Current updates on early detection and prevention of oral cancer

Oral cancer is ranked among the top 10 cancers in the world. Oral squamous cell carcinoma (OSCC) constitutes more than 90% of oral cancers. The risk factors for OSCC are well-known. Tobacco and alcohol being the major causes make the disease preventable. Data reveal that only around half of the patients survive the disease over 5 years. Despite advances in treatment modalities over past decades, a significant improvement in prognosis is not achieved. This is attributable to the failure to detect small lesions and potentially malignant lesions early, which precludes successful treatment. Therefore, early detection is the key to improve survival rate in oral cancer patients.\(^\text{[1]}\)

Early detection is possible through screening programs and by employing specific diagnostic aids and biomarkers.\(^\text{[2]}\) Although extensive research and clinical application of diagnostic aids and biomarkers are rising, they lack practical feasibility when applied to larger population at risk and low socio-economic groups. A recent systematic review on screening programs and preventive measures on oral cancer concludes that systematic visual oral examination by a clinician is by far the most common method for screening. Cost-effectiveness and feasibility increase its popularity. Visibility of the lesion may be enhanced by employing special dyes.\(^\text{[3]}\)

A cluster-randomized control trial conducted by Sankaranarayanan \textit{et al.} (2013) reported a sensitivity of 67.4% for the visual examination in detecting oral cancer. They concluded that those who adhere to repeated screening rounds demonstrate a sustained reduction in oral cancer mortality, thus highlighting the significance of population-based screening programs targeting tobacco and/or alcohol users.\(^\text{[4]}\) The National Institute of Dental and Craniofacial Research and World Health Organization propose that screening for oral cancer should involve a systematic visual inspection of the oral cavity and palpation of the tongue, floor of the mouth and regional lymph nodes. If any abnormality persists for more than 2 weeks, then it calls for a re-evaluation and should be considered for biopsy.\(^\text{[5]}\)

Screening may be targeted at high risk groups or opportunistic, that involves people who attend health services for other reasons or a population as a whole based on statistics.\(^\text{[6]}\)

In contrary, a review by the US Preventive Services Task Force (USPSTF) on the evidence on efficacy and accuracy of oral cancer screening programs revealed inadequate evidence on the diagnostic accuracy and benefits of oral cancer screening in asymptomatic adults. USPSTF has thus recommended counseling to prevent tobacco use and to reduce alcohol misuse.\(^\text{[7]}\)

Unavoidably high-risk groups mostly belong to lower socio-economic groups, who least attend the dental clinics or utilize other health services, thus limiting an opportunity for visual examination by a clinician.\(^\text{[8]}\) In a study by Horowitz \textit{et al.}, fewer than 25% of subjects knew about tobacco or alcohol as risk factors for oral cancer. This reflects the minimal awareness of oral cancer among general public. To overcome this basic issue, leaflet containing cancer information was used, which resulted in a significant raise in the knowledge level of general public, thus reducing patient part of delay.\(^\text{[9-11]}\) Therefore mass screening or health education for oral self-examination becomes crucial.

Further, a delay of 3-5 weeks is observed in diagnosis due lack of knowledge or lack of training among health professionals, which necessitates a universal training program for health professionals to detect early cancerous changes of oral mucosa.\(^\text{[12,13]}\) Diagnostic aids such as, light-based detection systems are under extensive research, but so far, controlled studies have shown no promising results. They can be adjunctive to clinical examination in detecting cancerous or potentially malignant lesions. Biopsy still remains the gold standard in definitive diagnosis of suspected lesions.\(^\text{[4]}\)

Since oral cancer is preventable, reduction in risk factor appears to be the most effective means to reduce cancer morbidity and mortality. Combined effect of alcohol and tobacco is multiplicative or greater than multiplicative in most studies.\(^\text{[1]}\) Dentists and dental auxiliary personnel can conduct tobacco cessation counseling. Smoking cessation shows a 50% reduction in risk of oral cancers within 5 years.\(^\text{[14]}\)

Currently, health education, prompt screening and counseling the high risk groups form the mainstay of early detection and screening. A thirst for universally applicable objective methods which detect the initial malignant changes is unanswered.

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