عنوان مقاله:

Irradiation and conditioned media from human umbilical cord stem cells suppress epithelial-mesenchymal transition biomarkers in breast cancer cells

محل انتشار:

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خلاصه مقاله:

Objective(s): Breast cancer cells developing radioresistance during radiation may result in cancer recurrence and poor survival. One of the main reasons for this problem is the changes in the regulation of genes that have a key role in the epithelial-mesenchymal transition (EMT). Utilizing mesenchymal stem cells can be an effective approach to overcome therapeutic resistance. In this study, we investigated the possibility of combining mesenchymal medium with cancer cell medium in sensitizing breast carcinoma cells to radiation. Materials and Methods: In this experimental study, the cells were irradiated at a dose of ۴ Gy alone and in combination with stem cells and cancer cells media. Apoptosis, cell cycle, Western blotting, and real-time PCR assays evaluated the therapeutic effects. Results: We found that the CSCM could decrease the expression of several EMT markers (CD۱۳۳, CD۴۴, Vimentin, Nanog, Snail, and Twist), resulting in increased cell distribution in the G۱ and G۲/M phases, apoptosis rate, and protein levels of p-Chk۲ and cyclin D۱; furthermore, it exhibits synergetic effects with radiation treatment in vitro. Conclusion: These findings show that CSCM inhibits the expansion of breast cancer cells and makes them more susceptible to radiotherapy, offering a unique approach to treating breast cancer by overcoming radioresistance.

کلمات کلیدی:

Breast carcinoma, EMT markers, MDA-MB-۲۳۱ cells Mesenchymal stem cell, Radiotherapy