6.14 Nebulized bone marrow derived extracellular vesicles ameliorate bacterial induced pneumonia in vivo

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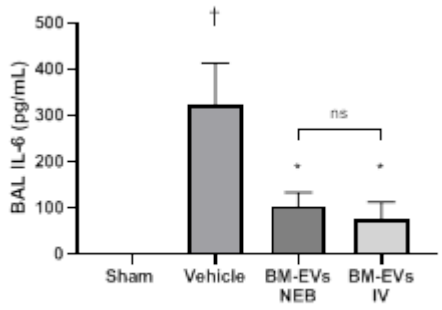
Razionale: Acute respiratory distress syndrome (ARDS) is an inflammatory disease with high mortality and a lack of specific therapy. Mesenchymal stromal cell (MSC) therapy is emerging as a potential therapeutic in a wide range of conditions, including pneumonia. We wished to utilise bone marrow extracellular vesicles (BM-EVs) in a rodent pneumonia model to explore clinically relevant administration using direct lung nebulization.Methods: BM-EVs were delivered intravenously or nebulized into the lungs using a vibrating mesh nebulizer to rats who had undergone bacterial lung installation, with administration delayed by 1 hour. 48 hours later, animals were assessed for lung physiological, inflammatory and infection parameters.Results: Nebulized BM-EVs delivered 1 hour after bacterial installation increased arterial partial pressure of oxygen and reduced lung bacterial load. Proinflammatory cytokines such as IL-1b and IL-6 were ameliorated in bronchoalveolar lavage (BAL).Conclusion: BM-EVs therapy is a promising ARDS therapeutics, and their direct nebulization offers a novel delivery route.Figure. BM-EVs nebulized after bacterial pneumonia induction reduced BAL IL-6 concentrations compared with vehicle and was not statistically different from the IV group. († p<0.05 wrt Sham; * p<0.05 wrt Vehicle. NS no significant difference between delivery route. (Sham N=4. Vehicle, BM-EVs NEB, BM-EVs IT: N=8)

(6.14)



Conflict of Interest: *None to declare*