Original Article

A comparative study of cytology versus histology in the salivary gland tumors

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Abstract

Introduction: Salivary gland tumors are uncommon, amounting to approximately 3-10% of neoplasms of the head and neck region. However, a wide variety of tumors in these glands and insufficient tumor cells in aspiration cytology make the diagnosis difficult in some patients. The general rule in salivary gland neoplasms is: 'smaller the gland, higher the rate of malignancy'. Thus, the rate of malignancy increases from 20%–25% in the parotid gland to 40%–50% in the submandibular gland and to 50%–81% in the sublingual glands and minor salivary glands. **Aims and Objective:** To assess the sensitivity and specificity of the Cytology in the diagnosis of the salivary gland tumors. **Methodology:** This was a prospective study conducted in the Departments of Pathology with aid from the surgical Department at tertiary care hospital from 2 years duration Jan 2012-Jan 2014. A total of 60 patients with salivary gland lesions who had undergone preoperative FNAC and had been diagnosed by subsequent histopathological examination were included in this study. **Result:** The sensitivity of the FNAC (Cytological test) was 80% and Specificity was 97.78%, Positive predictive value = 92.30%, Negative Predictive value =93.61%.Cytologically; In benign the majority of the lesions were Pleomorphic adenoma (28.33%), Warthinstumour (20.00%), Chronic sialadenitis (8.33%), Benign cystic lesion(8.33%), Lymphoepithelial cyst(6.66%), Oncocytoma (5.00%), Basal cell adenoma(5.00%), Lymphangioma (3.33%).In malignant lesions majority of the lesions were Adenocarcinoma (6.67%) Mucoepidermoid carcinoma (5%) Acinic cell carcinoma (1.67%) Adenoid cystic carcinoma (1.67%). Histologically in Benign majority of the lesions were; Pleomorphic adenoma(25%) Warthinstumour (16.67%) Chronic sialadenitis (11.67%) Basal cell adenoma (8.33%) Lymphoepithelial cyst Lipoma (6.67%) Salivary duct cyst (3.33%). In majority of the malignant lesions diagnosed by histopathologically were Mucoepidermoid carcinoma (6.66%), Acinic cell carcinoma, (5.00%), Salivary duct SCC, (3.33%) Infiltrating salivary duct carcinoma,(3.33%), Myoepithelial carcinoma,(3.33%)**. Conclusion:** The safe and sensitive and accurate method FNAC is useful to diagnose the Salivarygl and lesions pre-operatively.

Keywords: FNAC, Histology, Salivary Gland Tumors.

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INTRODUCTION

Salivary gland tumors are uncommon, amounting to approximately 3-10% of neoplasms of the head and neck region[1-3]. However, a wide variety of tumors in these glands and insufficient tumor cells in aspiration cytology make the diagnosis difficult in some patients[1-3]. The general rule in salivary gland neoplasms is: 'smaller the gland, higher the rate of malignancy'. Thus, the rate of malignancy increases from 20%–25% in the parotid gland to 40%–50% in the submandibular gland and to 50%–81% in the sublingual glands and minor salivary glands[4-7] Nearly 80% of benign parotid neoplasms are pleomorphic adenomas (PA). While PA is the most common benign tumor for both parotid and submandibular glands, the malignant tumors correspondingly are mucoepidermoid and adenoid cystic carcinomas. Fine needle aspiration (FNA) still remains the mainstay of evaluation of salivary neoplasms. While a malignant neoplasm is treated with urgency, benign lesions are, extent, treated depending upon the convenience of the patient[8]. The accuracy of cytological diagnosis depends on the expertise of the cytopathologist, technician, the site of lesion, the

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adequacy of sample and the sampling method[9,10,11,12,13]. The false positive diagnosis is rarely made by an experienced and well trained pathologist. The cytologist may make some false negative diagnoses. The false negatives and false positives are pointers towards limitations and pitfalls in cytological interpretation in the material[14].

AIMS AND OBJECTIVE

To assess the sensitivity and specificity of the Cytology in the diagnosis of the salivary gland tumors.

MATERIAL AND METHODS

This was a prospective study conducted in the Departments of Pathology with aid from the surgical Department at tertiary care hospital from 2 years duration Jan 2012-Jan 2014. A total of 60 patients with salivary gland lesions who had undergone preoperative FNAC and had been diagnosed by subsequent histopathological examination were included in this study. The FNAC was performed using a 23-gauge needle attached to a 10 ml disposable syringe. Aspirates were smeared on clean slides, wet fixed or air dried and stained by Papanicolaou (PAP) and May-Grunwald-Giemsa (MGG) stains. The excised surgical specimens were fixed in 10% formalin, then routinely processed and stained by Haematoxylin and Eosin (HE) stain. We compared the histopathological findings with the preoperative cytology of the FNAC specimens and calculated the sensitivity, specificity, positive predictive value (PPV) negative predictive value (NPV).

