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论文

2型糖尿病脑梗死患者血清MMP-2、VEGF与糖代谢异常的相关性

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摘要：

目的 探讨血清基质金属蛋白酶-2（MMP-2）、血管内皮生长因子（VEGF）在2型糖尿病脑梗死患者脑组织损伤及修复过程中的作用。方法 选取30名2型糖尿病脑梗死患者（DMCI组）、30名单纯脑梗死患者（CI组）、20名健康体检者作为对照组（C组）。其中DMCI组：男11名，女19名，60~80岁，平均71.2岁；CI组：男12名，女18名，60~80岁，平均70.3岁；C组：男9名，女11名，60~80岁，平均69.0岁。采用酶联免疫吸附法检测DMCI组、CI组发病1、7d及对照组体检时血清中MMP-2、VEGF的含量。结果 DMCI组发病1、7d血清MMP 2水平均高于CI组和C组($P < 0.05$)；发病1d血清VEGF水平与CI组比较差异无统计学意义($P > 0.05$)，但显著高于C组($P < 0.01$)；发病7d血清VEGF水平显著低于CI组($P < 0.01$)，但显著高于C组($P < 0.01$)。DMCI组、CI组发病7d MMP-2、VEGF水平均显著高于发病1d($P < 0.05$)。DMCI组血清MMP 2水平与FBG、HbAlc含量呈显著正相关($r=0.829$，$P=0.000$；$r=0.855$，$P=0.000$)；血清VEGF水平与FBG、HbAlc含量呈显著负相关（$r=-0.501$，$P=0.005$；$r=-0.528$，$P=0.003$)；血清MMP 2水平与VEGF水平呈显著负相关（$r=-0.586$，$P=0.001$)。结论 2型糖尿病脑梗死患者不同时间段血清MMP-2、VEGF水平与糖代谢异常有显著相关性，MMP-2、VEGF参与糖尿病脑梗死的病理生理过程。

关键词： 脑梗死；糖尿病，2型；MMP 2；VEGF

The relationship between serum MMP-2， VEGF and abnormal glyco-meta-bolism in cerebral infarction patients with type 2 diabetes mellitus

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Abstract:

Objective To study the role of matrix metalloproteinase-2 (MMP-2) and vascular endothelial growth factor (VEGF) in the injury and repair of brain tissue in cerebral infarction patients with type 2 diabetes mellitus. Methods 60 patients were enrolled in this study，including 30 cerebral infarction patients with type 2 diabetes mellitus (DMCI group: 11 men, 19 women； mean age 71.2 years old，from 60 to 80 yrs)， and 30 simple cerebral infarction patients (CI group: 12 men, 18 women; mean age 70.3 years old，from 60 to 80 years). 20 healthy subjects were recruited as a control (C group: 9 men, 11 women; mean age 69.0 years old， from 60 to 80 yrs)． Enzyme-linked immunosorbent assay (ELISA) was used to measure the levels of serum MMP-2 and VEGF in the DMCI group and the CI group on the first and 7th days after onset. The same protocol was applied in the control group. Results On the first day and 7th days after the onset of infarction, the level of serum MMP-2 was significantly higher in the DMCI group compared with the CI and control group ($P<0.05$). The DMCI group showed the same serum VEGF level as the CI group ($P > 0.05$)on the first day after the onset, which was considerably higher than the C group ($P<0.01$). On the seventh day, the level of serum VEGF was significantly lower in the DMCI group than the CI group ($P<0.01$), but still higher than C group ($P<0.01$). The levels of serum MMP-2 and VEGF on the 7th days were significantly higher than those on the first day in both the DMCI group and the CI group ($P<0.05$). In the DMCI group, the level of serum MMP-2 was positively correlated with fasting blood sugar (FBS) and HbAlc ($r=0.829$, $P=0.000$； $r=0.855$， $P=0.000$), however, VEGF was negatively correlated with both ($r=-0.501$， $P=0.005$； $r=-0.528$, $P=0.003$）. Also, the level of serum MMP-2 was negatively correlated with, VEGF ($r=-0.586$， $P=0.001$). Conclusion There are significant correlations among the levels of serum MMP-2, VEGF and abnormal glycol-metabolism in cerebral infarction patients with type 2 diabetes mellitus in two distinct time spans after onset. MMP-2 and VEGF take part in the pathophysiological processes of diabetic cerebral infarction.

Keywords: Cerebral infarction； Type 2 diabetes mellitus; Matrix metalloproteinase 2； Vascular endothelial growth factor

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