

肠道微生物对非小细胞肺癌小鼠抗肿瘤作用影响的机制研究

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Title: Immune mechanism of intestinal microecological balance in the treatment of non-small cell lung cancer

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摘要: 目的: 探讨肠道微生物平衡抗非小细胞肺癌作用的免疫机制。方法: 建立C57BL/6J小鼠Lewis肺癌模型72只, 根据腹腔注射药物不同分为对照组、顺铂组、顺铂/抗生素组、顺铂/乳酸杆菌组, 每组18只。记录各组小鼠肿瘤体积、存活时间; 采用Western Blot法检测瘤体VEGFA、Ras、CDKN1B、Bax蛋白表达, EILSA检测血清IL-6、IL-10、TNF- α 、IFN- γ 水平, PCR检测小鼠肠道菌群数量。结果: 与对照组相比, 其他组小鼠的肿瘤生长均受到明显抑制。其中, 以顺铂/乳酸杆菌组抑瘤作用最明显, 顺铂/抗生素组抑制效果最差。与顺铂/乳酸杆菌组相比, 顺铂组与顺铂/抗生素组的生存时间明显更短。与对照组相比, 顺铂组小鼠致癌基因VEGFA、Ras的表达水平分别降低了47.9%、33.2%, 抑癌基因Bax、CDKN1B的表达水平分别上调了121.7%、128.9%。与顺铂组对比, 抗生素减弱了顺铂对VEGFA的下调及对CDKN1B、Bax的上调作用。相反地, 乳酸杆菌明显增强了顺铂对VEGFA水平的下调及对CDKN1B的上调作用。ELISA检测结果发现, 与顺铂/抗生素组比较, 顺铂/乳酸杆菌组IL-6、IFN- γ 水平显著升高, IL-10水平显著降低($P < 0.05$), 但TNF- α 无明显差异($P > 0.05$)。与对照组相比, 顺铂组小鼠4种菌群数量均呈现下降趋势, 但差异无统计学意义($P > 0.05$), 顺铂/抗生素组4种菌群数量下降最为明显($P < 0.05$), 顺铂/乳酸杆菌组菌群数量与对照组基本接近。结论: 肠道微生物平衡有助于抗肺癌作用, 能增强顺铂的抗肿瘤效应。

Abstract: Objective: To explore the immune mechanism of intestinal microecological balance in the treatment of non-small cell lung cancer. Methods: 72 mice with Lewis lung cancer were divided into control group, cisplatin group, cisplatin/antibiotic group and cisplatin/Lactobacillus group. The tumor volume and survival time of each group were recorded, and the expression of related oncoproteins and serum cytokines were detected. Results: Compared with the control group, tumor growth in other groups was significantly inhibited. Compared with cisplatin/Lactobacillus group, the survival time of cisplatin group and cisplatin/antibiotic group was significantly shorter. Compared with the control group, the expression level of oncogene VEGFA and Ras in cisplatin group decreased by 47.9% and 33.2% respectively, and the expression level of Bax and CDKN1B of tumor suppressor gene was increased with 121.7% and 128.9% respectively. The results of ELISA detection showed that compared with cisplatin/antibiotic group, the level of IL-6 and IFN-gamma in cisplatin/Lactobacillus group increased significantly, and the level of IL-10 decreased significantly, but there was no significant difference in TNF-alpha. Compared with the control group, the number of 4 bacteria groups in cisplatin group showed a decreasing trend, and the number of 4 species of cisplatin/antibiotic group decreased most significantly, and the number of cisplatin/Lactobacillus group was almost close to that of the control group. Conclusion: Intestinal microecological balance can help lung cancer and enhance the antitumor effect of cisplatin.

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备注/Memo: -

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