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PPAR-γ通过PI3K/Akt及NF-κB通路调控猪颈动脉支架植入术后的血管重构(PDF)

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Title: PPAR-γ regulates vascular remodeling after pig carotid artery stent implantation through PI3K/Akt and NF-κB pathway

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关键词: 过氧化物酶体增殖物激活受体-γ; Akt; p-Akt; NF-κB; 血管重构; 猪

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摘要: 目的 观察过氧化物酶体增殖物激活受体-γ(peroxisome proliferator activated receptors-γ，PPAR-γ)在猪颈动脉支架植入术后血管重构中的作用。 方法 将12只小型猪分为正常对照组（*n*=4）和介入手术组（*n*=8），介入手术组采用猪颈动脉支架植入建立动物模型，分为支架组（*n*=4）和罗格列酮（ROSI）组（*n*=4）。术后3个月，应用数字减影血管造影（digital subtraction angiography，DSA）技术及HE染色评估血管形态学变化，应用免疫组织化学方法检测p-Akt及NF-κB的表达变化，应用Western blot方法检测支架段血管PPAR-γ、Akt、p-Akt及NF-κB的表达变化。 结果 ①猪颈动脉DSA和HE染色结果发现支架组血管狭窄较ROSI组明显（*P*<0.01）。②免疫组织化学染色结果发现支架组颈动脉血管p-Akt和NF-κB表达较正常对照组明显增加（*P*<0.01），ROSI组颈动脉血管p-Akt和NF-κB表达较支架组明显降低（*P*<0.01）。③Western blot检测结果显示：支架组PPAR-γ蛋白表达水平较正常对照组明显降低（*P*<0.01），NF-κB和p-Akt蛋白表达水平较正常对照组明显增加（*P*<0.05）；ROSI组PPAR-γ蛋白表达水平较支架组明显增加（*P*<0.01），NF-κB和p-Akt蛋白表达水平较支架组明显降低（*P*<0.01）；Akt在正常对照组、支架组和ROSI组中的蛋白表达量差异无

统计学意义（*P*>0.05）。　结论　PPAR-γ可能通过调节PI3K/Akt及NF-κB的表达，从而改善支架植入术后的血管重构。

Abstract: Objective To determine the role of peroxisome proliferator activated receptors-γ (PPAR-γ) in swine vascular remodeling after carotid artery stent implantation. Methods Totally 12 miniature pigs were randomly divided into normal control group (*n*=4) and intervention group (*n*=8). The animals of intervention group were adopted to establish the animal model of carotid artery stenting, and then randomly divided into stent subgroup (*n*=4) and rosiglitazone treatment (ROSI) subgroup (*n*=4). In 3 months after surgery, digital subtraction angiography (DSA) and HE staining was used to assess vascular morphology, immunohistochemical staining was applied to detect the expression of P-akt and NF-κB, and Western blotting was employed to detect the expression of PPAR-γ, Akt, p-Akt and NF-κB. Results DSA and HE staining demonstrated that vascular stenosis was more severe in the stent subgroup than the ROSI group (*P*<0.01). Immunohistochemical staining showed that the expression of p-Akt and NF-κB were significantly increased in the carotid artery stent groups than normal control group (*P*<0.01), and that in ROSI subgroup was significantly lower than in the stent subgroup (*P*<0.01). Western blot analysis showed that the protein expression level of PPAR-γ was significantly lower (*P*<0.01), and those of NF-κB and p-Akt were obviously higher in the stent subgroup than the normal control group (*P*<0.05), while that of PPAR-γ was significantly enhanced (*P*<0.01), and those of NF-κB and p-Akt were markedly reduced in the ROSI subgroup than in the stent subgroup (*P*<0.01). However, there was no significant difference in the protein expression of Akt in normal control group, stent subgroup and ROSI subgroup (*P*>0.05). Conclusion PPAR-γ might mediate the expression of PI3K/Akt and NF-κB, and then improve the vascular remodeling after stent implantation.

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