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Review Article

Dentists Role in Early Detection and Oral Cancer Awareness

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Abstract

Introduction: The accelerated growth of oral cancer is a constant and alarming concern for global health. Reports about oral cavity cancer, around 0.37 million new reports and 0.17 million deaths were recorded. Most oral cancers are preceded by oral potentially malignant disorder or disorders (OPMD), with a general prevalence of 4.47%. General dentists play a critical role in the detection of oral malignant lesions and OPMD. However, many dentists fail to evaluate and diagnose these injuries. Obstacles to routine oral examination by the dentist have been recognized and include lack of knowledge and experience of professionals.

Objective: The objective of this review is to show the importance of the task of the general dentist in ahead of time of oral cancer.

Method: A manual literature review search was performed in the PubMed and EBSCO databases by two researchers, using a combination of keywords “oral potentially malignant disorders” AND “cancer risk "AND “Oral cancer.” AND “prevention”.

Discussion: OPMD suggesting that oral precancers are benign conditions that can eventually develop into invasive malignancies in the long term. In general dentistry, it plays a fundamental role in the early diagnosis of OPMD and oral cancer, because the professional is the main health personnel who is in contact with the patient in each dental care, so he must have important knowledge of the characteristics of OPMD and oral cancer to be able to recognize early and refer in time Various studies suggest that dentists have deficiencies in knowledge about the etiology and diagnosis of oral cancer.

Conclusion: General dentists have an important role in the detection of oral cancer and potentially malignant lesions; However, the essential thing is to promote a thorough examination as part of your routine clinical examination and refer findings in a timely manner. An early diagnosis not only improves the patient's life survival but also reduces comorbidities associated with oncological treatment and reduces costs and improves quality of life.

Keywords: *Cancer Risk; Mouth Neoplasms; Oral Cancer; Oral Potentially Malignant Disorders.*

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Introduction

The increase in the incidence of oral cancer is a constant and concern for global health. In the oral cancer, around 0.37 million new reports and 0.17 million deaths were recorded.[1]

Head and neck cancers are a diverse group of malignancies that include cancers of the mouth, sinuses, larynx, nasopharynx, and oropharynx. Squamous cell carcinoma of the mucosal surfaces of the mouth, nose, and throat is the most common cancer in the head and neck region.[2]

With more than 350,000 new reports of oral cancer diagnosed annually, this type of cancer represents a serious challenge to public health. The incidence of oral cancer varies significantly by geographic location.[3]

An oral premalignant lesion is understood to be an alteration in the oral mucosa that has the potential to become cancer.[4]

Most oral cancers are preceded by potentially malignant oral lesions or disorders (OPMD) with a general prevalence of 4.47%.[1]

More than 90% of oral cancers are squamous cell carcinomas (OSCC). Other types of tumors that can occur in the oral cavity include those originating in the salivary and minor glands, as well as melanomas and lymphomas.[5]

Current 5-year survival rates for all stages range between 50% and 55%.[4] Therefore, early diagnosis and treatment is essential to increase the survival rate.

The etiology of oral cancer is multifactorial and includes genetic, environmental factors and viral infections. Smoking and alcohol consumption are the major factors of oral cancer.[6]

General dentists play a critical role in the detection of oral malignant lesions and OPMD. However, many dentists fail to evaluate and diagnose these injuries. Obstacles to routine oral examination by the dentist have been recognized and include lack of knowledge and experience of professionals.[7]

Cancer in early stages obtains better results than when treated in more advanced stages, at the same time the morbidity and mortality of these oncological processes is reduced, the prognosis of patients is improved and the health costs caused by these processes are reduced.[8]

The objective of this review is to show the importance of the role of the general dentist in the early detection of oral cancer.

Materials and Methods

A manual literature review search was performed in the PubMed and EBSCO databases by two researchers, using a combination of keywords “oral potentially malignant disorders” AND “cancer risk “AND “Oral cancer.” AND “prevention”. Regarding the criteria

For inclusion, bibliographic reviews, observational studies, clinical trials, clinical guidelines, systematic reviews and published meta-analyses were considered.

Between 2014 and 2024, in English. Animal studies and letters to the editor were excluded. Finally, 21 articles were included in this review.

