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摘要:

目的: 探讨碱性成纤维细胞因子单克隆抗体(basic fibroblast growth factor monoclonal antibody, bFGF-mAb)联合放疗对小鼠B16移植瘤的抑制效应。方法: 制备并提纯小鼠bFGF-mAb, 建立荷B16黑色素瘤小鼠模型并随机分为对照组、放疗组、bFGF-mAb组及联合治疗组。各组经相应治疗后, 测量移植瘤体积; 治疗20 d后处死小鼠, 取移植瘤称瘤质量, 计算抑瘤率。TUNEL法检测移植瘤细胞凋亡率, 免疫组化检测移植瘤组织bFGF、血管内皮生长因子(vascular endothelial growth factor, VEGF)的表达率及肿瘤微血管密度(microvessel density, MVD)。结果: bFGF-mAb治疗、放疗、联合治疗的抑瘤率分别为30.49%、12.17%和48.76%, 联合治疗组的抑瘤率明显高于其他组($P < 0.05$); 与放疗组比较, 联合治疗组的放射增敏率为2.37。联合治疗组移植瘤细胞凋亡较放疗组、bFGF-mAb组及对照组明显增多 $[(58.56 \pm 6.47) \% \text{ vs } (17.21 \pm 2.86) \% , (28.45 \pm 5.47) \% , (10.62 \pm 1.73) \% ; P < 0.05 \text{ 或 } P < 0.01]$, 其bFGF、VEGF表达水平下降, MVD明显减少($P < 0.05$)。结论: bFGF-mAb联合放疗对B16移植瘤具有协同抑瘤效应, 通过降低肿瘤组织bFGF和VEGF表达、抑制血管新生、促进瘤细胞凋亡提高放疗敏感性。

关键词: [黑色素瘤](#) [成纤维细胞因子单克隆抗体\(bFGF-mAb\)](#) [放射治疗](#) [血管内皮生长因子\(VEGF\)](#) [肿瘤微血管密度\(MVD\)](#)

Synergistic inhibitory effects of bFGF monoclonal antibody combined with radiotherapy on B16-transplanted tumors in mice [Download Fulltext](#)

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Abstract:

Objective: To investigate the inhibitory effect of basic fibroblast growth factor monoclonal antibody (bFGF-mAb) combined with radiotherapy against B16-transplanted tumors in mice. Methods: bFGF-mAb was prepared and purified. B16-transplanted melanoma tumor models were established and the mice were randomly divided into 4 groups: control group, radiotherapy group, bFGF-mAb group, and bFGF-mAb combined with radiotherapy group. Tumor volumes were measured in different treatment groups. Twenty days after treatment, the tumors were collected and weighted, and the inhibitory rates of tumor growth were calculated. TUNEL staining was used to detect the apoptosis rate of transplanted tumors; immunohistochemical method was used to examine the positive expression of bFGF, vascular endothelial growth factor (VEGF) and microvessel density (MVD) in transplanted tumor tissues. Results: The inhibitory rate of tumor growth in the combined treatment group was significantly higher than those in radiotherapy group and bFGF-mAb treatment group (48.76% vs 12.17%, 30.49%, $P < 0.05$). The radiotherapy sensitization enhancement ratio of the combined treatment group was 2.37 times that in the radiotherapy group. The apoptosis rate of transplanted tumor cells in the combined treatment group was significantly increased compared with those in the control, radiotherapy, bFGF-mAb treatment groups $[(58.56 \pm 6.47) \% \text{ vs } [(17.21 \pm 2.86) \% , (28.45 \pm 5.47) \% , (10.62 \pm 1.73) \%] ; P < 0.05 \text{ or } P < 0.01]$, with bFGF, VEGF expression and MVD being significantly decreased ($P < 0.05$). Conclusion: bFGF-mAb combined with radiotherapy have synergistic inhibitory effect on the growth of B16-transplanted melanoma tumors, and it can increase the radio-sensitivity of tumor cells by reducing the expressions of bFGF and VEGF, decreasing angiogenesis, and promoting apoptosis.

Keywords: [melanoma](#) [bFGF monoclonal antibody\(bFGF-mAb\)](#) [radiotherapy](#) [vascular endothelial growth factor\(VEGF\)](#) [microvessel density \(MVD\)](#)

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