

ANALYSIS OF PATTERN OF SALIVARY GLAND CANCERS: DESCRIPTIVE ANALYSIS FROM A SINGLE CENTER

Zulnorain Qambar Shah¹, Moiz Muhammad Sheikh¹, Fasiha Faisal Shah¹, Fayaz Hussain Mangi^{1&2}

¹Department of Clinical Research, Medical Research Center, Liaquat University of Medical and Health Sciences, Jamshoro, Pakistan, ²NIMRA Jamshoro, Pakistan

Correspondence:

Fasiha Faisal Shah, Medical Research Center, Liaquat University of Medical & Health Sciences, Jamshoro, Pakistan

Email:

fasiha.shah@lumhs.edu.pk

DOI:

10.38106/LMRJ.2024.6.1-06

Received: 29.01.2024

Accepted: 08.03.2024

Published: 31.03.2024

ABSTRACT

Salivary gland carcinomas are the malignant tumours arising from major or minor salivary glands, accounting for 5% of all head and neck cancers. There is scarce data available regarding pattern of presentation and clinical outcome of salivary glands in Pakistan. Thus this retrospective analysis of the patients presenting with salivary gland tumours was designed. A total of 305 patients were diagnosed with salivary gland cancers from 2008 till 2023, including 127 (41.6%) of females and 178 (58.4%) of male patients. There were 191 (62.6%) patients with parotid gland cancer and 114(37.4%) with submandibular and other minor glands. Mucoepidermoid carcinoma was the most prominent histological type followed by Adenoid Cystic carcinoma. Grade 2 (44.1%) was most frequently reported followed by Grade 1 (33.9%) and 3 (22.0%). These cancers did not show any significant association with age or gender. Salivary gland cancers are relatively rare cancer. Further studies to explore biological characteristics and long term clinical outcome are recommended.

Key Words: salivary gland cancers, head and neck cancer, clinical presentation

INTRODUCTION

Salivary gland cancers are relatively rare comprising of 5% of all head and neck cancers(1). Ionizing radiation is well established risk factor for salivary gland cancers, other associated risk factors include previous history of head and neck cancers. History of smoking and industrial exposure of certain toxins has been linked with the cancer, though with weak evidences(2). These cancers are rare and present in a variety of histological types. Till date at least 20 histological types have been reported(2). The histological types include Mucoepidermoid, adenoid cystic, adenocarcinoma, pleomorphic adenocarcinoma, salivary duct carcinoma, carcinosarcoma and other types. The standard treatment offered as per guidelines is surgery as primary therapeutic option if not operable then radiotherapy as general protocol. The data regarding treatment and clinical outcome is also based on small scale studies. The rate of salivary gland malignancies reported from India was 77.5% among all tumour of salivary glands where only 22.5% were benign tumours(3). The benign tumours of salivary gland also occur thus biopsy is essential part of diagnosis. However, fine needle aspiration cytology is suggested as primary line making diagnosis supported by MRI imaging. Contrast CT scan is only advised when MRI is not recommended.

The recent advances in oncology with emergence of novel therapeutic options there is still lack of robust evidence in these cancers due to their low incidence. In general operable tumours are treated by surgery while inoperable cancers are offered radiotherapy(2). These cancers in general show good prognosis with >90% 5-year survival rate(4). There has been limited literature presented on salivary gland cancers in Pakistan. Therefore, this study was designed to report pattern of salivary gland cancers in Pakistan.

METHODS

This was a retrospective study including cancer patients diagnosed and treated at Liaquat University of Medical & Health Sciences (LUMHS), Jamshoro Pakistan and their all clinical data available in Cancer Research database at Cancer Research Laboratory, Medical Research Centre (LUMHS). The database is prospectively developed and regularly updated. This includes patients from 2008 till date.

For this study patients with confirmed diagnosis of primary salivary gland cancer were included. The histological types and grades were taken from biopsy reports. Salivary gland cancers were defined as the cancers arising from parotid, submandibular and from other minor glands. Where parotid cancers were included as one category while the other salivary glands were merged together as submandibular and other minor glands.

Statistical analysis

Data was entered and analyzed by using Statistical Package for Social Sciences (SPSS) version 22.0. The continuous variables were analyzed for central tendency and dispersion and presented with median and Standard deviation. Categorical data was analyzed for frequency. Chi-squared test was used for analysis of categorical variables, whereas a p-value of <0.05 taken as significant.

