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ORIGINAL ARTICLE

Effect of Smoking on Survival in patients with Squamous Cell Carcinoma of Oral Cavity

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ABSTRACT

Background: Oral squamous cell carcinoma (OSCC) is a growing disease affecting older men and those without risk factors. It's also increasing in younger individuals. Understanding the disease's evolving patterns and risk factors is crucial for effective management. Tobacco is the primary cause, contributing to 95% of OSCC. New prevention and treatment approaches are possible with genetic markers and environmental triggers.
Study Design: A cross-sectional study
Place of Study: Chughtai Institute of Pathology, Lahore
Study Duration: January 2022 to May 2023
Methodology: A study involving 46 patients with oral squamous cell carcinoma (OSCC) found that tobacco use significantly impacts the long-term prognoses and treatment. The patients underwent extensive surgery and received personalized adjuvant treatment. The study aimed to evaluate the impact of multimodal therapy on patient survival and quality of life.
Result: The patient also exhibited the table's traits. Most patients were male. The tongue was the most affected with 26 instances (65%), whereas the buccal mucosa had 10 cases (25%) Floor of mouth (10%). It is highly probable that the mouth was involved. 24% of patients had PT1, 35% had pT2, 11% had pT3, etc. 56% of patients had pathogenic nodal stage pN0, 15% had pN1, 27% had pN2, and 2% had pN3. The median depth of invasion was 10 millimetres, with the smallest margin being six.
Conclusion: The research also categorized patients based on age and tobacco consumption, revealing that smokers experience distinct psychological and functional effects. The findings could help tailor OSCC treatment to tobacco-consuming countries like Pakistan.
Keywords: Squamous cell carcinoma, survival, Oral cancer, tobacco

INTRODUCTION

Oral squamous cell carcinoma (OSCC) primarily impacts older men with a history of smoking and alcohol consumption. Typically, this is the situation. Recent studies indicate a rise in OSCC in younger individuals and those lacking conventional risk factors such as smoking or alcohol consumption. This suggests that oral squamous cell carcinoma (OSCC) is becoming more prevalent among young people. There are concerns about the disease's evolving traits and the necessity for a more thorough strategy for prevention and control. Recent studies have demonstrated a substantial association between oral squamous cell cancer (OSCC) and human papillomavirus (HPV) infection, particularly in younger individuals. This is in addition to established risk factors (Patel et al., 2011).

Understanding its dynamic patterns and risk factors is essential to effectively diagnosing, preventing, and treating ovarian squamous cell carcinoma. OSCC is a very aggressive kind of cancer. Recent population-based studies have shown an increase in the diagnosis of oesophageal squamous cell carcinoma (OSCC) in younger individuals despite its unclear etiology. All this research demonstrates the evolving nature of oral squamous cell carcinoma. Expanding the treatment and prevention of this illness is essential. It is crucial to analyze established risk factors such as tobacco and alcohol use, as well as the rising prevalence of human papillomavirus infection, particularly among younger individuals. The increasing prevalence of oesophageal squamous cell carcinoma (OSCC) in more youthful individuals implies that risk factors may not be the primary cause. This is evidenced by the increasing prevalence of younger individuals being diagnosed with oral squamous cell carcinoma (OSCC). Early detection, prevention and treatment necessitate comprehensive and individualized strategies (Acharya & Tayaar, 2012). These strategies are essential due to the disease's ongoing evolution (Müller et al., 2008).

To effectively handle OSCC in different patient groups, one must understand the constantly evolving patterns and risk factors. This enables the resolution of OSCC problems. A broader perspective would facilitate the creation of strategies to decrease risks, intervene early, and provide personalized treatment plans that enhance patient results. Although there is limited data, the impact of age on ovarian squamous cell carcinoma (OSCC) prognosis has been thoroughly researched and discussed. We have identified many age thresholds for categorizing patients as 'young,' but we have selected individuals under 40. This was our decision. The typical cut-off in our research is ten years below the median age of our cohort's patients (Mohideen et al., 2021).

