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Mouse Liver Innate Immune Cell Atlas and Mesenchymal Stem Cell Transplantation-Associated Immune Cell Subsets

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The immunomodulatory effects of mesenchymal stem cells (MSCs) in acute liver injury involve coordination with the entire immune system. But mouse liver immune cell at lasin acute liver injury and a system-wide approach that analyses of the interaction between all major lineages and MSCs on single-cell level has been poorly understood.To assess the interaction between the immune system and MSCs, we used 43 antibodies to analyze the immune cell compartment in carbon tetrachloride (CCl_4)-injured mouse livers via mass cytometryon 1, 2, 3, and 7 days after MSC administration. We identified 18 immune cell subsets and found immune subsets in MSCs treated groups distinctly distinguished from control groups by high-dimensional analysis. Furthermore, MSCs can promote liver restitutive repair. It is closely related the suppressed proliferation of conventional natural killer (cNK) cells, plasma dendritic cells (pDCs), $CD4^+$ T, $CD8^+$ T, γδ T, and B cells and induced generation of monocytes, monocyte-derived macrophages, myeloid-derived suppressor cell (MDSC)-like cells and Tregs. Through high-dimensional analysis, we generated the landscape and dynamics of immune cell populations during CCl_4-induced mouse liver injury and our results indicate that mass cytometry analysis of the entire immune system can identify immune subsets associated with MSCs, which might facilitate the development of MSC-based immune therapeutics for acute liver injury.

Keywords: Acute liver injury, immune cell landscape, mesenchymal stem cell, immunomodulatory, mass cytometry

Biography:

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