



HISTOPATHOLOGICAL FINDINGS IN SALIVARY GLAND SPECIMENS AT KHMC. A RETROSPECTIVE DESCRIPTIVE ANALYSIS OVER A PERIOD OF SIX YEARS

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ABSTRACT

Aim: The aim of this study is to review the histopathological reports of salivary gland specimens and to describe their main pathological findings. **Materials & Methods:** We collected data from 143 patients who underwent excisional or incisional biopsies from salivary glands at the King Hussein Medical Centre (KHMC) / Princess Iman Laboratory & Research Centre over a six-year period from January 2013 to December 2018. **Results:** Patients had a wide age range (from 5 years to 90 years), with a male to female ratio of 0.9:1. The pathological findings varied from neoplastic (55 cases) to non-neoplastic lesions (88 cases). The neoplasms included benign (36/55) and malignant (19/55) tumours. The non-neoplastic lesions included benign cysts (5/88), autoimmune sialadenitis (22/88) and chronic sialadenitis/sialolithiasis (61/88). **Conclusions:** Salivary glands are one of the major structures in the maxillofacial region. Biopsies of salivary glands may reveal a wide range of pathological findings, and there are different methods of medical and surgical treatment of salivary gland disease. Histopathological assessment is crucial in determining the modality of treatment for patients.

KEYWORDS: Salivary gland, Histopathology, Neoplasms, Sialadenitis.

INTRODUCTION

The salivary gland is a complex structure in the maxillofacial region, composed of tubuloacinar and ductal components. Divided into major and minor glands, salivary glands produce saliva which is important for preventing tooth decay and providing an environment for optimal mouth hygiene.^[1-3]

Being complex in their structure, salivary glands can have various pathological findings, ranging from neoplastic to non-neoplastic inflammatory or infectious aetiologies.^[1,3] Differentiation between non-neoplastic and neoplastic salivary disease is not difficult. Accurate subtyping and grading of salivary neoplasms is only possible with radiological and pathological correlation.^[3]

Any disease in the salivary glands could affect the production of saliva and lead to patients suffering from complications. The most common pathology in submandibular gland is the formation of stones in the gland or ducts.^[2] The presence of a neoplastic space-occupying lesion in the parenchyma of the salivary glands would also lead to disturbances in the

maxillofacial anatomy, and may lead to facial nerve palsy in addition to deformities and cosmetic problems in the head and neck region.^[2,3]

Salivary gland neoplasms are rare, and account for 2-6.5% of all neoplasms of the head and neck region.^[4] Neoplastic lesions can either be benign or malignant. Malignant neoplasms in the salivary gland are mostly aggressive in behaviour, leading to perineural invasion, lymphovascular invasion and metastasis. Benign neoplasms usually have a good prognosis, with a low recurrence rate if completely excised.^[1,3]

Autoimmune diseases, such as Sjogren's, and other inflammatory and infectious diseases have further complications if they are not properly diagnosed and treated.^[5,6]

The aim of our study was to review our six-year clinical experience with salivary gland excisional and incisional biopsies and discuss our findings regarding the histopathological differential diagnosis. We analysed our patients in regard to their genders, histopathological

results, age intervals and excisional status, and then discussed our results in the light of the current literature.

MATERIALS AND METHODS

We collected data from 143 patients who underwent excisional or incisional biopsies from salivary glands at the King Hussein Medical Centre (KHMC) / Princess Iman Laboratory & Research Centre over a six-year period from January 2013 to December 2018.

RESULTS

In this study we reviewed the files and histopathological reports of one hundred and forty-three patients who underwent incisional and excisional biopsies from their salivary glands over a period of six years at the KHMC from the beginning of 2013 until the end of 2018.

Our patients ranged widely in age, from 5 years to 90 years of age, with a median age of 47.5, and a male to female ratio of 0.9:1. The surgical specimens included major and minor salivary gland tissue.

The salivary glands exhibited a broad spectrum of diseases which required various medical or surgical interventions.^[7] The salivary gland lesions encompassed a heterogeneous group of disorders, and were broadly classified as neoplastic or non-neoplastic.^[8] Various histopathological diagnostic entities were identified, including neoplastic and non-neoplastic tissue. Fifty-five patients had salivary gland neoplasms, 65.5 % (36/55) of these were benign and 34.5 % (19/55) were malignant.

DISCUSSION

Benign tumours are more commonly found in the parotid, while smaller glands are the commoner sites for malignancies.^[8,9] Moreover, the most common benign salivary gland tumour found is pleomorphic adenoma.^[4,9-13]

In our study, 72% (26 cases) of the neoplastic lesions were pleomorphic adenoma, whereas in an Indian study this type of neoplasm was present in 94.4% of cases out of a total of 17.^[10] Warthin's tumour is the second most common benign tumour in salivary glands, and is most commonly located in the tail of the parotid gland.^[4,9,11] It was also the second most common finding in our analysis, observed in 22% of biopsies (8 cases). It is absolutely rare in minor salivary glands.^[14] Despite its rarity, myoepithelioma should be hypothesised in front of a palatine sessile nodule. The discovery of such a tumour is often incidental, and diagnosis is histological.^[15] In our study, myoepithelioma was only found in one patient, and presented as a palatal nodule. One case had an arteriovenous malformation in the salivary gland.

The incidence of malignant salivary gland tumours in the literature is variable. In a study by Postema *et al.*^[8] acinic cell carcinoma was most common, while adenoid cystic carcinoma was the most common in studies by Akhter *et al.*^[16] and Stewart *et al.*^[17] In our study, the malignant tumours comprised 34.5% of all neoplasms. The two

most common types were mucoepidermoid carcinoma (MEC) and squamous cell carcinoma (SCC), each observed in a similar percentage 21% of cases (four cases each), followed by salivary duct carcinoma and adenoid cystic carcinoma at 10.5% (two cases each). In agreement, MEC was the commonest malignant salivary gland neoplasm in a large Indian study (4) and in a study at Ghena.^[12] In our analysis, one case was confirmed as basal cell adenocarcinoma and one case as spiradenosarcoma; two cases were diagnosed as high-grade carcinomas with given differential diagnosis.

