

STUDYING THE INTERACTIONS BETWEEN MESENCHYMAL STEM CELLS AND LYMPHOCYTES

(Oral presentation)

Field of medicine: Immunology
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Introduction: The mesenchymal stem cells (MSC) are well known for their anti-inflammatory and immunosuppressive effects. In the presence of MSCs, the proliferation of the activated lymphocytes is reduced, whilst survivability and some of the specific effector functions are maintained. The exact mechanisms of the observed effects listed above are still unclear.

Aim: Therefore, our aim was to design model systems for monitoring the effects of MSCs on lymphocytes. In addition, we planned to study the different mechanisms of the immunosuppressive effects of MSCs.

Material and methodology: Peripheral blood mononuclear cells and T lymphocytes were activated by anti-CD3- and anti-CD28-conjugated paramagnetic beads. We used three different methods to measure the effect of MSCs on the proliferation of activated lymphocytes. The lymphocytes were either treated with the supernatant obtained from the MSCs, or were co-cultured with the MSCs with or without being separated from them by a semipermeable membrane. Lymphocyte proliferation and survivability were measured with carboxyfluorescein succinimidyl ester (CFSE) dilution assay and propidium iodide staining using flow cytometry.

Results: We observed an inhibition of proliferation using both the supernatant or the co-culturing methods, where the rate of inhibition is closely correlated with the amount of activator beads. This inhibition was most prominent in the late division cycles.

Conclusion: In conclusion we can point out that the MSCs have a versatile effect on the proliferation of lymphocytes, which is not only manifested in the inhibition of proliferation of the total population, but also in the different cell division cycles.

Key words: mesenchymal, stem cell, lymphocyte, immunosuppression

