

左向右分流型肺动脉高压大鼠肺组织中microRNA的表达谱及初步分析 (PDF)

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Title: A preliminary analysis of microRNA expression profiles in pulmonary tissues of rats with left-to-right shunt pulmonary hypertension

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摘要: 目的 检测晚期肺动脉高压 (pulmonary hypertension, PH) 大鼠肺组织中microRNA (miRNA) 的表达, 初步预测差异表达的microRNA调控的靶基因。 方法 4~5周龄健康雄性SPF级SD大鼠20只, 体质量90~110 g, 按完全随机分组法分成分流组 (n=10) 和对照组 (n=10)。分流组采用套管法行右侧颈总动脉-颈外静脉分流术以建立左向右分流型肺动脉高压模型, 对照组行假手术, 建立左向右分流型肺动脉高压大鼠模型。12周后, 取大鼠外周肺组织, 运用microRNA表达谱芯片检测分流组和对照组大鼠肺组织microRNA的差异性表达。运用Miranda、TargetScan、PicTar软件预测可能调控的靶基因, 实时定量PCR验证miR-98、miR-130b和miR-127等的表达。 结果 平均肺动脉压 (mPAP)、肺动脉中膜厚度百分比 (MT%) 及右心室肥厚指数 (RVHI) 均明显高于对照组 (P<0.01), microRNA芯片结果提示: 与对照组相比, 在分流组大鼠肺组织中表达明显上调的miRNA有30个 (miR-122、miR-130b、miR-146b等), 明显下的miRNA有7个 (miR-382、miR-192、miR-29c等), RT-PCR结果与芯片结果一致。 结论 microRNA在左向右分流型肺动脉高压大鼠中表达存在差异, microRNA可能参与肺动脉高压大鼠肺血管的重构。

Abstract: Objective To investigate the differential expressions of microRNAs (miRNAs) in pulmonary tissues of rats with advanced pulmonary hypertension (PH), and to predict the target genes regulating miRNA differential expressions. Methods Twenty male SD rats (age 4-5 weeks and weight 95-110 g) were randomly divided into a shunt group and a control group with 10 rats of each group. The rats of the shunt group were treated with right common carotid artery-external jugular vein shunt to establish the rat models of left-to-right shunt PH, while the rats of the control group were given sham operation. The miRNA differential expressions in the pulmonary tissues that were collected from the two groups at 12 weeks after operation were examined by miRNA microarray. The target regulating genes were predicted by software such as miRanda, TargetScan and PicTar. Quantitative real-time PCR was applied to confirm the expressions of miR-98, miR-130b and miR-127. Results Mean pulmonary arterial pressure (mPAP), percentage of pulmonary artery media thickness (MT%) and right ventricular hypertrophy index (RVHI) were significantly higher in the shunt group than in the control group (P<0.01). The miRNA microarray results showed that 37 microRNAs were differentially expressed in the shunt group including 30 upregulated miRNAs (miR-122, miR-130b and miR-146b, etc.) and 7 downregulated miRNAs (miR-382, miR-192 and miR-29c, etc.) as compared with those in the control group. The RT-PCR results were in agreement with the microarray results. Conclusion There are differential expressions of miRNAs in pulmonary tissues of rats with left-to-right shunt pulmonary hypertension. These differentially expressed miRNAs may be involved in the pulmonary vessel reconstruction of PAH.

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