

[1]李尚师,李素芝,高钰琪,等.高原心脏病研究对象血液中促血管内皮生长因子及平滑肌细胞生长因子的表达及意义[J].第三军医大学学报,2014,36(12):1331-1334.

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## 高原心脏病研究对象血液中促血管内皮生长因子及因子的表达及意义



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Title: Expression and significance of vascular endothelial growth factors and vascular smooth muscle cell growth factors in blood of patients with high altitude heart disease

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关键词: 高原; 高原心脏病; 促血管内皮生长因子; 促血管平滑肌细胞生长因子

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摘要: 目的 探讨高原心脏病研究对象血液中促血管内皮生长因子及平滑肌细胞生长因子的表达情况及其意义。 方法 对42例高原心脏病研究对象和40例高原健康者血液中促血管内皮生长因子[肝细胞生长因子(hepatocyte growth factor, HGF)、血管内皮生长因子(vascular endothelial growth factor, VEGF)、碱性成纤维细胞生长因子(basic fibroblast growth factor, bFGF)]及促血管平滑肌细胞生长因子[内皮素-1(endothelin-1, ET-1)、血小板源性生长因子(platelet-derived growth factor, PDGF)、成纤维母细胞生长因子(fibroblast growth factor, FGF)]血液中的表达情况及其超声心动图情况进行检测。 结果 通过对两组研究对象血液中的促血管内皮生长因子及促血管平滑肌细胞生长因子比较发现,高原心脏病组HGF、VEGF、bFGF及ET-1、PDGF、FGF血液中的表达均显著高于对照组( $P<0.05$ ,  $P<0.01$ )。高原心脏病

研究对象均存在不同程度的右心改变及肺动脉高压,其右房(上下径,横径)、右室流出道、右室前后径、右室前壁厚度、肺动脉内径、肺动脉收缩压等测值均显著高于对照组( $P<0.01$ )。且高原心脏病研究对象HGF、VEGF、bFGF及ET-1、PDGF、FGF与其肺动脉收缩压、舒张压、平均压呈显著的正相关。 结论 高原心脏病研究对象血液中促血管内皮及平滑肌细胞生长因子的表达较高原健康者明显增强,与缺氧性肺动脉高压的形成及高原心脏病密切相关。

**Abstract:** **Objective** To investigate and discuss the expression and significance of vascular endothelial growth factors(VEGF) and vascular smooth muscle cell growth factors in blood of patients with high altitude heart disease through experimental study. **Methods** The expression of vascular endothelial growth factors including hepatocyte growth factor (HGF), VEGF and basic fibroblast growth factor (bFGF) and vascular smooth muscle cell growth factors including endothelin-1 (ET-1), platelet-derived growth factor (PDGF), and fibroblast growth factor (FGF) in the blood samples of 42 patients with high altitude heart disease and 40 healthy subjects living in plateau as well as their echocardiographic results were analyzed. **Results** The expression levels of HGF, VEGF, bFGF, ET-1, PDGF and FGF in the patients with high altitude disease were all higher than those in the healthy group ( $P<0.05$  or  $P<0.01$ ). The patients with high altitude disease presented various degrees of right heart changes and pulmonary hypertension, and had significantly higher values of right atrium (vertical diameter/transverse diameter), outflow tract of right ventricle, anteroposterior diameter of right ventricle, right ventricular anterior wall thickness, pulmonary artery inner diameter, and pulmonary arterial systolic pressure than those in the healthy group ( $P<0.01$ ). Meanwhile, the expression of HGF, VEGF, bFGF, ET-1, PDGF and FGF showed positive correlation with the pulmonary arterial systolic pressure, pulmonary artery diastolic pressure, and mean pulmonary arterial pressure. **Conclusion** Compared with those healthy subjects, the expression levels of vascular endothelial growth factors and vascular smooth muscle cell growth factors are significantly increased in the patients with high altitude heart disease, showing close correlation with the development of hypoxic pulmonary hypertension and high altitude heart disease.

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