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Research Article

Oral Cancer Causes and Prevention: An Overview

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Abstract

Cancer is the unmanageable growth of cells that infect and have bad effect on the nearby tissue. Mouth cancer, or oral cancer, can occur anywhere in the mouth and is any cancerous tissue located in the oral cavity. Oral cancer (OC) is the commonest cancer in India. Oral mucositis (OM) is the oral materialization of mucosal injury (MUI), and is a common, bothersome, and treatment-interrupting toxicity of chemoradiation therapy for squamous cell cancers (SCC) of the head and neck. Medication errors with oral cancer therapies such as methotrexate and temozolomide have resulted in casualty. There are two different pathways through which people mainly acquire oral cancer. One is smoking or chewing tobacco and drinking alcoholic beverages and second is by exposure to the Human Papilloma Virus-16 (HPV-16). Out of total cases a little proportion of individuals (less than 7%) get affected by oral cancers, the cause of which is not known yet. It is currently believed that these are likely related to some genetic predisposition. Some people think this as an uncommon cancer, but it is increasing at an alarming rate every day.

Keywords: Oral cancer, Squamous cell carcinoma, Risk factors of oral cancer, Staging and treatment, Diagnosis

Introduction

Oral cancer is the eighth most familiar cancer worldwide and represents a major ailment burden. If detected at a premature stage, endurance from oral cancer is better than 90% at 5 years, whereas continued existence of patients presenting with late-stage disease is only 30%. The 5-year endurance rate for oral cancer has remained less than 50% over the last 50 years for the following reasons.[1,2]

Oral cancer is the sixth most common cancer worldwide. Routine, lifestyle and demographic as well as hereditary factors influence geographic variation in the occurrence of oral cancer.[3] Oral cancer is the most common cancer in India and accounts for 35% of all recently diagnosed cancers in men. The etiology of oral cancer is well recognized in most instances with utilization of tobacco in several appearance and alcohol being the most common etiologic agent.[4]

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Figure 1.Appearance of Oral Cancer

Squamous Cell Carcinoma

Squamous cell carcinoma (SCC) is the most common malignant neoplasm of the oral mucosa, representing more than 90% of intraoral malignant tumors. SCC, also known as epidermoid carcinoma, is an unregulated proliferation of abnormal squamous cells of the epidermis of skin. SCCs often appear as flaking red patches, open wound, prominent growth with a central dip, or warts; they may be covered or bleeding. The main cause of SSC is prolonged exposure to ultraviolet (UV) radiation during the course of a lifetime; throughout the year revelation to the sun's UV light, more exposure in the summer months, and the UV produced by tanning beds all are accountable for damage to the skin that can lead to SCC. SCCs may occur on all areas of the body together with the mucous membranes and genitals, but are most common in areas recurrently exposed to the sun, such as the brim of the ear, lower lip, face, receding scalp, neck, hands, arms and legs. Often the skin in these areas reveals telltale signs of sun damage, including wrinkles, pigment changes, freckles, "spot," loss of softness, and wrecked blood vessels. But most dentists do not have the proficiency to perform biopsies of oral lesions themselves and a few patients may be perilous (e.g., by medication with coumarone derivates) to suffer a scalpel biopsy.[5,6]

Figure 2.Squamous Cell Carcinoma

Risk Factors of Oral Cancer

In the Western World, use of tobacco and alcohol is the main cause which contributes to oral cancer.[7,8] Even though the peril factors are sovereign, their accomplishment seems to be mutual. Out of all cases, 75% are due to tobacco smoking. Tobacco smoking carries a six-fold peril of budding oral cancer compared to not smoking. Also alcohol drinkers are six times more susceptible to oral cancer than non-drinkers. Collectively, both alcohol and tobacco users are fifteen times more prone to oral cancer than non-users.[9]

Staging and Treatment

Treatment scheduling for oral cancer requires a multidisciplinary move towards with surgeons, radiation oncologists, medical oncologists, radiologists, speech/swallowing pathologists and dentists. Treatment of oral cancer depends on the oral cancer staging. TNM staging is based on the anatomic scope of the primary tumor and tumor spread (tumor size T, lymph node involvement N, and metastasis to distant sites M).[10] Surgery and/or radiation therapy are the best treatment options for oral cancer. Surgery is the superior treatment, and its goal is to eradicate the entire malignant tissue reaching a harmful surgical margin. Radiation therapy is performed if surgery is not realizable or as adjuvant therapy (if surgical margins are involved by cancer).[11]

