中国寄生虫学与寄生虫病杂志
CHINESE JOURNAL OF PARASITOLOGY AND PARASITIC DISEASES
ISSN 1000-7423
CN 31-1248/R
主管：中华人民共和国国家卫生和计划生育委员会
主办：中华预防医学会 中国疾病预防控制中心寄生虫预防控制所

中国寄生虫学与寄生虫病杂志 » 2014, Vol. 32 » Issue (2) :101-105 DOI:

日本血吸虫感染小鼠肝脏Toll样受体2和6的表达变化

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Expression of Toll-like Receptors 2 and 6 in Mice Liver during Schistosoma japonicum Infection

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摘要 目的 探讨日本血吸虫感染小鼠肝内Toll样受体1（Toll-like receptor 1，TLR1）、TLR2和TLR6的表达变化。 方法 50只BALB/c小鼠经腹部皮肤贴片法感染日本血吸虫尾蚴(20±3)条，分别于感染后5、6、8和12周各剖杀10只，收集小鼠肝脏。另10只鼠感染后6周经灌胃法给予吡喹酮治疗[250 μg/（g·d）×3 d]，于感染后8周剖杀收集小鼠肝脏。同时设未感染吡喹酮治疗组和健康对照组，每组10只小鼠。以肝脏总RNA为模板逆转录PCR检测感染不同时期TLR1、TLR2、TLR6的mRNA水平。应用免疫组化法检测各时期小鼠肝TLR2和TLR6的蛋白水平。 结果 感染后5、6、8、12周，小鼠肝组织中的TLR1、TLR2、TLR6 mRNA转录水平均升高。感染后6周，吡喹酮治疗组肝组织中的TLR2、TLR6 mRNA水平较单纯感染组下降，而TLR1未见明显变化。免疫组织化学结果显示，感染后5、6、8、12周，小鼠肝组织中的TLR2、TLR6蛋白表达水平升高；感染后6周，吡喹酮治疗组肝组织中的TLR2蛋白水平较单纯感染组明显下降，TLR2阳性表达面积百分比分别为（8.8±3.1）%、（44.2±4.3）%，差异有统计学意义（P<0.01）。感染后6周，吡喹酮治疗组肝组织中的TLR6蛋白水平较单纯感染组略微下降，TLR6阳性表达面积百分比分别为（37.4±3.5）%、（48.4±5.4）%，差异有统计学意义（P<0.05）。 结论 小鼠感染日本血吸虫后肝组织中的TRL2、TLR6蛋白水平升高，但TLR6的作用比TLR2弱。

关键词： 日本血吸虫 感染 小鼠 肝脏 Toll样受体

Abstract: Objective To investigate the expression of hepatic Toll-like receptor 1（TLR1）, TLR2 and TLR6 on mice with Schistosoma japonicum infection. Methods Fifty BALB/c mice were infected with 20±3 S. japonicum cercariae through abdominal skin. At 6 weeks post-infection, the mice (n=10) in treatment group were administered intragastrically with praziquantel [250 μg/（g·d）] for 3 d. The livers of mice (n=10) were collected at pre-infection and 5, 6, 8 and 12 weeks post-infection, and then the mRNA expression levels of hepatic TLR1, TLR2, TLR6 gene were detected with reverse transfer PCR. Hepatic TLR2, TLR6 protein levels were detected by immunohistochemical staining. Results The mRNA levels of TLR1, TLR2， and TLR6 on 5, 6, 8 and 12 weeks post infection were significantly higher than that of uninfected mice. After praziquantel treatment, the mRNA level of TLR2 and TLR6 in murine liver of treatment group was lower than that of infection group, but the level of TLR1 mRNA had no obvious change. Furthermore, immunohistochemistry results revealed that the expression of TLR2 and TLR6 proteins in murine liver was up-regulated at 5, 6, 8 and 12 weeks post-infection. After praziquantel treatment, the percentage of TLR2 positive area in liver of infected mice without and with praziquantel treatment were （44.2±4.3）%, （8.8±3.1）%, respectively, and TLR2 protein level was considerably down-regulated（P<0.01）. The percentage of TLR6 positive area in liver of infected mice without and with praziquantel treatment was （48.4±5.4）%, （37.4±3.5）%, respectively, and TLR6 level decreased slightly（P<0.05）. Conclusion The expression level of TRL2 and TLR6 in murine liver increases after Schistosoma japonicum infection. While compared with TLR2, the role of TLR6 in this progress is a weaker one.