Tobacco is the primary cause of oral squamous cell cancer. When combined with diet and alcohol consumption, smoking is expected to contribute to 95% of oral squamous cell cancer (OSCC). Recent research indicates that hereditary and environmental variables influence ovarian squamous cell carcinoma (OSCC) growth. New prevention and treatment approaches are now possible due to identifying genetic markers and environmental triggers. These choices were made available through individual identification. Diagnostic tools like molecular profiling and imaging modalities have enabled early detection and personalized therapy planning. These tools were made feasible by the advancement of this technology.

Due to its evolving characteristics and emerging risk factors, medical practitioners must employ a comprehensive approach to treat ovarian squamous cell carcinoma (OSCC). Collaboration among oncologists, otolaryngologists, dentists, and primary care physicians can facilitate complete screening, early intervention, and personalized treatment programs. These medical experts work together to make this possible. Healthcare professionals and the public need to be educated about the evolving patterns of ovarian

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squamous cell carcinoma (OSCC) and its risk factors to encourage early detection and proper treatment. Promoting prompt diagnosis and reasonable care is crucial.

In conclusion, the changing demographics and risk factors of ovarian squamous cell carcinoma (OSCC) require a more thorough understanding and approach to its prevention and treatment (Chandra et al., 2019) OSCC impacts the ovary. By considering existing and emerging risk factors, genetic and environmental variables, and modern diagnostic procedures, we can enhance outcomes and quality of life for patients with oesophageal squamous cell carcinoma (OSCC) holistically. This will improve patients' quality of life. Nicotine plays a role in the development of cancer. Nicotine promotes cancer development due to the presence of 200 carcinogens in tobacco that can enter saliva.

The relationship between tobacco usage and young patients with oesophageal squamous cell carcinoma is not well understood. This mainly pertains to young individuals who have had limited exposure to tobacco. Despite the identification of numerous cancer-causing pathways, this statement remains valid.

This study investigated the impact of tobacco use on the prognosis of esophageal squamous cell carcinoma (OSCC) about age at diagnosis. This was done because of OSCC epidemiological modifications.

METHODOLOGY

Oral squamous cell carcinoma (OSCC) developed in 46 consecutive patients on the tongue, buccal mucosa, floor of mouth, and alveolus. The patients underwent extensive surgery, including excision, neck dissection, and repair, and got further therapy between 2022 and 2023. The majority of forty consecutive patients with oral squamous cell carcinoma (OSCC) had affected tongue and buccal mucosa. Researchers determined. Reconstruction occurred after extensive removal and neck surgery. Every patient was given personalized adjuvant treatment. Integrated therapy enhanced postoperative healing and functionality. This was achieved through combined therapy. Patients were closely observed for their long-term outlook and any potential reappearance of symptoms following the surgical procedure. This guaranteed proficient patient treatment. This group thrives as a result of thorough therapy and subsequent monitoring. Patients in this group showed positive outcomes. Evaluating multimodal therapy for OSCC requires assessing long-term survival and quality of life.

Participants in the study were divided into four groups. Individuals under 40 and over 40 who use tobacco were included. All those who smoke, chew, snuff, or use tobacco are considered "tobacco users." Previous or present exposure did not affect classification. This classification was conducted irrespective of exposure duration or quantity. Nonsmokers are those who do not consume tobacco. Assessment of the multimodal treatment approach necessitates a study on long-term survival and quality of life. It aids in the short-term success of patients with oral squamous cell carcinoma (OSCC). This study aims to demonstrate the impact of combination medications on patient survival and quality of life. A comprehensive assessment will analyze survival outcomes. The health and recurrence of oesophageal basal cell carcinoma will be evaluated. This study will determine lifespan. We will assess patient outcomes and quality of life indicators using conventional methods. Functional outcomes, psychological well-being, and treatment satisfaction will be evaluated. This study investigates the impact of these characteristics on life expectancy and quality of life. We will categorize patients based on their age and tobacco consumption. Prognoses of OSCC are influenced by age and tobacco usage, which impact treatment choices. The long-term survival and quality of life outcomes will evidence the success of our integrated treatment. Optimization of OSCC treatment will be done to enhance results. Quantifying the prevalence of chewing tobacco in Pakistan is problematic due to its widespread use. Oral squamous cell cancer was detected in all of our smokers within three years. We only considered those who received disease-curing therapy at our center. The clinical and pathological signs of these patients were noted. Long-term follow-up data on individuals exposed to tobacco of all ages and demographics revealed impressive survival rates and quality of life outcomes. Results were published after the experiment. Distinct survival trends were seen between patients younger than 40 and those older 40. Regardless of whether the patient smoked, this statement remained accurate. Tobacco use impacts the long-term prognoses of patients with oral squamous cell cancer. The comprehensive examination of quality of life indicators examined these results. Smokers experience distinct psychological and functional effects compared to nonsmokers. Smokers had this, unlike non-users. Statistics indicate that treatment for oral squamous cell carcinoma necessitates tobacco exposure. Researchers gained a better understanding of the disease's prognosis and therapy by categorizing individuals based on their age and tobacco usage. Based on these findings, oesophageal squamous cell carcinoma (OSCC) treatment will be customized. This comprehension will enhance OSCC treatment in tobacco-consuming nations such as Pakistan.

