

THE EXPRESSION OF p63 IN SALIVARY GLAND NEOPLASMS – AN IMMUNOHISTOCHEMISTRY STUDY

C. Aruna Mutharasi¹, L. Muthumani², K. Sumathi²

¹Assistant Professor, Department of Pathology, Madurai Medical college

²Assistant Professor, Department of Pathology, Government Medical College, Virudhunagar

Received : 10/12/2022
Received in revised form : 18/01/2023
Accepted : 31/01/2023

Keywords:

Salivary gland tumors, Immunohistochemistry, p63, benign, malignant.

Corresponding Author:

Dr. C. Aruna Mutharasi,

Email: prakasharuna04@gmail.com

DOI: 10.47009/jamp.2023.5.6.243

Source of Support: Nil,
Conflict of Interest: None declared

Int J Acad Med Pharm
2023; 5 (6); 1184-1186



Abstract

Background: Salivary gland tumors though relatively rare, are a diverse group of tumors with benign and malignant lesions. Clinicians and pathologist encounter these tumors occasionally with an annual incidence of 2.5 to 3.0 per 100,000 people in the western world. Immunohistochemistry is the study of expression of various antigens by tissues. These studies greatly help in diagnosis and determining the prognosis of various tumors. In this article we study the expression of P63, an immunohistochemistry marker among various salivary gland neoplasms. **Materials and Methods:** Hematoxylin and eosin-stained slides of salivary gland tumors were studied and slides were selected for Immunohistochemistry. Antigen retrieval was done by heat induced epitope retrieval and expression of p63 was studied. **Result:** Expression of p63 marker expression in various salivary gland tumors revealed the following observations. 100% of pleomorphic adenoma (19/19) expressed p63. Warthins tumor (3/3), oncocytoma (1/1) and Basal cell adenoma (1/1) are the various benign salivary gland tumors with 100% expression of p63. Of the malignant tumors Mucoepidermoid carcinoma expressed 100% (8/8) positivity, along with Polymorphous low-grade adenocarcinoma (2/2). Adenoid cystic carcinoma had a positivity of 75% (3/4), whereas Acinic cell carcinoma exhibited 100% (0/4) negative staining. **Conclusion:** From the present study we can observe the staining pattern of p63 in various salivary gland tumors. It is also observed that benign tumors most of the time express p63 while malignant tumors show varied expression. Acinic cell carcinoma is observed to show negative staining of p63 consistently. So p63 may act as a valuable marker and aid in the diagnosis of salivary gland neoplasms.

INTRODUCTION

Immunohistochemistry is a novel and valuable tool that uses the specific binding between tissue antigen and antibody to detect the presence of various antigens in tumors. It is widely used to classify neoplasms, identify unknown primary tumors and to recognize tiny foci of tumors that are difficult to identify in routine hematoxylin and eosin staining. It also has a major role in prediction of prognosis and to select the ideal chemotherapeutic agent. Salivary gland tumors, though have different histopathological appearance, they still carry cells that differentiate towards the cell of their origin in a normal salivary gland.^[1-3] The normal histology of salivary gland has four types of cells: Basal cells, ductal cells, acinar cells and myoepithelial cells. Ductal and acinar cells are called luminal cells as they are situated on the luminal side of the duct, whereas the myoepithelial and basal cells are located around the basement membrane. The cells around the

basement membrane – the basal cells and myoepithelial cells show p63 positivity. Thus tumors carrying cells that differentiate towards these cells also express p63.^[4]

MATERIALS AND METHODS

The present study is a retrospective study to assess the expression of p63 in 42 salivary gland tumours. It is a single institution study over a period of one and a half years. All salivary gland neoplasms, both benign and malignant were included in the study. All inflammatory and non neoplastic lesions of salivary glands were excluded. A total of 42 cases of reported salivary gland neoplasms were collected and their paraffin blocks were used for the Immunohistochemistry study.

RESULTS

This study constituted a total of 42 cases of salivary gland neoplasms which includes both benign and malignant lesions. The age of occurrence of these tumours ranges from 17 years to maximum of 72 years. The mean age of occurrence was 48.5 years. Of the total 42 cases, 22 were males (52.3 %) and 20 were females (47.6 %). Out of the 42 cases, 24 (57.1 %) were benign and 18 (42.9 %) were malignant.

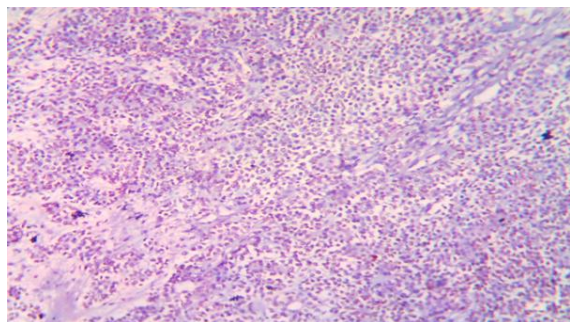


Figure 1: p63 Expression of Pleomorphic adenoma, H&E, 10x

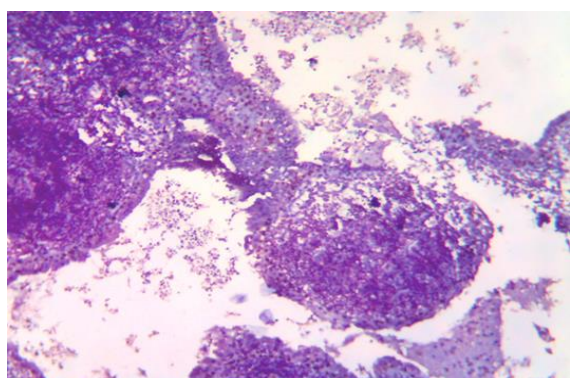


Figure 2: p63 Expression of Warthin Tumor, H&E, 10x

The most common benign tumour in the present study was pleomorphic adenoma - 19 cases (45.2 %). It had a mean age of occurrence of 33.6 years and a