RESULTS

A total of 39044 patients were presented with cancers, out of which 305 had primary salivary gland cancers including 191 (62.6%) in parotid gland and 114 (37.4%) in submandibular and other minor glands. There were 178 (58.4%) male patients and 127 (41.6%) female patients. Median age of the patients was 48 years (\pm SD=16.47). Age distribution of males and female patients is presented in Figure 1. There was no significant association of age with gender (Figure 2) or the site of cancer (Figure 3). Mucoepidermoid carcinoma was the most prominent histological type followed by Adenoid Cystic carcinoma.

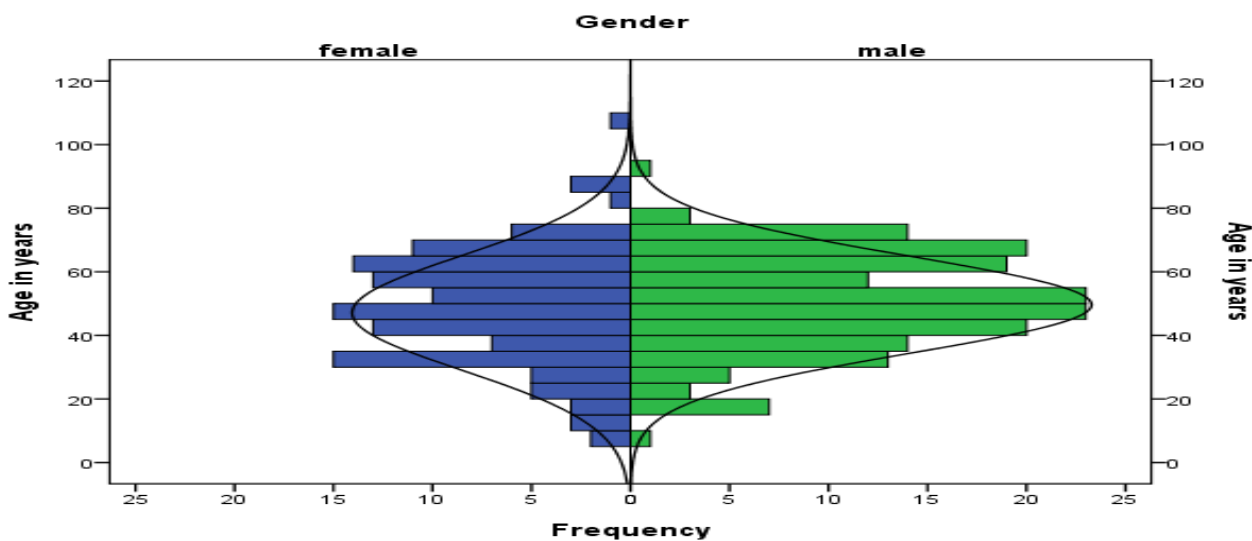


Figure 1. Age distribution of patients presenting with salivary gland cancers: Male versus Female

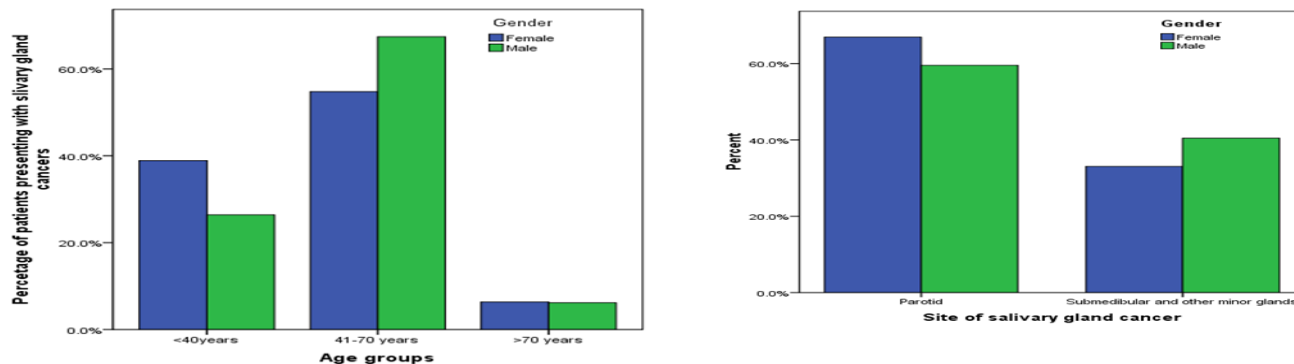


Figure 2. Association of gender with age in patients presenting with salivary gland cancers

Figure 3. Association of gender with site of salivary gland cancers

There was no significant association of age and the site of the cancer (Figure 4). Grade 2 was dominant with 44.1% of patients followed by grade 1 (33.9%) and grade 3 (22.0%) (Figure 5). There were 43.3% of patients with stage IV disease. A summary of stage and association with the site of tumour is presented in Figure 6 and 7.

