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Concept of cancer stem cells in oral squamous cell carcinoma

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Oral squamous cell carcinoma (OSCC) is an epithelial malignancy commonly affecting developing countries. Disease progression is due to a complex molecular mechanism resulting in accumulated genetic mutations causing uncontrolled cell proliferation. These genetic alterations are primarily evident in somatic stem cells and recently, it has been demonstrated that a subset of these cells referred to as cancer stem cells play an important role in cancer progression.

Cancer stem cells are defined as a small subset of cells with the capability of self renewal and differentiation into the heterogenous lineages that constitute the tumor mass. These cells were found to be highly tumorigenic with capability of self renewal and behaviour akin to tumor progenitor cells. The origin of cancer stem cells could be from normal somatic stem cells, dedifferentiated tumor cells, fusion of tumor epithelial cells with hematopoietic stem cells or due to the process of epithelial-mesenchymal transition. Other minor factors giving rise to cancer stem cells could be human papilloma virus, tobacco habits, neosis and tumor microenvironment which act as stem cell niche. Identification of cancer stem cells could be done by markers such as CD44, CD133, E-cadherin; Wnt signaling pathway, Oct-4 and ABCG2. Cancer stem cells are responsible for tumor recurrence, metastasis and resistance to chemotherapy.

The concept of cancer stem cells and its association with OSCC is relatively new and detailed study is necessary for its better understanding. This review highlights the relevant findings on cancer stem cells, its origin, identification and its role in OSCC.

Biography

Gokul Sridharan completed is Masters in Oral Pathology (Dentistry) in 2009 and currently working as lecturer in the department of Oral Pathology. He is currently pursuing in PhD with the study titled "Oxidative stress in leukoplakia and oral squamous cell carcinoma". He has several publications in national and international journals and serving as an editorial board member of reputed journals.

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