male: female ratio of 1.9:1. The most common site of occurrence was parotid (54.17%), followed by submandibular (39.93 %) and other minor salivary glands (5.8%). Other benign tumors studied were Warthins tumor, basal cell adenoma and oncocytoma. The commonest malignant neoplasm seen in the study was mucoepidermoid carcinoma – 8cases (19.04 %). The mean age of occurrence was 47.5 years. It has male: female ratio of 2.5:1. The second most common salivary gland neoplasm was both acinic cell carcinoma -4 cases (9.5 %), and adenoid cystic carcinoma 4 cases (9.5%). Cases of Warthins tumour (3), Basal cell adenoma (2) and polymorphous low-grade adenocarcinoma (2) were all included in the study and staining pattern of p63 by these tumors were studied.

P63 expression was studied for 42 cases which included 18 malignant cases and 24 benign cases. Out of the 24 benign cases studied all showed positivity for p63 ranging from weak positive to strong positive. [Table 1]

Of the malignant tumors studied, Mucoepidermoid carcinoma expressed 100% (8/8) positivity, along with Polymorphous low-grade adenocarcinoma (2/2). Adenoid cystic carcinoma had a positivity of 75% (3/4), whereas Acinic cell carcinoma exhibited 100% (0/4) negative staining. [Table 2]

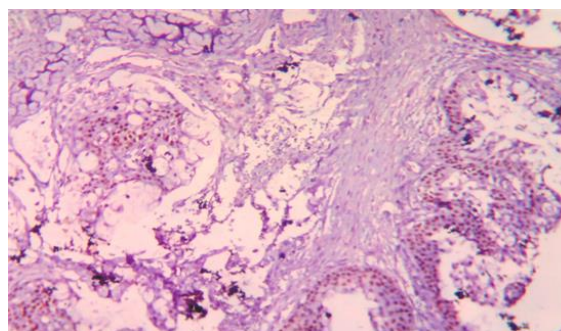


Figure 3: p63 Expression of mucoepidermoid carcinoma, H&E, 10x

Table 1: expression of p63 by benign salivary gland neoplasms

| Name of tumor | Number of cases studied | p63 expression |
|---------------------|-------------------------|----------------|
| Pleomorphic adenoma | 19 | 19 |
| Warthins tumor | 3 | 3 |
| Basal cell adenoma | 1 | 1 |
| oncocytoma | 1 | 1 |

Table 2: Expression of P63 By Malignant Salivary Gland Neoplasms

| Name of tumor | Number of cases studied | p63 expression |
|---------------------------------------|-------------------------|----------------|
| Mucoepidermoid carcinoma | 8 | 8 |
| Acinic cell carcinoma | 4 | 0 |
| Adenoid cystic carcinoma | 4 | 3 |
| Polymorphous low grade adenocarcinoma | 2 | 2 |

DISCUSSION

Salivary glands tumors frequently pose diagnostic challenges to surgical pathologist due to their overlapping histological features. The expression of various immunohistochemistry markers helps

pathologist address such challenges, In this study we examine the expression of p63 expression in various benign and malignant salivary gland neoplasms.

Pleomorphic adenoma is the commonest salivary gland neoplasm in various studies which is proved in our study also.^[5] 100% (18/18) cases of pleomorphic

adenoma expressed p63 which is similar to the study conducted by Adeola et al.^[6] p63 was seen to stain the basal cells of ducts and spindle cells in chondromyxoid areas, which is similar to the observations of Masahiro Wato et al.^[7] [Figure 1] According to a study conducted by Marisa et al only 50% of cases of carcinoma ex pleomorphic adenoma expressed p63.^[8] So p63 could be a valuable marker in differentiating carcinoma ex pleomorphic adenoma from pleomorphic adenoma.

Warthins tumor exhibits a basal cell positivity in 100% (3/3) cases which is similar to the observations of Dardick et al [Figure 2].^[9] Basal cell adenoma and oncocytoma both express p63 positivity. The positivity expressed by salivary oncocytoma for p63 helps to differentiate these tumors from metastatic renal cell carcinoma.^[10]

The commonest malignant tumor of our study Mucoepidermoid carcinoma showed 100 % (8/8) cases positive for p63 expression. Basal cells, intermediate and squamous cells stained positive with p63 while luminal cells stained negative [Figure 3]. These observations are similar to that of Bilal H et al.^[11] 75 % cases of adenoid cystic carcinoma (3/4) and both cases of polymorphous low grade adenocarcinoma stained positive for p63 which is similar to the observations of Aribah Atiq et al.^[12] Four cases of acinic cell carcinomas were observed for p63 expression. All the 4 cases did not stain for p63 which is similar to the observations of Nermine M et al.^[13] It is also observed that p63 can serve as a valuable marker in differentiating acinic cell carcinomas from other histologically similar tumors.^[14,15]

CONCLUSION

The present study discusses the varied expression of p63 in salivary gland neoplasms. It is observed from this study that p63 expression has a valuable diagnostic role in differentiating various salivary gland neoplasms. P63 is also an oncogene (15). Further extensive studies of this protein expression has significant scope in understanding the pathogenesis of development and behavior of salivary gland neoplasms.

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