ORAL CANCER: EARLY DETECTION AND PREVENTION

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Abstract

Cancers contribute significantly to the global disease burden. Oral cancer is the tenth most common cancer worldwide and 300,000 new cases are diagnosed annually. Tobacco use is estimated to account for about 41% of oral/pharyngeal cancer cases in men, and 11% in women (Stewart and Kleihues, 2003). Two thirds of these cancers are found in the developing countries and there is an increase in the last four decades. Differences across countries particularly relate to distinct risk profiles and availability and accessibility of health services. The ability to control oral and pharyngeal cancer will depend on prevention and early diagnosis.

Over 90 percent of these tumors are squamous cell carcinomas, which arise from the oral mucosal lining. In spite of the ready accessibility of the oral cavity to direct examination, these malignancies still are often not detected until a late stage, and the survival rate for oral cancer has remained essentially unchanged over the past three decades.

Key words: oral cancer; tobacco; early detection; precancerous lesions; screening; malignant transformation.

Introduction

Oral cancer is an important health issue. The World Health Organization predicts a continuing worldwide increase in the number of patients with oral cancer, extending this trend well into the next several decades. In the US the projected number of new cases of oral and oropharyngeal cancer will exceed 31,000 per year. Mortality due to cancers in this region exceeds the annual death rate is the US caused by either cutaneous melanoma or cervical cancer. Significant agents involved in the etiology of oral cancer in Western countries include sunlight exposure, smoking and alcohol consumption. Use of the areca or betel nut in many cultures is a major etiological factor outside of the USA.

Oral cancer is the sixth most common cause of cancer related death. Though many people are unaware of its existence, there are a high number of cancer cases that are reported from the Indian subcontinent and parts of Asia. On the basis of cancer registry data, it is estimated that annually about 75000 new oral cancer cases develop in India. In India majority of oral cancer is associated with the use of tobacco products. And it is quite right, as smoking and chewing tobacco leaves harmful chemical bi-products known as carcinogens that are absorbed in the oral cavity. About 300 carcinogens have been identified in tobacco products, which cause oral cancer.

Other etiologic factors associated with oral squamous cell carcinoma, but far less significant statistically, include syphilis and sideropenic dysphagia. Recently, strong evidence for an etiological relationship between human papilloma virus and a subset of head and neck cancers has been noted. It is generally accepted that most sporadic tumors are the result of a multi-step process of accumulated genetic alterations. These alterations affect epithelial cell behaviour by way of loss of chromosomal heterozygosity which in turn leads to a series of events progressing to the ultimate stage of invasive squamous cell carcinoma. The corresponding genetic alterations are reflected in clinical and microscopic pathology from hyperplasia through invasiveness.

It is also noticed that approximately 60 percent of oral cancers are well advanced at the time of diagnosis and the principal cause of delay in oral cancer diagnosis are largely insignificant lesions that have no symptoms and are painless in the initial stages resulting in delayed detection by the patient. It has also been seen that lots of patients who come for routine dental problems have these lesions that are highly precancerous and may turn in to oral cancer. These precancerous lesions are in the form of white patches, ulcers and swellings and most of the cancer arise within these lesions.

Routine oral examinations play an important role in controlling oral cancer. Examinations can reveal mucosal changes that might be pre-malignant or malignant, thereby accelerating the diagnosis and initiation of early treatment. As carcinomas account for nine of 10 oral cancers, this indicates surface lesions that may be much easier to recognize. White and red lesions of the oral mucosa are the most common precancerous clinical lesions. Though premalignant mucosal changes don't always precede oral cancers, such changes warn of risk and present an opportunity for preventive measures. White changes

(leukoplakia) are the most common pre-malignant lesions, but red changes (erythroplasia) or white changes with a red component (speckled leukoplakia, erythroleukoplakia) carry a greater risk

Potentially malignant oral lesions

Lesion	Aetiology	Features
Erythroplasia	Tobacco/alcohol	Flat red plaque
Leukoplakia	Tobacco/alcohol	white plaque
Proliferative verrucous Leukoplakia	tobacoo/ alcohol/HPV	White/ speckled
Sublingual keratosis	Tobacco/alcohol	white plaque
Actinic chelitis	Sunlight	white plaque
Lichen planus	idiopathic	white plaque/erosion
Submucous fibrosis	Areca nut	immobile mucosa
Discoid lupus erythematosis	idiopathic	white or red lesion/erosion
Chronic candidosis	candida albicans	white/ speckled plaque
Syphilitic leukoplakia	syphilis	white plaque
Dyskeratosis congenital	genetic	white

Clinical dentists should think of prevention in two ways

- Early detection to reduce morbidity and mortality;
- An opportunity to identify and treat pre-malignant lesions.