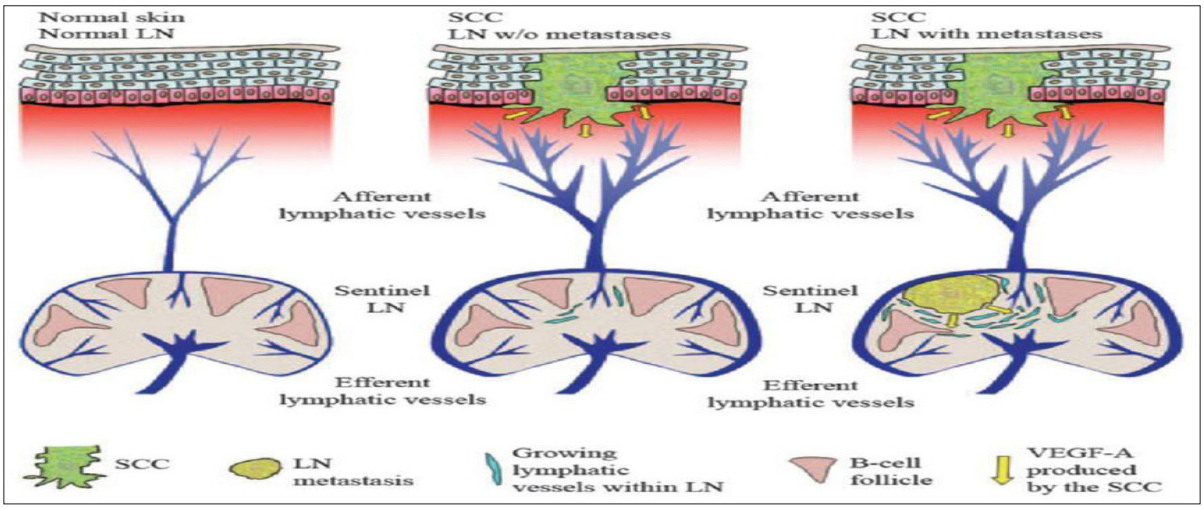

Figure 3.Stages of Cancer

United States

In 2011, approximately 37,000 Americans were expected to be diagnosed with oral or pharyngeal cancer. Out of which, 66% will be found as late stage, which will lead to more than 8,000 deaths.

Of those newly diagnosed, only slightly more than half will be alive in five years. Similar survival estimates are reported from other countries. For example, five-year relative survival for oral cavity cancer in Germany is about 55%.[14] Oral cancers overall risk higher in black males opposed to white males; however, specific oral cancers, such as of the lip, have a higher risk in white males opposed to black males. Overall, rates of oral cancer between gender groups (male and female) seem to be decreasing, according to data from three studies.[15] Of all the cancers, oral cancer attributes to 3% in males, opposed to 2% in women. New cases of oral cancer in the US as of 2013, approximated almost 66,000 with almost 14,000 attributed from tongue cancer, and nearly 12,000 from the mouth, and the remainder from the oral cavity and pharynx. In the previous year, 1.6% of lip and oral cavity cancers were diagnosed, where the age-standardized incidence rate (ASIR) across all geographic regions of United States of America estimates at 5.2 per 100,000 population.[15] It is the 11th most common cancer in USA among males while in Canada and Mexico it is the 12th and 13th most common cancer, respectively.

South America

The ASIR across all geographic regions of South America as of 2012 sits at 3.8 per 100,000 population where approximately 6046 deaths have occurred due to lip and oral cavity cancer, where the age-standardized mortality rate remains at 1.4.[16] In Brazil, however, lip and oral cavity cancer is the seventh most common cancer, with an estimated 6930 new cases diagnosed in the year 2012. This number is rising and has an overall higher ASIR at 7.2 per 100,000 population whereby an approx. 3000 deaths have occurred.[16] Rates are increasing across both males and females. As of 2017, almost 50,000 new cases of oropharyngeal cancers will be diagnosed, with incidence rates being more than twice as high in men than women.[16]

Asia

Oral cancer is one of the most common types of cancer in Asia due to its association with smoking (tobacco, bidi), betel quid, and alcohol consumption. Regionally, incidence varies with highest rates in South Asia, particularly India, Bangladesh, Sri Lanka, Pakistan and Afghanistan.[17] In South East Asia and Arab countries, although the prevalence is not as high, estimated incidences of oral cancer ranged from 1.6 to 8.6/100,000 and 1.8 to 2.13/100,000 respectively.[18] Hyperlink "https://en.wikipedia.org/wiki/Oral_cancer#cite_note-:7-41."[19] According to GLOBOCAN 2012, the estimated age-standardized rate of cancer incidence and mortality was higher in males than females. However, in some areas, specifically South East Asia, similar rates were recorded for both genders.[20] The average age of those diagnosed with oral sarcoma cell carcinoma is approx. 51–55.[17] In 2012, there were 97,400 deaths recorded due to oral cancer.[21]

Table 1.Age-Standardized Incidence and Mortality Rates of Oral Cancer (per 100,000 Individuals per Year) in Australia between 1982 and 2008

Location	Incidence per 100,000 Individuals per Year			Mortality per 100,000 Individuals per Year		
	Both Sexes	Males	Females	Both Sexes	Males	Females
Lip	5.3	8.4	3.4	0.1	0.1	0.0
Tongue	2.4	3.3	1.4	0.7	1.1	0.4
Gingivae	0.3	0.4	0.3	0.1	0.1	0.0
Palate	0.6	0.7	0.4	0.1	0.2	0.1
Major	1.2	1.6	0.9	0.3	0.4	0.2
salivary						
glands						
Oropharynx	1.9	3.0	0.8	0.7	1.2	0.3

Adapted from Farah, Simanovic and Dost (2014)[22]

Conclusion

Oral cancer is a major global threat to public health, accounting for 50–70% of total cancer mortality and accounts for highest prevalence among Asian countries. Around 75% of oral cancers are linked to modifiable behaviors such as tobacco use and excessive alcohol consumption. Currently, the most effective way to control oral cancer is to combine early diagnosis and opportune, and felicitous, treatment. Cancer of the oral cavity is the sixth most common cancer in the USA, where the annual incidence rate is 10/100,000. Furthermore, around 8000 deaths due to oral cancer are reported from the USA each year. Around 35,000 Americans are newly diagnosed with oral cancer every year. The role of surgery in primary squamous cell carcinomas in other sites in the head and neck has evolved with addition of multidisciplinary treatment approach, employing chemotherapy and radiotherapy also consecutively or simultaneously. Thus, larynx continuation with synchronized chemoradiotherapy has become the standard of care for locally highly developed carcinomas of the larynx or pharynx that require total laryngectomy. This article is an overview about oral cancer and a general awareness on smoking and drinking.

Conflict of Interest: None

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