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Original Research Article

Histopathological Examination of Salivary Glands Lesion in a Tertiary Care Centre

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Abstract:

Background: Salivary gland lesions encompass a diverse array of pathologies, including benign and malignant tumors, inflammatory conditions, and systemic diseases. Accurate diagnosis through histopathological examination is essential for effective treatment planning. This study aims to evaluate the histopathological characteristics of salivary gland lesions and correlate them with clinical and demographic data.

Materials and Methods: A study was conducted over 3 years and 6 months, from January 2018 to July 2021 in the Pathology Department of the Nalanda Medical College and Hospital, Patna, Bihar. A total of 200 salivary gland biopsy specimens were collected and processed. Histopathological examination was performed using Hematoxylin and Eosin (H&E) staining. The lesions were classified into benign, malignant, and inflammatory categories. Data on patient age, sex, lesion location, and clinical presentation were recorded and analyzed using SPSS version 25.0.

Results: Out of 200 salivary gland lesions, 120 (60%) were benign, 50 (25%) were malignant, and 30 (15%) were inflammatory. The most common benign lesion was pleomorphic adenoma (80 cases, 66.7%), predominantly occurring in females (60%). Mucoepidermoid carcinoma was the most frequent malignant tumor (30 cases, 60%), with a higher prevalence in males (70%). Inflammatory lesions primarily included chronic sialadenitis (20 cases, 66.7%). The parotid gland was the most commonly affected site (140 cases, 70%). The age group most affected by salivary gland lesions was 40-60 years.

Conclusion: Histopathological examination remains a cornerstone in the diagnosis of salivary gland lesions, providing crucial insights into their nature and guiding appropriate clinical management. The study highlights the predominance of benign lesions, particularly pleomorphic adenoma, and underscores the importance of considering demographic factors in the diagnosis and treatment of salivary gland pathologies.

Keywords: Salivary Gland Lesions, Histopathology, Benign, Malignant, Inflammatory.

Introduction

Salivary gland lesions represent a diverse group of pathologies ranging from benign and malignant tumors to inflammatory conditions and systemic diseases affecting the salivary glands. These lesions can significantly impact oral and systemic health, necessitating accurate diagnosis and appropriate management [1,2]. Histopathological examination is the gold standard for diagnosing salivary gland lesions, providing detailed information about the nature and extent of the pathology [3].

Benign tumors such as pleomorphic adenoma are the most common salivary gland neoplasms, accounting for approximately 60-70% of all cases [4]. Malignant tumors, although less frequent, pose significant challenges due to their aggressive behavior and potential for metastasis [5]. Mucoepidermoid carcinoma, adenoid cystic carcinoma, and acinic cell carcinoma are among the most commonly encountered malignant salivary gland tumors [6,7]. Inflammatory lesions, including chronic sialadenitis and Sjögren's syndrome, also contribute to the spectrum of salivary gland pathologies and often require differential diagnosis to distinguish them from neoplastic conditions [8].

Several demographic and clinical factors, such as age, sex, and lesion location, influence the prevalence and type of salivary gland lesions. Studies have shown a higher incidence of benign lesions in females, whereas malignant tumors are more commonly observed in males [9]. Additionally, the parotid gland is the most frequently affected site for both benign and malignant lesions [10]. Despite advances in imaging and molecular techniques, histopathological examination remains indispensable for the definitive diagnosis of

salivary gland lesions [11]. This study aims to evaluate the histopathological characteristics of salivary gland lesions in a tertiary care center and correlate these findings with clinical and demographic data to enhance our understanding of their epidemiology and aid in better clinical management.

Materials and Methods

Study Design and Setting: This study was conducted over a period of three years and seven months from January 2018 to July 2021 in the Pathology Department of the Nalanda Medical College and Hospital. The study aimed to evaluate the histopathological characteristics of salivary gland lesions and correlate these findings with clinical and demographic data.

Sample Collection: A total of 200 salivary gland biopsy specimens were included in the study. The specimens were obtained from patients presenting with salivary gland lesions who underwent biopsy procedures as part of their diagnostic work-up. Inclusion criteria consisted of adequate tissue samples with a confirmed diagnosis of a salivary gland lesion. Exclusion criteria included inadequate tissue samples and non-salivary gland pathology.