A dentist's dilemma in oral diagnosis stems from the multitude of ill-defined, variable appearing, controversial and poorly understood lesions that appear in the mouth. Most lesions are benign, but many present changes that may easily be confused with malignancy. Conversely, early malignancy may be mistaken for a benign change. Inescapably, such clinical uncertainty is involved in the early detection of malignancy as well as in the understanding and management of other lesions that may not always remain benign.

Though various studies have estimated that 80 percent of oral cancer deaths can be prevented if detected at an early stage but late detection leads to fatal consequences. Therefore a complete oral examination must be performed for each new patient and for patients during recall appointments, not only by the dentists but the patients themselves can detect oral cancer at an early stage by simply examining the oral cavity.

Screening for oral cancer should include a thorough history and physical examination. The clinician should visually inspect and palpate the head, neck, oral, and pharyngeal regions. This procedure involves digital palpation of neck node regions, bimanual palpation of the floor of mouth and tongue, and inspection with palpation and observation of the oral and pharyngeal mucosa with an adequate light source; mouth mirrors are essential to the examination. Forceful protraction of the tongue with gauze is necessary to visualize fully the posterior lateral tongue and tongue base.

The clinician should review the social, familial, and medical history and should document risk behaviors (tobacco and alcohol usage), a history of head and neck radiotherapy, familial history of head and neck cancer, and a personal history of cancer. Patients over 40 years of age should be considered at a higher risk for oral cancer.

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Though some patients seek consultation only after developing severe and persistent pain, the most frequent symptom is a sore or irritation in the mouth. Early carcinomas may appear as small, apparently harmless areas of induration or local changes (erosion, erythema, keratosis. All oral lesions that persist or do not respond to the usual therapeutic measures, therefore, must be considered malignant until proven otherwise. Warning features suggestive of cancer

Simple visual examination, however, is well known to be limited by subjective interpretation and by the potential, albeit rare, occurrence of dysplasia and early OSCC within areas of normal-looking oral mucosa. As a consequence, adjunctive techniques have been suggested to increase our ability to differentiate between benign abnormalities and dysplastic/malignant changes as well as to identify areas of dysplasia/early OSCC that are not visible to naked eye. These include the use of toluidine blue, brush biopsy, chemiluminescence and tissue autofluorescence. At present, the utilization of these techniques in clinical practice is largely anedoctal and is principally directed to help experienced clinicians at improving their ability to detect dysplasia and early squamous cell carcinoma in high-risk individuals attending secondary and tertiary centers. Moreover, experienced surgeons use some of the described optic aids to improve the identification of a lesion's margins and extensions in the operatory setting, although it is not know then impact these techniques have on a patient's survival and risk of disease recurrence.

Further research with clear objectives, well-defined population cohorts and sound methodology is required before supporting the extensive use of oral cancer diagnostic aids in both primary and specialty settings.

Because of the variability of signs and symptoms, even good clinical judgment and experience do not preclude diagnostic errors. Biopsy is the only method to definitively diagnose a cancer and still remains the gold standard for cancer diagnosis.

Conclusion

There is significant potential for early detection of oral cancer because the oral cavity and oropharynx are relatively accessible and amenable to examination without invasive procedures. The existence of potentially malignant disorders of the oral mucosa implies there should be significant potential for prevention of oral cancer through oral visual screening.

The International Agency for Research on Cancer (IARC) and the World Health Organization (WHO) have recently stressed that we can reduce a third of a predicted 15 million cancer cases in the future and more effectively manage another third by planning effective cancer control and screening strategies. The major focus of these strategies is preventable cancers, such as those associated with tobacco smoking and infection, responsible for 43% of all cancer deaths in 2000, that is 2.7 million fatalities . Oral cancer is among the malignancies that would best benefit from this approach. It affects an area of the body that is easy to access for clinical inspection, is preceded by long-lasting mucosal changes, and has preventable risk factors

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Gutkha (a form of smokeless tobacco)

Bidis (a type of indigineous form of smoking tobacco)

Mucosal changes in a high risk individual (poor oral hygiene plus smokeless tobacco habit)

Oral squamous cell carcinoma