upon, patients having skin involvement by lesion and patients refusing FNAC. After admitting these patients, detailed history was taken and thoroughly clinical

examination especially for parotid and ENT was carried out. An informed consent was taken from all the patients and they were briefed about the procedure. FNAC was performed with a 20 ml syringe attached with 22gG cannula and multiple passes was done in parotid masses to get the representative cells. Aspirated material from the lesion was put and spread on the slide, which was left for drying & was stained by haematoxylin and eosin and later on examined under microscope. The results obtained on FNAC were categorized into three categories viz, benign, malignant and suspicious. Considering the "suspicious" cases on cytology as positive for malignancy, the results obtained on histopathological examination of the respective specimens were compared with those of FNAC. Final diagnosis was made on the basis of histopathological examination of biopsy which was categorized as either benign or malignant. Conclusions were made.

All the data was analyzed for descriptive statistics by using computer program SPSS for windows version 12.

RESULTS

In this study a total of 50 cases were subjected to FNAC. Gender-wise majority 36 (72%) were males and 14 (28%) were females with a ratio of 2.57:1. Out of 8 suspicious cases for malignancy on FNAC, 5 cases proved to be malignant on histology. The 7 false negative on FNAC in parotid glands were, 5 cases of pleomorphic adenoma which proved to be mucoepidermoid carcinoma, 1 case of chronic non-specific inflammation which turned out to be adenoid cystic carcinoma and 1 case of sialadenitis proved to be adenoid cystic carcinoma. The 4 false positive results were 3 cases of suspicious which were considered on FNAC as malignant but on histology proved to be pleomorphic adenoma and 1

Table 1: Table of frequency of diseases in this study (n=50)

Test Result (FNAC)	Gold Standard Test (biopsy)		Total
	Disease	No Disease	
Positive	8	4	12
Negative	7	31	38
Total	15	35	50

Table 2: Diagnostic Value of FNAC in this Study (n=50)

Salivary Gland	Accuracy	Sensitivity	Specificity	PPV	NPV
Parotid Glands	78%	53.28%	88.57%	72.72%	79.85%

FNAC = Fine needle aspiration cytology

PPV = Positive predictive value

NPV = Negative predictive value

case of mucoepidermoid carcinoma diagnosed as pleomorphic adenoma on histopathology (Table 1 and 2). Side-wise distribution in this study was right side involved in 32 (64%) and left side involved in 18 (36%) cases. In this study site-wise involvement was as pre-auricular swelling in 31 (62%), Infra-auricular in 13 (26%) and retroauricular in 6 (12%) cases.

DISCUSSION

Fine needle aspiration cytology (FNAC) has become an important tool for initial diagnosis in management of patients presenting with tumours of head and neck region. FNAC has gained acceptance as a mean of providing pre-operative tissue diagnosis of salivary gland tumors, including parotid glands.¹⁷ FNAC of salivary glands is a safe and reliable technique in primary diagnosis and follow-up of patients.¹⁸ Salivary glands tumour represents about 3% of all neoplasm. About 80% are local in parotid gland, 10% in submandibular gland and remainder being distributed between sublingual and minor salivary glands. In parotid gland 80% of tumors are benign, in submandibular gland 60% are benign and in minor salivary glands, malignant tumors outnumber the benign tumor.^{19, 20} Many patients with non-neoplastic salivary gland lesions can be managed, and should be managed without surgery.²¹⁻²⁵ In this study, among the benign tumors the pleomorphic adenoma was the commonest and among the malignant tumors adenoid cystic carcinoma was common.²² Out of 38 cases of pleomorphic adenoma 31 cases were correctly identified on FNAC in this study. Five cases of mucoepidermoid carcinoma were diagnosed as pleomorphic adenoma on cytology. One case of adenoid cystic carcinoma was diagnosed as chronic non-specific inflammation on cytology and another case of adenoid cystic carcinoma was wrongly designed as sialadenitis on cytology. Hee CQ and Perry CF²⁶ in a study of 169 patients on parotid found the FNAC had an overall accuracy 85.6%. The sensitivity

and specificity for following diagnosis were respectively; benign 86% and 61%; malignant 57% and 100%; pleomorphic adenoma 78% and 95%; Squamous cell carcinoma 52% and 99%; mucoepidermoid carcinoma 14% and 99% and adenocarcinoma 20% and 100%. Zafar A and colleagues in a similar study on parotid of 28 patients found that FNAC having sensitivity of 80%, specificity 94.4% and diagnostic accuracy 89.3%.³ Obaid MA and Yousaf A¹⁸ found FNAC as useful adjunct in the management of epithelial parotid tumors. Another study by Cohen MB et al²⁷ showed that FNAC of salivary masses had a sensitivity and specificity of 66%, 88% respectively, for lesions found to be malignant on final histologic examination. Wong DS et al²⁸ studied 186 cases. The overall accuracy of FNAC was 54.3%. Lourie M et al²⁹ studied 52 cases in which the accuracy of FNAC was 69.2%. The diagnostic value of FNAC in our study was; accuracy 78%, sensitivity 53.28%, specificity 88.57%, positive predictive value 72.72% and negative predictive value 79.85%.³⁰ Use of triple test; combined clinical/radiological/cytological approach is advocated to minimize false negative and false positive diagnosis of parotid masses.

CONCLUSION

The results of this study suggest that it would be important to evaluate histologically all palpable masses of parotid glands irrespective of clinical diagnosis. The choice of 1st histological evaluation of mass rests on FNAC, which is simple, accurate, fast and economic. It must be emphasized that open biopsy should be performed in cases of negative FNAC result.

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