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论文

人脐带沃顿胶间充质干细胞对重型再生障碍性贫血调节性T细胞及Foxp3基因的影响

郭鹏1, **刘传方**2, **赵雯**3

1. 山东大学西区校医院内科, 济南 250012; 2. 山东大学齐鲁医院血液科, 济南 250012;
3. 山东省荣军医院耳鼻喉科, 济南 250013

摘要:

目的 研究脐带沃顿胶间充质干细胞(WJCs)对重型再生障碍性贫血(SAA)患者外周血CD4+CD25+调节性T细胞及Foxp3基因表达水平的影响,探讨WJCs对SAA患者T淋巴细胞(TLCs)免疫调节作用的可能机制。 方法 从人脐带中分离培养WJCs,通过流式细胞术检测其表面标记并进行鉴定;采用密度梯度离心法从SAA患者外周血中分离TLCs;在植物凝集素(PHA)刺激下,将SAA患者TLCs(1×105个)进行体外培养,实验组加入不同数量级WJCs(1×103、1×104、1×105个)共培养,3d后采用MTT法检测淋巴细胞抑制率;流式细胞仪检测实验组及正常对照组SAA患者TLCs中 CD4+CD25+T细胞比例的变化,RT-PCR方法检测Foxp3 基因mRNA水平的变化。 结果 WJCs能明显抑制SAA患者TLCs增殖,且抑制作用与WJCs呈剂量依赖性;实验组CD4+CD25+T细胞比例以及Foxp3基因表达水平均比对照组明显增加,且与TLCs增殖水平呈负相关。 结论 WJCs对SAA患者TLCs的抑制作用呈剂量依赖性,通过上调Foxp3的表达而发挥CD4+CD25+调节性T细胞的免疫调节作用可能是其机制之一。

关键词: 沃顿胶间充质干细胞;CD4+CD25+调节性T细胞;Foxp3基因;再生障碍性贫血

Effects of Wharton′s jelly-derived mesenchymal stem cells from the human umbilical cord on regulatory T cells and the Foxp3 genein severe aplastic anemia patients

GUO Peng1, LIU Chuan-fang2, ZHAO Wen3

1. Department of Internal Medicine, School Hospital, Shandong University, Jinan 250012, China;
2. Department of Hematology, Qilu Hospital of Shandong University, Jinan 250012, China;
3. Department of Otorhinolaryngology, Shandong Rongjun Hospital, Jinan 250013, China

Abstract:

Objective To investigate effects of Wharton′s jelly-derived mesenchymal stem cells(WJCs) from the human umbilical cord on CD4+CD25+ regulatory T cells and the Foxp3 gene, and their immunoregulatory mechanisms in severe aplastic anemia(SAA) patients. Methods WJCs were isolated from the human umbilical cord, expanded, and identified by morphology of culture cells and flow cytometry of stem cell markers. Using density gradient centrifugation, T-lymphocytes(TLCs) were isolated from human peripheral blood from patients with SAA. TLCs(1×105) were cultured under the stimulation of phytohemagglutinin(PHA). In the experimental group, WJCs(1×103,1×104 and 1×105) were co-cultured with TLCs for 3 days, and then the inhibitory ratio of TLCs induced by human WJCs at various concentrations was measured by MTT assay. The percentage of CD4+CD25+T cells from patients with SAA was detected by flow cytometry, and expression of the Foxp3 gene was detected by reverse transcriptionpolymerase chain reaction(RT-PCR). Results WJCs showed an inhibitory effect on TLCs from patients with SAA in a dose-dependent manner. An increase of the percentage of CD4+CD25+T cells in peripheral CD4+T cells was observed when TLCswere co-cultured with WJCs. The level of Foxp3 mRNA in the experimental group was significantly higher than that in the controls and was negatively associated with the value, which represented TLCs proliferation. Conclusion WJCs specifically inhibit the proliferation of TLCs from patients with SAA in a dose-dependent manner, and one of mechanisms could be that up-regulated expression of Foxp3 promotes CD4+CD25+regulatory T cells to perform their immunoregulatory function.

Keywords: Wharton′s jelly-derived mesenchymal stem cells; CD4+CD25+regulatory T cells; Foxp3 gene; Aplastic

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通讯作者: 刘传方(1965-),男,博士,教授,硕士生导师,主要从事血液病的临床和基础研究。E-

mail:lcfsy@163.com
作者简介: 郭鹏(1972-),女,硕士研究生,主治医师,主要从事血液病的治疗及研究。
作者Email:

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