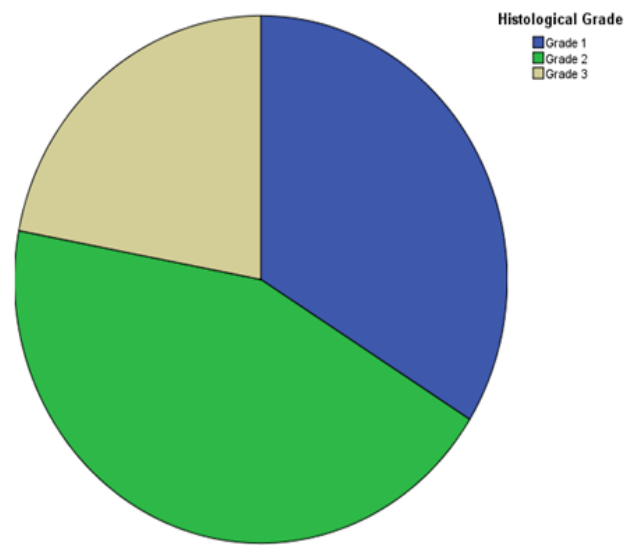
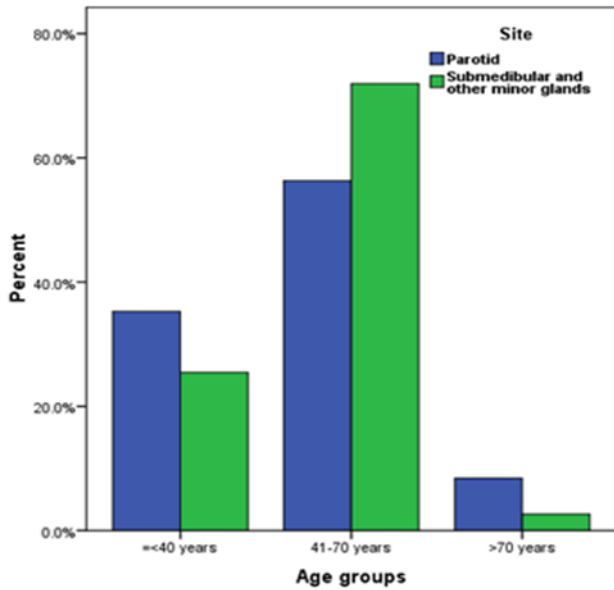


Figure 4. Association of age with site of salivary gland cancers

Figure 5. Pattern of histological grade in salivary gland cancer

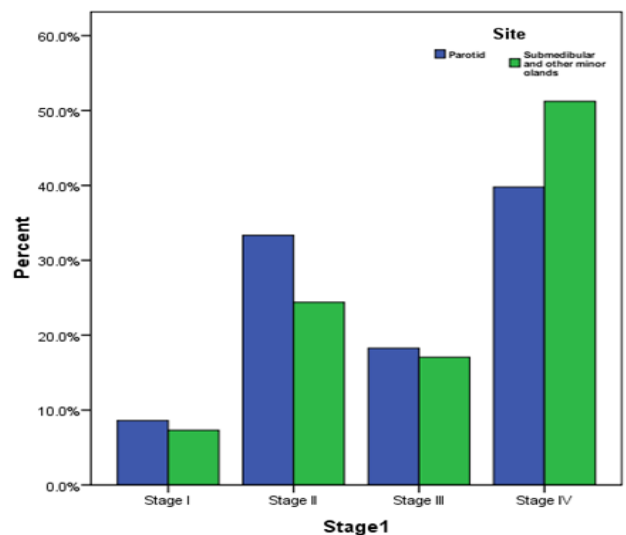
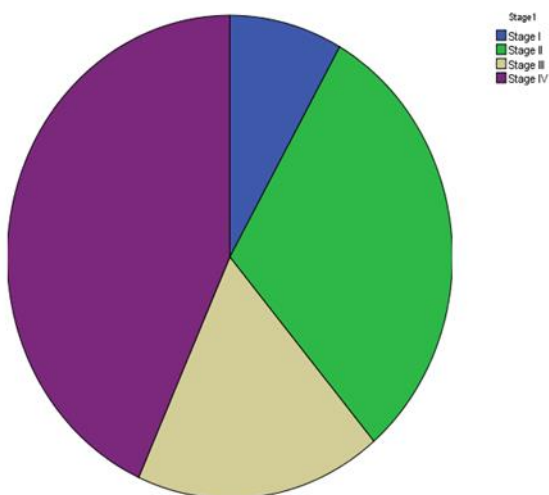


Figure 6. Stage of the cancer at the time of diagnosis in patients with salivary gland cancers

Figure 7. Stage of the cancer at the time of diagnosis: Parotid gland cancer versus submandibular and others

DISCUSSION

Salivary gland cancers are rare, in our study they account for 0.8% of all cancers. There was no significant association with age or gender was presented in our study. Parotid gland cancer was highly prevalent as compared to other salivary glands.