Search algorithm

(((oral potentially malignant disorders) AND (cancer risk)) AND (Oral cancer)) AND (prevention)

Epidemiology

The estimated global prevalence of potentially malignant disorders of the oral cavity is approximately 1% to 5% sharing common risk factors such as smoking and betel chewing.[7]

Cancers from all regions of the buccal cavity and pharynx are grouped together and collectively represent the sixth most common cancer in the world.[9]

With more than 350,000 new cases of oral cancer detected each year, it is a major global public health problem. The incidence of oral cancer varies significantly by geographic region, being highest in Southeast Asia, South Asia, and some areas of Europe.[3]

European relative survival rates for patients with head and neck cancer are estimated at 72% at one year and 42% at five years. It has been estimated that the overall five-year survival for head and neck cancer in the UK is 45%; however, rates also vary depending on the site of the cancer. Between 2009 and 2013, the 5-year survival rate in England for oral cancer was 65%.for oropharyngeal cancer, 56.1% for oral cavity cancer, and 27.8% for hypopharyngeal cancer.[2]

Risk Factors to Oral Cancer[2-10-11-12]

- Tobacco
- Alcohol
- Genetic factors
- Diet
- Viral infections
- Poor oral hygiene
- Age

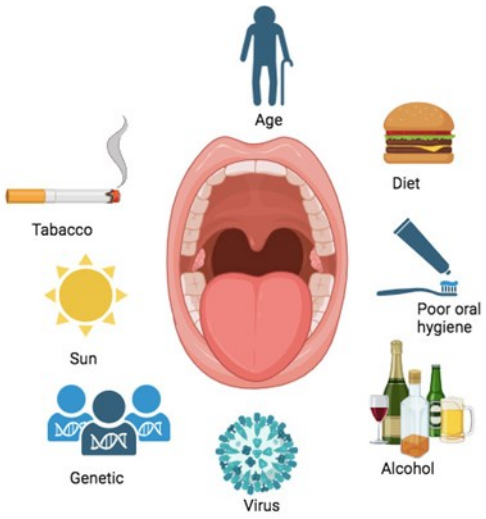

Figure 1. *Risk factors*

Potentially Malignant Lesions (Potentially malignant oral lesions or disorders)

Originally OPMD in 1805 as "precancers", suggesting that oral precancers are benign conditions that can eventually develop into invasive malignancies in the long term.[1]

Erythroplakia

Oral erythroplakia is a red lesion of the oral mucosa that cannot be characterized as any other definable lesion. Its prevalence in adults is lower than that of leukoplakia, ranging between 0.02% and 0.1%.[13]

Differential diagnosis are candidiasis, lichen planus, mucositis and systemic lupus erythematosus. Erythroplakias show histological signs of malignancy, including carcinoma in situ and invasive carcinoma, at the time of biopsy, given the high risk that erythroplakia carries, it is recommended treat the condition promptly: excisional or incisional biopsy is recommended, followed by complete removal of lesions that show severe dysplasia on histopathological examination.[5]

Figure 2. *Erythroplakia in lateral border of tongue.*

Leukoplakia

Leukoplakia refers to lesions in the white oral mucosa that cannot be classified as any other defined condition and have the potential for malignant transformation. The incidence of leukoplakia fluctuates between 1.5% and 2.6%.[13]

A predominantly white plaque of questionable risk that has excluded (other) known diseases or disorders that do not carry an increased risk of cancer.[14]

The worldwide prevalence is 4.11%, with the highest incidence in the Asian population (7.77%). The definitive cause of leukoplakia is not clear. However, the most common risk factors involve tobacco and alcohol consumption.[1]

Figure 3. Leukoplakia in buccal mucosa.

Submucous fibrosis

Oral submucosal fibrosis is a fibrotic condition of the oral mucosa characterized by an infiltration of epithelial immune cells followed by fibroelastic change in the lamina propria and submucosa leading to rigidity of the oral mucosa. The clinical definition describes it as "a disorder debilitating, progressive and irreversible collagen metabolism induced by chronic chewing of areca nut and its commercial preparations; affecting the oral mucosa and occasionally the pharynx and esophagus; leading to mucosal stiffness and functional morbidity; and has a potential risk of malignant transformation" with a general prevalence of 4.96%.[1]

Oral submucosal fibrosis is clinically distinguished by leathery mucosa, paleness. Histopathological features include subepithelial fibrosis and hyalinization characterized by excessive collagen deposition in the subepithelial connective tissue, as well as excessive thickening of connective tissue fibers.[15]

Figure 4. *Submucous fibrosis in lateral border of tongue.*

Oral lichen planus

Oral lichen planus (OLP) is defined as a chronic inflammatory autoimmune disease of the oral cavity that affects 1.01% of the world population, with the highest incidence in Europe (1.43%) and the lowest in the India (0.49%).

