

The role of Haemophilus parainfluenzae in regulating antigen presenting cells in primary sjogren's syndrome

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Sjogren's syndrome is an autoimmune disease which caused by the immune system attacking and destroying the exocrine glands. It leads loss of secretory gland functions, such as dry eyes, dry nose, or dry mouth. The past studies, in our laboratory we found that the oral microbiome of Sjogren's disease patients was dysregulated, and the Haemophilus parainfluenzae was significantly reduced. The study also found that treatment of A253 cells in vitro with H. parainfluenzae upregulated PD-L1 expression, and H. parainfluenzae-pretreated A253 cells suppressed CD4 T cell proliferation. By NGS analysis, A253 cells treated with H. parainfluenzae were found to have significantly increased TLR2 expression. Therefore, in this study, we aim to investigate whether H. parainfluenzae can modulates the function of antigen present cells to influence the immune response and the mechanism. Using macrophage cell line- RAW264.7, we found that H. parainfluenzae can upregulate PD-L1 expression and inhibit the proliferation of CD4 T cells. Using TLR2 antagonist-MMG11, PD-L1 expression on RAW264.7 is downregulated and reverse the decrease of CD4 T cell proliferation. In the qPCR experiment, TLR signal pathways and negative regulators of inflammation were activated in RAW264.7 cells after H.p. treatment. The above data indicated that H. parainfluenzae can through TLR signaling to modulate antigen present cells to influence T cell immune response in Sjogren's syndrome.

探討原發性修格蘭氏症中嗜血副流感桿菌調節抗原呈 現細胞的作用

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修格蘭氏症(sjogren's syndrome)是一種自體免疫性疾病。由免疫系統攻擊和破壞外分泌腺引起。它會造成腺體功能的喪失，導致眼睛、鼻子、口腔乾燥。在過去的研究中，我們實驗室發現修格蘭氏症病人口腔微生物出現失調的狀況，其中嗜血副流感桿菌大量減少。研究還發現，在體外用嗜血副流感桿菌處理 A253 細胞可上調 PD-L1 表達，而經過嗜血副流感桿菌預處理的 A253 細胞可抑制 CD4 T 細胞增殖。通過 NGS 分析，發現用嗜血副流感桿菌處理的 A253 細胞 TLR2 表達顯著增加。因此，在本研究中，我們旨在研究嗜血副流感桿菌是否可以通過調節抗原呈遞細胞的功能來影響免疫反應及其機制。使用巨噬細胞 RAW264.7，我們發現嗜血副流感桿菌可以上調 PD-L1 表達並抑制 CD4 T 細胞的增殖。使用 TLR2 拮抗劑-MMG11，RAW264.7 上的 PD-L1 表達下調並逆轉 CD4 T 細胞增殖的減少。在 qPCR 實驗中，我們發現嗜血副流感桿菌能夠激活 RAW264.7 細胞 TLR 信號通路以及炎症的負調節因子的相關基因。以上數據表明副流感嗜血桿菌可以通過 TLR 信號調節抗原呈遞細胞來影響修格蘭氏症中的 T 細胞免疫反應。