

基础研究

生长激素荷人结肠癌裸鼠GH/IGF-I/IGFBP-3轴的影响

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摘要:

目的: 探讨外源性生长激素(GH)对荷瘤裸鼠GH/胰岛素样生长因子(IGF)/胰岛素样生长因子结合蛋白3(IGFBP-3)轴的影响。方法: 采用人结肠癌细胞株(HCT116)建立人结肠癌细胞裸鼠移植瘤模型。取48只荷瘤裸鼠随机均分为生理盐水处理组(NS组)、氟尿嘧啶处理组(FU组)、GH处理组(GH组)、FU+GH处理组(FU+GH组)。每组连续给药6 d, 在给药结束后24 h, 72 h分别处死每组6只动物, 取血及移植瘤标本, 应用ELISA法检测血清GH, IGF-I, IGFBP-3含量和RT-PCR法检测移植瘤IGF-I, IGF-I受体(IGF-IR), IGFBP-3的mRNA表达。结果: ELISA结果显示, 给药结束后24 h, GH组和FU+GH组血清GH, IGF-I, IGFBP-3含量较NS组与FU组明显升高(均 $P < 0.05$ ); 给药结束后72 h, 各组GH, IGF-I的水平无统计学差异(均 $P > 0.05$ ), 但GH组和FU+GH组IGFBP-3水平仍高于NS组和FU组(均 $P < 0.05$ )。RT-PCR结果显示, 给药结束后24 h, GH, FU, FU+GH组移植瘤组织IGF-I mRNA与IGF-IR mRNA的表达较NS组明显降低, 而IGFBP-3 mRNA表达明显增加; 给药结束后72 h, IGF-I mRNA与IGF-IR mRNA表达各组间无差别, 但GH组, FU组和FU+GH组IGFBP-3 mRNA表达量仍明显高于NS组。结论: 短期应用外源性GH所致GH/IGF/IGFBP-3轴的变化对人结肠癌移植瘤生长无促进作用。

关键词: 结肠肿瘤; 人生长激素; 异种移植模型抗肿瘤试验; 小鼠 裸

Impact of exogenous growth hormone on GH/IGF/IGFBP axis in colon cancer-bearing nude mice

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Abstract:

Objective: To observe the impact of exogenous growth hormone (GH) on the axis of GH/insulin-like growth factor I (IGF-I)/insulin-like growth factor binding protein (IGFBP) in colon cancer-bearing nude mice. Methods: Nude mice xenograft models of human colon cancer were established by using human colon cancer HCT116 cells. Subsequently, 48 tumor-bearing mice were equally randomized into normal saline treatment group (NS group), fluorouracil treatment group (FU group), GH treatment group (GH group) and FU plus GH treatment group (FU+GH group), and all treatment regimens were continued for 6 days. Mice were sacrificed to collect the blood and tumor xenograft samples at 24 and 72 h after the termination of regimens with 6 mice in each group. The serum contents of GH, IGF-I and IGFBP-3 were determined by ELISA assay, and the mRNA expressions of IGF-I, IGF-I receptor (IGF-IR) and IGFBP-3 in xenograft were detect by RT-PCR method. Results: The results of ELISA showed that the serum levels of GH, IGF-I and IGFBP-3 were significantly increased in GH group and FU+GH group compared with either NS group or FU group at 24 h after regimen discontinuation (all  $P < 0.05$ ); at 72 h after regimen discontinuation, the serum levels of GH and IGF-I were similar among groups (both  $P > 0.05$ ), but the IGFBP-3 levels in GH group and FU+GH group were still higher than that in NS group or FU group (all  $P < 0.05$ ). The results of RT-PCR showed that the mRNA expressions of IGF-I and IGF-IR were obviously decreased but IGFBP-3 mRNA expression was markedly increased in tumor xenografts in either GH group or FU group or FU+GH group compared with NS group at 24 h after regimen discontinuation; at 72 h after regimen discontinuation, both IGF-I and IGF-IR mRNA expressions were similar among groups, but IGFBP-3 mRNA expressions in above three groups were still higher than that in NS group. Conclusion: The alteration in GH/IGF/IGFBP axis resulting from short-term exogenous GH application exerts no growth-promoting effect on tumor xenograft of human colon cancer.

Keywords: Colonic Neoplasms Human Growth Hormone Xenograft Model Antitumor Assays Mice, Nude

收稿日期 2012-06-26 修回日期 2013-01-11 网络版发布日期 2013-04-15

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基金项目:

国家自然科学基金资助项目(30460133)。

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