RESULTS

Table 1: Distribution of the Salivary Gland Lesion as Per Cytology

	Diagnosis	Total (60(100%)
Benign	Pleomorphic adenoma	17 (28.33)
	Warthinstumour	12 (20.00)
	Chronic sialadenitis	5(8.33)
	Benign cystic lesion	5 (8.33)
	Lymphoepithelial cyst	4(6.66)
	Oncocytoma	3 (5.00)
	Basal cell adenoma	3(5.00)
	Lymphangioma	2(3.33)
Total		51 (85)
Malignant	Adenocarcinoma	4 (6.67)
	Mucoepidermoid carcinoma	3 (5)
	Acinic cell carcinoma	1(1.67)
	Adenoid cystic carcinoma	1 (1.67)
Total		**9 (15)**

From Table 1: The lesions of the salivary gland tumors can be divided into Benign and malignanat. In benign the majority of the lesions were Pleomorphic adenom (28.33%), Warthinstumour (20.00%), Chronic sialadenitis (8.33%), Benign cystic lesion (8.33%), Lymphoepithelial cyst (6.66%), Oncocytoma (5.00%), Basal cell adenoma (5.00%), Lymphangioma (3.33%).In malignant lesions majority of the lesions were Adenocarcinoma (6.67%) Mucoepidermoid carcinoma (5%) Acinic cell carcinoma (1.67%) Adenoid cystic carcinoma (1.67%).

Table 2: Distribution of the Salivary Gland Lesion as Per Histo-Pathology

		Total
Benign	Pleomorphic adenoma	15(25)
	Warthinstumour	10(16.67)
	Chronic sialadenitis	7(11.67)
	Basal cell adenoma	5(8.33)
	Lymphoepithelial cyst	4(6.67)
	Lipoma	2(3.33)
	Salivary duct cyst	2(3.33)
Total		45 (75)
Malignant	Mucoepidermoid carcinoma	4 (6.66)
	Acinic cell carcinoma	3(5.00)
	Salivary duct SCC	2(3.33)
	Infiltrating salivary duct carcinoma	2(3.33)
	Myoepithelial carcinoma	2(3.33)
	Papillary adenocarcinoma	1(1.67)
	Epithelial- myoepithelial carcinoma	1(1.67)
Total		**15(25)**

From Table 2: The histological lesions also broadly classified into Benign and Malignant, in Benign majority of the lesions were; Pleomorphic adenoma (25%) Warthinstumour (16.67%) Chronic sialadenitis (11.67%) Basal cell adenoma (8.33%) Lymphoepithelial cystLipoma (6.67%) Salivary duct cyst (3.33%). In majority of the malignant lesions diagnosed by histopathologically were Mucoepidermoid carcinoma (6.66%), Acinic cell carcinoma, (5.00%), Salivary duct SCC, (3.33%) Infiltrating salivary duct carcinoma, (3.33%), Myoepithelial carcinoma, (3.33%).

Table 3: Distribution of Patients as per Cytology and Histology

FNAC	Malignant histology	Benign histology	Total
Malignant Cytology	12(True positive)	1(False positive)	13
Benign Cytology	3 (False negative)	44(True negative)	47
Total	**15**	**45**	**60**

From the Table 3: It is clear that the diagnosis done by the FNAC as Malignant were 9, Benign 51, and they were confirmed by Histo-pathologically as Malignant 15 and Benign 45.So the sensitivity of the FNAC (Cytological test) was 80% and Specificity was 97.78%, Positive

predictive value = 92.30%, Negative Predictive value =93.61%.

DISCUSSION

FNAC is a safe and reliable and relatively painless procedure for the preoperative diagnosis of the salivary gland lesions15. In our study we have observed the lesions of the salivary gland tumors can be divided into Benign and malignanat. In benign the majority of the lesions were Pleomorphic adenoma (28.33%), Warthinstumour (20.00%), Chronic sialadenitis (8.33%), Benign cystic lesion (8.33%), Lymphoepithelial cyst (6.66%), Oncocytoma (5.00%), Basal cell adenoma (5.00%), Lymphangioma (3.33%).In malignant lesions majority of the lesions were Adenocarcinoma (6.67%) Mucoepidermoid carcinoma (5%) Acinic cell carcinoma (1.67%) Adenoid cystic carcinoma (1.67%). This result is comparable with Jayaram G115 Stramandinoli RT16Piccioni LO17. The histological lesions also broadly classified into Benign and Malignant, in Benign majority of the lesions were; Pleomorphic adenoma (25%) Warthinstumour (16.67%) Chronic sialadenitis (11.67%) Basal cell adenoma (8.33%) Lymphoepithelial cyst Lipoma (6.67%) Salivary duct cyst (3.33%). In majority of the malignant lesions diagnosed by histopathologically were Mucoepidermoid carcinoma (6.66%), Acinic cell carcinoma, (5.00%), Salivary duct SCC, (3.33%) Infiltrating salivary duct carcinoma, (3.33%), Myoepithelial carcinoma, (3.33%). This is comparable with Vaidya S *et al* 19. In our study the sensitivity of the FNAC (Cytological test) was 80% and Specificity was 97.78%, Positive predictive value = 92.30%, Negative Predictive value =93.61%. So this the safe test is having high sensitivity and the specificity also this test shows some false positive results also because the morphological features of the both the cytology and pathology overlap to e ach other these results are comparable with Vaidya S *et al* 19.

CONCLUSION

The safe and sensitive and accurate method FNAC is useful to diagnose the salivaryglanad lesions pre-operatively.

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