It is characterized by bilateral white reticular patches that affect the oral mucosa, tongue, and gums. The most awful forms are characterized by erosions, areas of atrophy and ulceration.[16]

The malignant transformation of oral lichen planus into oral squamous cell carcinoma (OSCC) remains debated: several prospective and retrospective studies discussed this topic and reported rates varying from 0 to 9%.[17]

Figure 5. *Oral lichen planus in gingiva.*

Role of general dentists

In general dentistry, it plays a fundamental role in the early diagnosis of OPMD and oral cancer, because the professional is the main health personnel who is in contact with the patient in each dental care, so he must have important knowledge of the characteristics of OPMD and oral cancer to be able to recognize early and refer in time. Various studies suggest that dentists have deficiencies in knowledge about the etiology and diagnosis of oral cancer.[18]

An organized screening program should include several key components, such as high participation rates, adequate training of screeners, quality control of the tests performed, and a referral pathway to ensure that detected cases receive appropriate treatment.[16]

Oral cancer prevention

Prevention begins with the provision of information and counseling about the risk factors and habits that may increase the risk of suffering from OPMD or oral cancer.

One of the fundamental steps in prevention is early detection of lesions. Studies and screening programs using conventional tests consist of a systematic visual inspection and palpation of the oral cavity under an intense light source, with the aim of identifying abnormal findings that increase the suspicion of oral cancer or oral dysplastic mucosal diseases (OPMD). Additionally, an evaluation of the neck is performed to detect possible regional metastases.[14]

Counselling

Tobacco Cessation

Studies report a strong exposure-response relationship regarding the frequency and duration of tobacco product use and the development of OPMD. The risk increases with increasing duration and intensity of tobacco use. This finding is consistent with the results of a meta-analysis on oral cancer risk associated with tobacco use and further suggests a strong association between OPMDs and tobacco use.[19]

Clinical trials reported that dentists can be highly effective in delivering brief but impactful messages about smoking prevention. In dentist-initiated programs, success rates of up to 15% in one year have been reported.[20]

It's very important the dentists must reinforce the message about the effects of tobacco consumption on the oral cavity and the possible consequences of the habit.

Cessation of alcohol consumption

Alcohol is one of the main risk factors, because ethanol has a direct effect on the cells where the conversion to acetaldehyde occurs. Ethanol increases the generation of reactive oxygen species, which can cause DNA damage, modify its methylation and cause hormonal effects. In addition, ethanol also facilitates the absorption of carcinogens from, for example, smoking in the mouth and the throat, thus also increasing the risk of tobacco-induced cancers.[10]

Although chewing tobacco contains lower levels of nicotine compared to smoked tobacco, it is believed to have a higher carcinogenic potential because it stays in contact with the oral mucosa for a longer period.[21]

For this reason, professional advice is essential to stop these habits that can be harmful to health.

Examination

A correct and exhaustive examination by health personnel is essential for the prevention of oral cancer, especially in lesions that have not healed for more than 14 days, potentially malignant lesions or habits that could cause a risk factor for the development of oral cancer.

The main thing before the examination is to collect all the information necessary for a complete medical history, concomitant diseases, habits, medications, history of cancer in the family, etc.

The clinical history can determine the extent and severity of the disease process by determining the duration, type, and rate of progression of symptoms, and the functional impairment experienced by the patient also helps us identify specific comorbidity. [20]

Visual screening as part of a population screening program reduces mortality in high-risk patients, also considering changing lifestyles and imposing barriers to triggering factors.

Education for the general population, as well as for individuals at higher risk, should provide a solid theoretical foundation covering the key aspects of oral cancer.[9]

Conclusion

General dentists have an important role in the detection of oral cancer and potentially malignant lesions; However, the essential thing is to promote a thorough examination as part of your routine clinical examination and refer findings in a timely manner.

An early diagnosis not only improves the patient's life survival but also reduces comorbidities associated with oncological treatment and reduces costs and improves quality of life.

Intensified training and evaluation of physicians, dentists, and dental hygienists is recommended. Education from the professional to the patient is essential for primary prevention.

Conflict of Interest

The authors declare no conflict of interest.

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