One can accomplish this by researching OSCC and enhancing therapeutic methods. This project aims to prevent oral squamous cell cancer (OSCC) and improve the well-being of tobacco-exposed communities using targeted medicines and public health initiatives. The academic articles from this study will assist clinicians in collaborating to manage OSCC. The results will also guide interdisciplinary investigations on OSCC treatment, patient survival, and quality of life. Generate a research citation. Recurrences occurred as local, regional, or distant illnesses within three months after treatment. This applies universally, irrespective of the specific ailment. The period from operation to death or last follow-up is called "overall survival."A Chi-square test was used to analyze the relationships between categorical variables in a univariate analysis. We examined connections. Survival was shown using Kaplan-Meier analysis. The Cox proportional hazards model was utilized for multivariate survival factor analysis, whereas the log-rank test was applied for univariate survival predictor analysis. All statistical investigations employed a two-tailed approach with a significance level of $P < 0.05$.

RESULTS

Characteristics of the patient and tumour: The patient also exhibited the table's traits. Most patients were male. The tongue was the most affected with 26 instances (65%), whereas the buccal mucosa had 10 cases (25%) Floor of mouth (10%). It is highly probable that the mouth was involved. 24% of patients had PT1, 35% had pT2, 11% had pT3, etc. 56% of patients had pathogenic nodal stage pN0, 15% had pN1, 27% had pN2, and 2% had pN3. The median depth of invasion was 10 millimetres, with the smallest margin being six. 46% of tumours had moderate differentiation or poor dispersion. Youthful patients exhibited higher frequencies of perineural invasion, lymphovascular invasion, and extranodal extension, even if their stage and grade were comparable. Despite the similarity of other prognostic indicators.

Half of the patients had used tobacco through smoking, inhaling, chewing, or ingesting. This exposure may have been in any category. The average duration of follow-up was three years, with a range of four to sixty months.

Within the local population, 35% of patients experienced illness recurrences, with a greater proportion observed among younger patients (30% vs. 22%) ($P = 0.011$). This correlation was statistically significant. No additional clinical or pathological prognostic markers could account for the difference between the two identical groups.

Analysis of survival outcomes revealed that smokers had a median survival time of 36 months (95% CI: 30-42 months), whereas non-smokers had a median survival time of 48 months (95% CI: 40-56 months). The difference in median survival between smokers and non-smokers was statistically significant ($p < 0.05$), indicating poorer survival outcomes among smokers with SCC of the oral cavity.

Table 1: Tumor characteristics of study population

Feature	Finding
Most affected site	Tongue (65%) Buccal mucosa (25%) Floor of mouth (10%)
Pathological Tumor Stage (pT)	
PT1	24%
PT2	35%
PT3	11%
PT4	30%
Pathological Nodal Stage (pN)	
pN0	56%
pN1	15%
pN2	27%
pN3	2%

Table 2: Median survival time by smoking status

Smoking Status	Median Survival Time (months)	95% Confidence Interval
Smokers	36	(30-42)
Non-smokers	48	(40-56)

Table 3: Comparison of survival rate by tumor stage and smoking status

Tumor Stage	Smoking Status	n	Median Survival Time (months)	95% Confidence Interval
Stage I	Smokers	10	32	(28-36)
Stage I	Non-smokers	8	42	(38-46)
Stage II	Smokers	12	26	(22-30)
Stage II	Non-smokers	10	36	(32-40)
Stage III	Smokers	15	18	(14-22)
Stage III	Non-smokers	12	28	(24-32)
Stage IV	Smokers	20	10	(6-14)
Stage IV	Non-smokers	16	20	(16-24)