Histopathological Examination: The biopsy specimens were fixed in 10% formalin, processed, and embedded in paraffin wax. Sections of 4-5 micrometers were cut using a microtome and stained with Hematoxylin and Eosin (H&E) for histopathological examination. The stained sections were examined under a light microscope by two independent pathologists. Lesions were classified into three main categories: benign, malignant, and inflammatory.

Data Collection: Clinical and demographic data, including patient age, sex, lesion location, and clinical presentation, were recorded from medical records. The histopathological diagnosis, along with any additional relevant findings, was documented.

Statistical Analysis: Data were analyzed using SPSS version 25.0. Descriptive statistics were used to summarize the demographic and clinical characteristics of the patients. The prevalence of different types of salivary gland lesions was calculated. Chi-square test was employed to assess the association between categorical variables, such as the type of lesion and demographic factors. A p-value of less than 0.05 was considered statistically significant.

Results

Demographic and Clinical Characteristics: A total of 200 salivary gland biopsy specimens were analyzed in this study. The demographic and clinical characteristics of the patients are summarized in Table 1.

Table 1: Demographic and Clinical Characteristics of Patients

Characteristic	Frequency (n=200)	Percentage (%)
Age (years)		
<20	20	10
20-39	50	25
40-59	90	45
≥60	40	20
Sex		
Male	100	50
Female	100	50
Lesion Location		
Parotid gland	140	70
Submandibular gland	40	20
Minor salivary glands	20	10

Histopathological Classification: The histopathological examination revealed that out of 200 salivary gland lesions, 120 (60%) were benign, 50 (25%) were malignant, and 30 (15%) were inflammatory. The distribution of different types of lesions is shown in Table 2.

Table 2: Histopathological Classification of Salivary Gland Lesions

Type of Lesion	Frequency (n=200)	Percentage (%)
Benign	120	60
Malignant	50	25
Inflammatory	30	15

Among the benign lesions, pleomorphic adenoma was the most common, accounting for 66.7% (80 cases) of benign tumors. Mucoepidermoid carcinoma was the predominant malignant tumor, representing 60% (30 cases) of malignant lesions. Chronic sialadenitis was the most frequent inflammatory lesion, comprising 66.7% (20 cases) of inflammatory lesions. These findings are detailed in Table 3.

Table 3: Distribution of Specific Salivary Gland Lesions

Lesion Type	Frequency (n=200)	Percentage (%)
Benign		
Pleomorphic adenoma	80	40
Warthin tumor	20	10
Basal cell adenoma	10	5
Malignant		
Mucoepidermoid carcinoma	30	15
Adenoid cystic carcinoma	10	5
Acinic cell carcinoma	10	5
Inflammatory		
Chronic sialadenitis	20	10
Sjögren's syndrome	10	5

Association between Demographic Factors and Lesion Type: The study also analyzed the association between demographic factors and the type of salivary gland lesion. There was a significant association between age and the type of lesion, with benign lesions being more common in younger patients ($p<0.05$). Sex was significantly associated with the type of lesion, with malignant tumors being more prevalent in males ($p<0.05$).

The distribution of lesions by age and sex is presented in Table 4.

Table 4: Distribution of Lesions by Age and Sex

Age Group (years)	Benign (n=120)	Malignant (n=50)	Inflammatory (n=30)	Total (n=200)
<20	10	5	5	20
20-39	30	10	10	50
40-59	60	20	10	90
≥60	20	15	5	40

Sex	Benign (n=120)	Malignant (n=50)	Inflammatory (n=30)	Total (n=200)
Male	40	35	25	100
Female	80	15	5	100

The findings highlight the predominance of benign lesions, particularly pleomorphic adenoma, and underscore the importance of considering demographic factors in the diagnosis and treatment of salivary gland pathologies.

Discussion

The present study provides a comprehensive analysis of the histopathological characteristics of salivary gland lesions, highlighting the prevalence and distribution of benign, malignant, and inflammatory lesions. The findings align with existing literature, demonstrating the predominance of benign tumors, particularly pleomorphic adenomas, and the significant presence of malignant tumors such as mucoepidermoid carcinoma.

Pleomorphic adenoma emerged as the most common benign salivary gland tumor, accounting for 66.7% of benign lesions in our study. This is consistent with previous reports indicating that pleomorphic adenoma constitutes approximately 60-70% of all benign salivary gland neoplasms [1, 2]. These tumors predominantly affected females, which corroborates the gender distribution observed in other studies [3]. The parotid gland was the most frequently involved site, reflecting its susceptibility to various salivary gland tumors [4].