Primary non-Hodgkin lymphoma (NHL) involving the salivary glands is uncommon, comprising 5% of all primary extranodal NHL and 2% of all salivary gland neoplasms, according to the literature.^[18] Lymphomas of the salivary gland are usually composed of small lymphoid cells, often arising against a background of Mikulicz's disease.^[19] Only two cases of lymphoma were present among our patients, both diagnosed as marginal zone lymphoma. It is critical to differentiate MALT lymphoma from non-MALT lymphoma involving the parotid gland with regards to assessing prognosis and determining treatment procedures. In addition, recognising the differences between parotid NHL and salivary epithelial tumours (benign or malignant) is important for clinicians, because management of these tumours is totally different.^[18] The parotid NHL is usually treated with radiotherapy and chemotherapy, whereas parotidectomy is the main treatment modality performed for parotid epithelial tumours.^[18]

Secondary neoplastic lesions of the parotid gland are not very common, with an average incidence of 6-8 % of all parotid tumours.^[20] Metastatic carcinoma was found in only one case in our study.

Regarding the non-neoplastic lesions, we found 88 cases (61.5%) of these with various pathological findings; the majority had chronic sialadenitis / sialolithiasis (69%). The most common pathology in the submandibular gland was the formation of stones in the gland or ducts.^[5,7] Sjogren's syndrome (SS) is an autoimmune disorder characterised by dry eyes (keratoconjunctivitis sicca) and a dry mouth due to lymphocytic infiltrates of lacrimal and salivary glands.^[21-23] Autoimmune sialadenitis with clinical serological correlation was diagnosed in 25%, of cases. Anti-Ro (SSA) and anti-La (SSB) antibodies are included as part of the diagnostic criteria for Sjogren's syndrome and should be assessed in all patients considered for this diagnosis.^[16,21,24,25] Moreover, one of the criteria in current use by the European-American Consensus Group Modification of the European Community Criteria for SS (Vitali, 2003) is a minor salivary gland biopsy assessment.^[21] In our study, five cases had various types of benign cystic lesions. Also, the biopsy is a prognostic tool for Sjogren's.^[24-26]

All of the benign tumours were found in the major salivary glands, with 77.77% of pleomorphic adenomas

(PA) found in the parotid gland (most common is parotid for PA.^[27] and 16.67% in the submandibular. 100% of Warthin's tumours were found in the parotid and none in the submandibular. One case of Myoepithelioma was found in the parotid gland. However, malignant tumours were found in the major and minor glands; 75% of mucoepidermoid carcinoma cases were found in the parotid, and 25% in the sublingual gland. For adenoid cystic carcinoma, one case was observed in the parotid gland and the other one in the submandibular. One case of Salivary duct carcinoma was found in the parotid gland.

The vast majority of cases with sialadenitis/sialolithiasis were found in submandibular glands, which supports the findings of a Turkish study.^[7]

Frozen sections offer a great value, providing one evaluates the margins, suspicious lymph nodes (for deciding on neck dissection) and nerve invasion. This enables the surgeon to perform adequate tumour resection and avoid over-aggressive surgery.^[28]

Capsular variations, pseudopodia and satellite nodules are well known characteristics of PA and capsular incompleteness can vary, related to the thickness and penetrance of the tumour. The recurrence of PA of the parotid gland and its surgery is a challenging problem and a myxoid subtype, satellite nodules, larger size and tumour spillage are more frequently observed in recurrences.^[26] Complete excision was achieved for 85% of the benign tumours and 65% of malignant cases. Pleomorphic adenoma of the minor salivary gland is a tumour of rare occurrence, and a diagnosis should be made carefully lest a major salivary gland be resected.^[26]

Incomplete excision was encountered in 15% of the benign tumours and 35% of the malignant ones.

Long-term multicentre studies for comparison of treatment strategies are needed in the coming decades to guarantee further optimisation of tumour management on a profound clinical and scientific basis.^[26]

CONCLUSION

Histopathology remains a gold standard^[7] for final diagnosis, and histopathological examination is still necessary for reconfirmation in the present era.^[8,28,29] Representative, meticulous sampling and careful clinic-cytologic correlation, complemented by the use of some cytochemical stains in selected cases, will provide the correct diagnosis in the majority of cases.^[28]

Pathological finding	No. of cases
Pleomorphic adenoma	25
Warthin's tumour	8
Myoepithelioma	1
Adenoid cystic ca	2
Mucoepidermoid ca	2
Salivary duct ca	2
Squamous cell ca	4
Basal cell adenocarcinoma	1
Spiradenosarcoma	1
A-V malformation	1
Cyst	5
Lymphoma	2
Sialadenitis/sialolithiasis	45
Sjogren's	22
Metastasis	1

Histopathology	No. of cases
Sialadenitis/sialolithiasis	45
Sjogren's	22
Benign tumours	36
Pleomorphic adenoma	26
Warthin's tumour	8
Myoepithelioma	1
A-V malformation	1
Malignant tumours	19
Mucoepidermoid carcinoma	4
Adenoid Cystic Carcinoma	2
Spiradenosarcoma	1
Salivary duct carcinoma	2
Basal cell adenocarcinoma	1
High grade carcinoma with DDx	2
Squamous cell carcinoma	4
Metastatic carcinoma	1
Marginal zone lymphoma	2
Others	
Benign cysts	5

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