

长春瑞滨及联合热疗抗血管生成作用的实验

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Experiment of Vinorelbine or Combined with Hyperthermia on Inhibiting Angiogenesis

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- 摘要
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摘要 目的探讨长春瑞滨及联合热疗对血管生成的抑制作用。方法以人肺癌A549细胞为对照, 采用MTT法观察长春瑞滨及联合热疗对人脐静脉内皮细胞(HUVEC)增殖的影响; 通过Transwell趋化实验、小管形成实验及流式细胞术观察长春瑞滨对HUVEC迁移、小管形成及细胞凋亡的影响; 利用鸡胚绒毛尿囊膜(CAM)模型, 观察长春瑞滨对体内CAM新生血管的影响。结果小剂量(0.1~1 ng/ml)长春瑞滨对HUVEC和A549增殖抑制具有差异细胞毒性(P=0.000)。0.1~1 ng/ml 长春瑞滨呈剂量依赖性抑制HUVEC增殖($r=0.993$, $P=0.000$), 联合热疗具有抑制HUVEC增殖的叠加或协同效应。小剂量长春瑞滨能够抑制HUVEC迁移和小管形成, 诱导HUVEC凋亡, 遏制CAM新生血管形成。结论小剂量长春瑞滨具有抗血管生成作用, 联合热疗具有协同或叠加效应。

关键词: 长春瑞滨 人脐静脉内皮细胞 血管生成 热疗

Abstract: Objective To investigate the antiangiogenesis ability of Vinorelbine or combined with hyperthermia in vitro and in vivo. Methods Human pulmonary adenocarcinoma A549 cell was used as control; proliferations of human umbilical vein endothelial cell(HUVEC) was measured by MTT assay. Transwell cabin test and out-body canalicularization test were used to observe the impact of Vinorelbine on cell migration and capillary-like tube formation ability, and the apoptosis rate of HUVEC was calculated by flow cytometry. In vivo, the chicken chorioallantoic membrane (CAM) model was used to check whether the neovascularization of CAM could be suppressed. Results Low dose Vinorelbine [(0.1~1)ng/ml] had a much more effect of inhibiting the proliferation of HUVEC than that of A549, and the difference was significant ($P=0.000$). The inhibition rate of HUVEC within a range of (0.1~1.0) ng/ml Vinorelbine was positive correlated with the concentration ($r=0.993$, $P=0.000$). Sub-additive or synergistic anti-angiogenic effect was observed when combined low dose Vinorelbine with hyperthermia in vitro. Low dose Vinorelbine has the ability of inhibiting migration and tube formation of HUVEC. Furthermore, it could induce apoptosis of HUVEC. We also observed that Vinorelbine suppressed the neovascularization of CAM in vivo. Conclusion The results of this experiment show that low dose of vinorelbine has anti-angiogenic effect both in vivo and in vitro, and there is additional effect when in combination with hyperthermia.

Key words: Vinorelbine HUVEC Angiogenesis Hyperthermia

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