中南大学学报(医学版) 2013, 38(9) 944-948 DOI: 10.3969/j.issn.1672-7347.2013.09.013 ISSN: 1672-7347 CN: 43-1427/R

论著

血小板反应蛋白-1在氧诱导小鼠视网膜病变模型中的表达及意义

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摘要： 目的: 检测血小板反应蛋白-1 (thrombonspondin-1，TSP-1) 在氧诱导视网膜病变 (oxygen-induced retinopathy，OIR) 模型小鼠视网膜中的表达，探讨其在视网膜新生血管中的作用。方法: 随机选取7日龄C57BL/6J新生小鼠40只，分为模型组(n=20)及正常对照组(n=20)。模型组小鼠通过高氧诱导的方法建立OIR模型。于小鼠出生后第7，9，11天时两组各随机抽取5只小鼠，取视网膜组织采用RT-PCR法检测TSP-1 mRNA的表达水平; 并于小鼠出生后第11天时两组随机取5只小鼠，运用荧光造影视网膜铺片对视网膜新生血管进行形态学观察。结果: 出生后第11天时，正常组小鼠视网膜铺片显示视网膜血管分布呈均匀的网状结构，而模型组小鼠视盘周围可见大片无灌注区，视网膜大血管扩张，仅在周边见少量毛细血管分布，为典型的OIR早期表现。出生后第7天，模型组与对照组小鼠视网膜组织中TSP-1 mRNA表达水平差异无统计学意义(P>0.05); 出生后第9天，模型组小鼠视网膜组织中TSP-1 mRNA表达水平下降(P<0.05); 出生后第11天模型组小鼠视网膜组织中TSP-1 mRNA表达水平明显低于正常组(P<0.01)，且较第9天模型组亦下降(P<0.05)。结论: 在新生小鼠OIR模型视网膜血管生长发育抑制期，视网膜组织中TSP-1 mRNA的表达逐渐下降，提示TSP-1可能作为负调节因子在早期参与视网膜新生血管的形成过程。

关键词： 血小板反应蛋白-1 氧诱导视网膜病变 视网膜血管生长发育抑制期

Expression and significance of thrombonspondin-1 in oxygen-induced retinopathy in mice

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Abstract: Objective: To examine the expression and function of thrombonspondin-1 (TSP-1) in oxygen-induced retinopathy in new-born mice, and to investigate its role in retinal neovascularization. Methods: A total of 40 C57BL/6J newborn mice were divided equally into a model group (n=20) and a normal control group (n=20). Mice in the model group were exposed to 75% oxygen to establish the oxygen-induced retinopathy (OIR) model. On the 7th, 9th, and 11th day after the birth of mice, 5 mice were randomly selected each time from the 2 groups to examine the expression of TSP-1 mRNA with reverse transcription polymerase chain reaction (RT-PCR). After that, 5 mice were selected on the 11th day to observe the retinal neovascularization by fluorescein angiography retinal flatmount. Results: On the 11th day, fluorescein angiography retinal flatmount showed that the retinal blood vessels presented mean network distribution in the normal control group, while in the model group, a lot of dilatated areas in the retinal main vessels surrounded the optic disc. Meanwhile lots of new blood vessels were found surrounding the optic disc with irregular distribution but well distributed peripherial retinal small vessels, which was typical of early stage OIR. There was no significant difference in the retinal TSP-1 mRNA level between the model group and the normal control group in the postnatal 7-day mice (P>0.05). Compared with the normal control group, the expression of TSP-1 mRNA in the model group was significantly lower in postnatal 9-day and 11-day mice (P<0.05, P<0.01) , and the expression of TSP-1 mRNA in postnatal 9-day mice was lower than that in the postnatal 11-day mice(P<0.05). Conclusion: In the early stage of OIR model (retinal vascular growth and development stage), the expression of TSP-1 mRNA in the retinal tissue is gradually decreased, implying that TSP-1 (as a negative regulatory factor) may be involved in the formation of retinal neovascularization in the early stage.

Keywords: thrombonspondin-1 oxygen-induced retinopathy retinal neovascularization

收稿日期 2012-12-21 修回日期 网络版发布日期

DOI: 10.3969/j.issn.1672-7347.2013.09.013

基金项目:

湖南省科技厅科技计划项目(2012fj4353)。

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