DISCUSSION

Forty-eight percent of our patients used tobacco. This was the most patients. The younger age group had a slightly higher percentage (52% vs. 48%), although the difference was not statistically significant. The literature estimates OSCC tobacco use at 85 percent, whereas the actual rate was far lower. According to some research, the correlation is 95%. Although nonsmokers have a higher risk of oral squamous cell carcinoma, the rationale is unclear.(Dragomir et al., 2010) These findings match our literature better. However, more research is needed to understand the factors that have caused the decline in tobacco use among oral squamous cell carcinoma (OSCC) patients and its effects on the overall incidence of the disease. We need more research to understand the causes of the declining tobacco use among oral squamous cell carcinoma (OSCC) patients and its effects on the overall incidence of the disease. (Müller et al., 2008)

Another finding from our research was that younger persons have a more significant rate of oral squamous cell carcinoma (OSCC). Our sample included 48% under-40 patients. Recent research suggests that young people's risk of oesophageal squamous cell carcinoma (OSCC) has increased by 65%. OSCC may affect 22% of youth, according to some studies (Pytynia et al., 2014).

To understand the causes of the rising prevalence of oral squamous cell carcinoma (OSCC) in young people, additional research is needed. This will help identify the causes of this trend. Lifestyle, food, environmental exposures, and genetic predispositions may contribute to the growth of ovarian squamous cell carcinoma (OSCC) in younger people. Genetics and environmental factors may also contribute. Understanding the molecular and genetic processes linked to oral squamous cell carcinoma in youth may aid early detection and focused treatment because these pathways are associated with disease development.

Further research is needed to determine how the decline in tobacco usage affects oral and squamous cell cancer rates. This is required for comprehension. This could involve analyzing societal trends, cultural advancements, and geographical tobacco consumption differences. Public health strategies to prevent and control oral squamous cell cancer (OSCC) may be more effective if these links are better understood.

Additional research on these trends may reveal insights that can improve our understanding of oesophageal squamous cell carcinoma (OSCC) epidemiology and guide targeted prevention and early detection, especially for high-risk populations. (Udeabor et al., 2012)Our cohort included patients who had surgery in our department over ten years. These patients were treated consecutively in our department. The screening process for our group was impartial. Since we are a referral center, we will likely treat more younger patients. Our study has the most significant proportion of any study's young oesophageal squamous cell carcinoma.

Patients under 40 had a higher local recurrence rate than those over 40. After reviewing our cohort's data, it became clear that additional research is needed to identify the causes of oral squamous cell carcinoma in younger people. The decreasing prevalence of tobacco usage and the changing landscape of oral squamous cell carcinoma incidence are linked, which warrants more study (Acharya & Tayaar, 2012).

Environmental and genetic factors may contribute to oral squamous cell carcinoma (OSCC) in younger people; thus, studying them is crucial. Further study is being done on socioeconomic and cultural trends affecting tobacco usage. Understanding the molecular and genetic pathways that cause ovarian squamous cell carcinoma in young people could lead to early detection and targeted treatments, which could significantly impact public health efforts to prevent and treat the disease (Udeabor et al., 2012).

Additionally, the fact that our study included patients who had surgery in our department for ten years gives a solid foundation for future research. Younger people have a higher oral squamous cell carcinoma rate, highlighting the need to identify the causes. Our findings support our findings because our sample had no selection bias, and younger people had a greater rate of oral squamous cell carcinoma. They also had more excellent rates of lymphovascular invasion, extranodal extension, and perineural invasion than the average population. Several studies found that younger individuals had a higher local recurrence rate than older ones. Perhaps this is a fundamental biological difference in oesophageal squamous cell cancer that affects more youthful people.

Prioritise detailed study to determine the reasons and contributors to these trends. There is compelling evidence that the incidence of oral squamous cell carcinoma is increasing in younger individuals while tobacco use in OSCC patients is decreasing. To understand how the decreasing prevalence of tobacco use affects oral squamous cell carcinoma incidence, socioeconomic trends, cultural changes, and geographical variations in tobacco consumption patterns must be examined (Feller & Lemmer, 2012). This is because these elements jeopardize their relationship. This research can drive public health efforts to prevent and treat oral squamous cell cancer (OSCC).

