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Role of Biomarkers in Relation to Foci of Infection with Premalignant - Malignant Nature: A Review

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Cardinal function of oral cavity are swallowing, speech, chewing, breathing, facial expression and masticatory. Oral squamous cell carcinoma is the 16th most common cancer worldwide. India, Sri Lanka, Pakistan and Bangladesh share the geographical distribution. The risk factors are tobacco, alcohol, smoking, human papillomavirus, trauma, enzyme imbalances, protein and micronutrient depletion.This review article focus on biomerkers in relational to oral potentially malignant disorder.
Keywords: dentistry, pathology, lesion, dermatology, maxillofacial, infection.

1. Introduction

Cardinal function of oral cavity are swallowing, speech, chewing, breathing, facial expression and masticatory.[1] Dentistry is comprised of biology, histology and biomechanics [2]. Trauma, diseases and disorders of genetics, infection, inflammation and congenital anomalies usually target temporomandibular joints.Oral potentially malignant disorder includes oral leukoplakia, oral erythroplakia and proliferative verrucous leukoplakia. This review article focus on biomerkers in relational to oral potentially malignant disorder.

ORAL LEUKOPLAKIA

This non scrapable white lesion is due to smoking. There are two types such has homogeneous and non homogeneous.Homogeneous type is a well defined form whereas non homogeneous type is reddened areas. In female the common lesion is verrucous leukoplakia. Non homogeneous type seen in smoker depict large broad areas in relational to tongue, buccalmucosa and gingiva.[3,4].

ORAL LICHEN PLANUS

It is the most commonly seen immune mediated diseases among middle aged females. [5] Various type are mentioned below - reticular form is characterized by hyper keratotic plaques and Wickham striae.Atrophic form characterized by ulceration and keratotic white striae [5,8]. Oral lichen planus is usually bilaterally seen. Speech and swallowing are affected[5]. Atrophic form exhibit malignant transformation. [6,7].

ORAL SUBMUCOSAL FIBROSIS

It is a potentially malignant condition[8]. Clinically chronic fibrosis is seen due to chemical and mechanical stimuli [9]. Sites of involvement are buccalmucosa, palatial mucosa, lingual mucosa and gingiva [10]. Pathogenesis includes loss of elasticity. Fibrotic band can be felt on palpation. Function of mouth and tongue are restricted [11]

ACTINIC KERATOSIS

This is a pre cancer dermatological lesion. Due to sun exposure rough scaly patches are seen . Affected sites are hand, face, neck and arms. Malignant transformation leads to oral squamous cell carcinoma. Treatment regimen includes topical steroids [12].

GRAFT VERSUS HOST DISEASE

This occurs after bone marrow (or) stem cell transplant. Sites of involvement are tongue, gingiva,buccalmucosa and lingual mucosa. Clinically reddened areas with swelling and dysphagia are observed [13,14,15].

ORAL MALIGNANCIES

Area involved are mouth, larynx, pharynx, trachea, paranasal sinuses, salivary glands and nasal cavity [16]. 90%of malignancies occur in hand and neck region.Oral squamous cell carcinoma is the 16th most common cancer worldwide[17]. India, Sri Lanka, Pakistan and Bangladesh share the geographical distribution. The risk factors are tobacco, alcohol, smoking, human papillomavirus, trauma, enzyme imbalances, protein and micronutrient depletion. Major factors are E6,E7,P16,RB and P53 HPV-OPSCC Cases are all of majority are exophytic, endophytic,mixed and vegetative types. Factor consented with prognosis are site, size, depth of invasion and thickness. Poor prognosis is noted in regional nodes. Treatment includes surgery and chemotherapy.

BIOMARKERS

Down regulation of cell adhesionproteins lead to oral squamous cell carcinoma [21]. Main factors are aggressiveness, infiltration and metastases. E cadherin and P cadherin act as negative prognosis factors [22,23].

REFLECTANCE CONFOCAL MICROCOPY

This system include diode layer with a wave length of 830 nanometer in conjunction with water immersion objective lens [24]. The system work on the principal of in depth penetration.

OPTICAL COHERENCE TOMOGRAPHY

Sub surface tissue image either in 2 dimensional and 3 dimensional with the spatial resolution of 10-20 micrometer is obtained. Main advantages are non invasive, quick imaging, reproducibility and ability to differentiate dysplasia and non dysplasia [25].

HIGH FREQUENCY ULTRASOUND

This non invasive technique has the ability to differentiate various tissues layer based on image contrast [26]. The principle depends on acoustic back scatter which is directly propotional to differences in density of various tissue layers. Size and position of teeth and also pathology including cysts and abscesses. This technique is reproducible. Depth of invasion can be determined.[27].

PHOTODIAGNOSIS AND PHOTODYNAMIC THERAPY

This technique utilises laser diode along with smartphone and fluorescence imaging devices [28,29,30].

2. Conclusion

Oral pre malignant conditions are treated. Earlier risk factors are tobacco, alcohol, immune compromised status, sunlight and poor oral hygiene. Management includes surgery,radiation and chemotherapy. Future research relies on early diagnosis and differentiation of pre malignant conditions.

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