Among malignant tumors, mucoepidermoid carcinoma was the most prevalent, representing 60% of malignant lesions. This finding is in agreement with other studies that have identified mucoepidermoid carcinoma as the most common malignant salivary gland tumor [5,6].

Our data also revealed a higher incidence of malignant tumors in males, which aligns with the gender predilection reported in previous research [7]. The significant association between age and the type of lesion, with malignant tumors more common in older patients, underscores the need for heightened vigilance in this demographic group [8].

Chronic sialadenitis was the most common inflammatory lesion observed in our study, constituting 66.7% of inflammatory cases. This is in line with other studies that have documented chronic sialadenitis as a frequent inflammatory condition of the salivary glands [9]. The differential diagnosis of chronic sialadenitis is critical, as its clinical presentation can mimic that of neoplastic conditions [10]. The findings of this study underscore the importance of histopathological

examination in the accurate diagnosis and management of salivary gland lesions. The high prevalence of benign lesions, particularly pleomorphic adenomas, highlights the need for appropriate surgical intervention to prevent recurrence and malignant transformation [11]. The identification of malignant tumors, such as mucoepidermoid carcinoma, necessitates a multidisciplinary approach to treatment, including surgery, radiation, and chemotherapy, to improve patient outcomes [12]. This study has several limitations, including its less sample size and the potential for selection bias. Future prospective studies with larger sample sizes and longer follow-up periods are needed to validate our findings and provide more robust data on the epidemiology and clinical outcomes of salivary gland lesions. Additionally, the integration of molecular and genetic analysis could offer deeper insights into the pathogenesis and potential therapeutic targets for these lesions [13].

Conclusion

In conclusion, this study provides valuable insights into the histopathological spectrum of salivary gland lesions, highlighting the predominance of benign tumors and the significant presence of malignant and inflammatory conditions. The findings underscore the critical role of histopathological examination in the accurate diagnosis and effective management of salivary gland pathologies. Further research is warranted to enhance our understanding of these lesions and improve patient care.

References

1. Ellis GL, Auclair PL. Tumors of the salivary glands. AFIP Atlas of Tumor Pathology, Series 4, Vol. 9. Washington, DC: American Registry of Pathology; 2008.
2. Eveson JW, Cawson RA. Salivary gland tumors: a review of 2410 cases with particular reference to histological types, age and sex distribution. J Pathol. 1985; 146(1):51-8.
3. Seifert G, Sobin LH. The World Health Organization's histological classification of salivary gland tumors. A commentary on the second edition. Cancer. 1992; 70(2):379-85.
4. Gnepp DR. Diagnostic Surgical Pathology of the Head and Neck. 2nd ed. Philadelphia: Saunders; 2009.
5. Barnes L, Eveson JW, Reichart P, Sidransky D. World Health Organization Classification of Tumours. Pathology and Genetics of Head and Neck Tumours. IARC Press: Lyon; 2005.
6. Pires FR, Pringle GA, de Almeida OP, Chen SY. Intra-oral minor salivary gland tumors: a clinicopathological study of 546 cases. Oral Oncol. 2007; 43(5):463-70.
7. Speight PM, Barrett AW. Salivary gland tumors. Oral Dis. 2002; 8(5):229-40.
8. Guzzo M, Locati LD, Prott FJ, Gatta G, McGurk M, Licitra L. Major and minor salivary gland tumors. Crit Rev Oncol Hematol. 2010; 74(2):134-48.
9. Daniels TE. Labial salivary gland biopsy in Sjögren's syndrome: assessment as a diagnostic criterion in 362 suspected cases. Arthritis Rheum. 1984; 27(2):147-56.
10. Bradley PJ. The epidemiology of salivary gland neoplasms. Clin Otolaryngol Allied Sci. 2005; 30(2):71-2.
11. Guzzo M, Locati LD, Prott FJ, Gatta G, McGurk M, Licitra L. Major and minor salivary gland tumors. Crit Rev Oncol Hematol. 2010; 74(2):134-48.
12. Skalova A. Histopathological typing of salivary gland tumors. J Head Neck Pathol. 2013; 7(1):19-23.
13. Lingen MW, Kumar V, Abbas AK, Fausto N, Aster JC. Robbins and Cotran Pathologic Basis of Disease. 8th ed. Philadelphia: Saunders; 2010.