ML 22-14 (16/08/2022)

Cancers (Basel)
.
. 2022 Aug 2;14(15):3761.
doi: 10.3390/cancers14153761.

Mesenchymal Stem/Stromal Cells May Decrease Success of Cancer Treatment by Inducing Resistance to Chemotherapy in Cancer Cells

Taja Železnik Ramuta[1], Mateja Erdani Kreft[1]
Affiliations expand

- PMID: 35954425
- PMCID: PMC9367361
- DOI: 10.3390/cancers14153761

Abstract

The tumour microenvironment, which is comprised of various cell types and the extracellular matrix, substantially impacts tumour initiation, progression, and metastasis. Mesenchymal stem/stromal cells (MSCs) are one of the key stromal cells in the tumour microenvironment, and their interaction with cancer cells results in the transformation of naïve MSCs to tumour-associated MSCs. The latter has an important impact on tumour growth and progression. Recently, it has been shown that they can also contribute to the development of chemoresistance in cancer cells. This review provides an overview of 42 studies published between 1 January 2001 and 1 January 2022 that examined the effect of MSCs on the susceptibility of cancer cells to chemotherapeutics. The studies showed that MSCs affect various signalling pathways in cancer cells, leading to protection against chemotherapy-induced damage. Promising results emerged from the use of inhibitors of various signalling pathways that are affected in cancer cells due to interactions with MSCs in the tumour microenvironment. These studies present a good starting point for the

investigation of novel treatment approaches and demonstrate the importance of targeting the stroma in the tumour microenvironment to improve treatment outcomes.