The Globocan 2020 has also reported salivary gland cancer as one of the least occurring cancers. The rarity causes lack of large scale studies and large clinical trials for recommendation of the evidence based medicines. Recently, biological markers have been recommended to be studied so that treatment based on molecular classification can be advised for better clinical outcome(5).

The previously reported studies have suggested age and gender dominance, however there was only non-significant difference seen in our study(6). This may be geographical variation or may be linked with prevalence of head and cancers in other regions as radiotherapy and ionizing radiation as salivary gland cancers have shown significant association with previous history of both(7). Though there are studies where there is no significant difference is observed, but the results remained inconsistent (8).

Mucoepidermoid type was predominant in our series, this was consistent with other studies(9). Other studies have also reported the same with second most common histological types being adenoid cystic carcinoma(6). Previously a study reported from Finland including children (n=20), also showed parotid as the most common site with seven out of ten cancers and mucoepidermoid carcinoma as the most common histological types seen in five out of ten cases(10). There was no significant association of grade is observed. Similarly stage also did not show any significant association with site of the cancer. There is limited data available for comparison.

There is limited literature available on salivary gland cancers from Pakistan. This was also a retrospective analysis of an institutional database which is considered as the limitation of this study. Further large scale studies with large sample size is recommended. Further analysis of the molecular pattern is also recommended.

CONCLUSION

Salivary gland cancers are relatively rare cancer where parotid gland is the predominant site of the salivary gland cancer. There is no predominant pattern of association with age and gender observed. Further large scale prospective studies are recommended.

Conflict of interest:

Authors declare no conflict of interest

Funding source:

The study did not receive any external funding

REFERENCES

1. GLOBOCAN 2020: New Global Cancer Data | UICC.
2. van Herpen C, Vander Poorten V, Skalova A, Terhaard C, Maroldi R, van Engen A, et al. Salivary gland cancer: ESMO–European Reference Network on Rare Adult Solid Cancers (EURACAN) Clinical Practice Guideline for diagnosis, treatment and follow-up. *ESMO Open*. 2022 Dec;7(6):100602.
3. Shukla NK, Hazarika S, Deo S, Kar M, Kumar S, Samaiya A, et al. Salivary gland tumours: profile and management at a tertiary cancer centre. *J Indian Med Assoc* . 2011 Jun;109(6):381–5.
4. Park SI, Park W, Choi S, Jang Y, Kim H, Kim S-H, et al. Clinical Outcome of Minor Salivary Gland Cancers in the Oral Cavity: A Comparative Analysis With Squamous Cell Carcinomas of the Oral Cavity. *Front Oncol* . 2020 Jun 3;10.

-
5. Rack S, Rahman R, Carter L, McKay C, Metcalf R. Impact of tumour profiling on clinical trials in salivary gland cancer. *Clin Otolaryngol* . 2019 Jan 3;44(1):1–6.
 6. Zanella V, Wagner V, Schmidt T, Thieme S, Correa C, Fonseca F, et al. Salivary gland cancer in Southern Brazil: a prognostic study of 107 cases. *Med Oral Patol Oral y Cir Bucal*. 2021;e393–403.
 7. Falchook AD, Zevallos JP, Chera BS. Increased risk of salivary gland cancer among women with a previous cancer diagnosis. *Head Neck* . 2016 Apr 14;38(S1).
 8. Cohen Goldemberg D, Alves LDB, Antunes HS, Thuler LCS, de Melo AC. Epidemiology of major salivary gland cancer in Brazil: Incidence, morbidity, and mortality. *Oral Dis* . 2023 Mar 2;29(2):707–13.
 9. Niazi Z. Mucoepidermoid Carcinoma: A Demographic and Histopathological Profile. *J Islam Med Dent Coll* . 2020 Dec 31;9(4):298–302.
 10. Aro K, Leivo I, Grénman R, Mäkitie AA. Paediatric salivary gland cancer in Finland. *Int J Pediatr Otorhinolaryngol* . 2012 Sep;76(9):1304–7.