Bharti Mittal et al., Oral Health Dent Manag 2015, 14:6
http://dx.doi.org/10.4172/2247-2452.C1.018

6th Indian Dental Congress

November 23-25, 2015 Bengaluru, India

Role of Mesenchymal Stem Cells in Head and neck squamous cell carcinoma

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Head and neck squamous cell carcinoma (HNSCC) is a major health problem worldwide affecting more than half a million patients each year. At present, stem cell therapy for cancer has entered into a new era with traditional therapies such as chemotherapy, radiotherapy and surgery. Mesenchymal stem cells (MSCs) have attracted increasing interest in the field of oncology because of their inherent capacity to migrate and home to tumor tissues, regulating immune surveillance, apoptosis and angiogenesis during tumor development. These are the group of cells, present in bone-marrow stroma and the stroma of various organs. MSCs exhibit stimulatory or inhibitory effects on tumor growth and invasion through direct or indirect interaction with tumor cells. The role of MSCs in cancer development is still controversial and the exact contribution in tumor progression has not yet been fully clarified, whether they exert a tumor-suppressive effect or favor tumor growth. The discrepancy between these results may arise from issues related to different tissue sources, individual donor variability and injection time. Further research is required to differentiate the genes and signaling pathways involved in carcinogenesis and interaction with stem cells for development of new therapies, with the goal of eliminating the residual disease, recurrence and drug resistance. Understanding the mechanisms of how MSCs promote invasive growth and metastasis in HNSCC and respond to cancer management strategies is of profound medical importance and will allow us to design improved therapeutic protocols in evaluating the role of MSCs in cell-based anti-tumor and tumor targeted therapy for HNCC.

Biography

Dr. Mittal has completed her PhD in Biochemistry from AAU, Gujarat and postdoctoral studies from Center for Cellular and Molecular Biology, Hyderabad. At present she is heading the Department of Molecular Genetics and Stem Cell Research at Vydehi Institute of Medical Sciences and Research Center, Bengaluru, India. The focus of her lab is to study the Mesenchymal Stem cells, directed differentiation into specific lineages, insight into disease mechanism, and screening of novel therapeutic molecules. The goal of her lab is to study the interaction of MSCs with tumors, tumors initiating stem cells and pathogens for targeted cell based therapies.

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