

Cancer Therapy & Radiation Oncology

The role of TGF- β signaling in epithelial-mesenchymal transition of breast cancer stem cell

Parisa Zolfaghari lake

Islamic Azad University of Medical Sciences, Iran

Introduction: Stem cells of breast cancer “CSCs” play a pivotal role in the growth of breast cancer and Metastasis . CSCs constantly undergo self-renewal, which is associated with the production of daughter cells and as a result, form a mass of tumor cells that retain their proliferative properties, , Which makes tumors in the form of small populations . Embryonic signaling pathways such as NOTCH, WNT, Hedgehog and the TGF- β pathway are essential for signaling to stem cells in the embryogenesis process and these pathways play an important role in the development and preservation of normal tissue and also they are closely involved in regulating the EMT pathway Since many deaths from cancer are caused by metastases, studying the processes concerned in metastasis, including the transition from epithelial to mesenchymal states, is crucial . Until nowadays , extensive studies have been conducted on the EMT process and its association with cancer, and the results have illustrated that EMT is entailed at the onset of metastasis, invasion, and recurrence of cancer and it can also lead to drug resistance. The aim of this study was to evaluate the TGF- β inhibitor signaling in the process of epithelial to mesenchymal transformation in breast cancer cells .

Materials and Methods:In this investigation, three breast cancer tissue specimens of Luminal Type A and B from women involved in breast cancer were excluded from the marginal part of the tumor at Khatam Al-Anbia Hospital in sterile conditions and all specimens were invasive. Then, these samples were transferred to the Genomic Research Center of Islamic Azad University. Considered specimens were cultured in sterile conditions in Flask with the method of Primary to grow and proliferate, and then, their number of cells attained the intended number, they were trypsinized and cultured individually with normal breast adipose tissue. The culture was also performed in 3 well 24 well plates on days 7, 14 and 21 with TGF- β inhibitor treatment. Immunocytochemistry was conducted to evaluate protein expression .

Results:The results demonstrate that breast cancer stem cells of type of mesenchymal stem cells, that E-cadherin gene expression was observed only in the cultured plates of the cancer cell, with normal adipose tissue on days 7, 14 and 21 that were not treated with TGF- β inhibitor. Expression of the Vimentin gene was seen in both groups of cultures containing breast cancer cells and normal adipose tissue, whether treated with TGF- β inhibitor or not treated with, we perceived expression on days 7, 14 and 21.

Discussion and conclusion:Research investigations with the mentioned methods in breast cancer stem cells and their comparison with control groups concluded that Breast cancer stem cells have easy, high-potency culture characteristics. According to the expression of the markers in these cells, it can be exerted as a target to obstruct the metastasis pathway.

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Biography

Parisa zolfaghari lake has completed her master degree at the age of 25 years from Islamic Azad University of Medical Sciences. she has completed her bachelor deree in genetics from Islamic Azad University of Shahsavar at the age of 22 .she is a reserach assisstant at Islamic Azad University of Medical lab, she has translated the book named hypoxia and cancer metastasis book by Daniele M.Gin. and countributed to the translation cancer stem cells methods and protocols by Gianpaolo Papaccio and vincenzo Desiderio in persion . she is intresting about cancer stem cells and cancer signaling pathway and cancer biology.