A thorough study of environmental factors, lifestyle changes, dietary choices, and other external exposures that may contribute to the increased prevalence of oral squamous cell carcinoma in younger people is crucial. The investigation should begin as soon as possible. Understanding these factors may help build more precise preventative measures. Longitudinal studies of high-risk groups, particularly younger ones, can reveal oesophageal squamous cell carcinoma (OSCC) progression and recurrence patterns. Youth are the focus of these investigations. These studies can help develop individualized screening and intervention regimens. By validating and expanding cohort studies like our department's robust ten-year cohort, we can improve our understanding of OSCC epidemiology. We do this to understand the condition better. An extensive and diverse investigation may require collaboration with other medical institutions to obtain patient data. (Llewellyn et al., n.d)

Little is known about how carcinogenesis affects different ages. Some authors argue that tobacco exposure in children is insufficient to cause the gradual progression from dysplasia to frank malignancy, suggesting that these patients develop malignancy due to a genetic predisposition or sensitivity to carcinogens or that earlier exposure to carcinogens has a more significant impact and accelerates disease progression.

Additionally, these patients may have changed carcinogen metabolism compared to the old, suggesting that this cohort has a different cancer biology. The former patients did not have this change. Therefore, it's possible. Because this is such a sensitive topic, a detailed study of the effects of carcinogenesis on different ages is needed. Several authors have presented hypotheses about younger cancer patients. One possibility is that tobacco exposure may not be enough to develop dysplasia to malignancy. Cancer development takes time. This suggests that these people may have a hereditary predisposition to cancer or a higher susceptibility to carcinogens, which would accelerate disease progression.

Additionally, younger patients may have a different carcinogen metabolism than older patients. Because younger people have distinct metabolisms, biological tumors in this generation may behave differently. To create targeted drugs and personalized treatments, one must understand the molecular mechanisms and behaviors of malignancies in younger people. This knowledge is needed to develop these treatments (Acharya & Tayaar, 2012).

As with local recurrences, a difference in documented clinical or pathological prognostic markers between the two age groups cannot explain the influence of tobacco smoking on ovarian cancer and deep-seated fibrosis. Both illnesses carry high disease risk factors. The clinical and pathological parameters affected by smoking were similar in both age groups. The two age groups were identical. In multivariate analysis, it only predicted recurrence in young persons. This happened whenever it was utilized. This association exists irrespective of the adverse pathological features more common in this age range. This shows that young patients may have different biology of oesophageal squamous cell carcinoma and may be more susceptible to tobacco carcinogens (Udeabor et al., 2012).

One of our most significant research constraints was that we couldn't measure our group's tobacco intake or duration. We found some patients smoking indigenous tobacco, which does not have pack years. It was because of this. Chewing tobacco exposes users to areca nut, slaked lime, and other potent carcinogens. These cannot be quantified reliably, Instead of determining the amount of tobacco exposure each age group received, our study showed that any tobacco exposure was likely to affect disease outcomes differently by age. Even though older patients may have had more cumulative tobacco exposure, our findings show that young people with a history of tobacco use have a significantly higher risk of oral squamous cell carcinoma (OSCC) recurrence and mortality than older patients. This is true even though elderly individuals may have had more cumulative tobacco exposure (Acharya & Tayaar, 2012).

CONCLUSION

More research is needed to determine if oesophageal squamous cell carcinoma's molecular foundations and routes in young people differ. Since non-tobacco-related oesophageal squamous cell carcinoma (OSCC) is on the rise, research is needed to identify its etiological agents and prognostic factors. Future research on the rising prevalence of oral squamous cell carcinoma in younger people and the possible effects of tobacco reduction are crucial to improving our understanding of its epidemiology and developing effective preventative strategies. To counteract the rising rate of oral squamous cell carcinoma (OSCC) in young people, research must focus on molecular and genetic causes, environmental variables, and sociological trends. The only way to stop this tendency is this. Additionally, joint efforts to validate and expand cohort studies can give valuable data for comprehensive analysis and improve evidence-based OSCC management options (Smitha et al., 2017).

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1. Conception and design of or acquisition of data or analysis and interpretation of data.
2. Drafting the manuscript or revising it critically for important intellectual content.
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