



N-乙酰半胱氨酸对日本血吸虫病小鼠肝组织中丙二醛和超氧化物歧化酶的影响

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Effect of N-acetylcysteine on Malondialdehyde and Superoxide Dismutase in Hepatic Tissue of Mice with Schistosomiasis japonica

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摘要 将90只小鼠随机分为健康对照组(18只)、感染对照组(18只)、长期服药组1(18只)、长期服药组2(18只)、短期服药组1(9只)和短期服药组2(9只),共6组。除正常对照组外,余各组小鼠经腹部皮肤感染日本血吸虫尾蚴30条。于感染的同时给长期服药组1和长期服药组2小鼠分别灌胃200 mg/kg、400 mg/kg N-乙酰半胱氨酸(N-acetylcysteine, NAC)(溶于0.2 ml蒸馏水),2次/d,共56 d;短期服药组1和短期服药组2小鼠在感染的第42天开始分别灌胃200 mg/kg、400 mg/kg NAC(溶于0.2 ml蒸馏水),2次/d,共14 d。正常对照组和感染对照组小鼠于感染同时灌胃0.2 ml生理盐水,2次/d,共56 d。正常对照组、感染对照组、长期服药组1和长期服药组2小鼠分别在感染后第42天和56天各处死9只;短期服药组1和短期服药组2于感染后第56天全部处死。观察各组小鼠肝组织中日本血吸虫单个虫卵肉芽肿个数和面积、血清和肝组织中丙二醛(MDA)含量和超氧化物歧化酶(SOD)的活性。结果表明,小鼠肝组织中炎症细胞浸润程度为“+”级单个虫卵肉芽肿个数以长期服药组1最少,平均为 3.04 ± 0.25 个,其次为短期服药组1,平均为 4.87 ± 0.19 个。长期服药组2小鼠肝组织中MDA的水平($9.2 \sim 9.3$ nmol/mg)显著低于长期服药组1($12.15 \sim 12.20$ nmol/mg)($P < 0.05$)。长期服药组1和短期服药组1小鼠肝组织SOD活性处在同一水平[$170.00 \sim 190.00$ U/(g·pro)]($P > 0.05$),长期服药组2小鼠第42天也处于这一水平($P > 0.05$),但第56天与短期服药组2在同一水平($P > 0.05$)。因此,NAC可减缓日本血吸虫病小鼠肝组织中单个虫卵肉芽肿形成,调节日本血吸虫病小鼠肝组织内MDA含量和SOD活性。

关键词: N-乙酰半胱氨酸 日本血吸虫 超氧化物歧化酶 丙二醛

Abstract: 90 mice were randomly divided into six groups: normal control, infected control, long-term drug use group 1 (L1), long-term drug use group 2 (L2), short-term drug use group 1 (S1) and short-term drug use group 2 (S2). Mice in all groups except those in the normal control group were infected with 30 cercariae of *Schistosoma japonicum* through abdominal skin. N-acetylcysteine (NAC) solution was orally given to mice in L1 and L2 groups, 200 mg/kg and 400 mg/kg, respectively, 2 times/d from the day of infection, while for S1 and S2 groups, 200 mg/kg and 400 mg/kg, respectively, 2 times/d from the 42th day after L2 infection. Mice in the groups of normal control, infected control, L1 and L2 were sacrificed either on day 42 or day 56 after infection, while those in S1 and S2 were sacrificed on day 56 after infection. Number and area of the single egg granuloma were measured with computer image analysis software. The concentration of malondialdehyde (MDA) and the activity of superoxide dismutase (SOD) in serum and hepatic tissue were detected. The number of “+” single egg granulomas in the liver of mice in L1 was the fewest by 3.04, followed by those in S1, by 4.87. The results indicated that the level of MDA in hepatic tissue of L2 ($9.2 \sim 9.3$ nmol/mg) was markedly lower than that of L1 ($12.15 \sim 12.20$ nmol/mg) ($P < 0.05$), and the level of SOD in hepatic tissue of L1 was $170.00 \sim 190.00$ U/(g·pro), similar to those of S1 and L2 at the 42th day ($P > 0.05$), but the level in L2 at the 56th day was close to that of S2 ($P > 0.05$). Hence, NAC may retard the formation of single egg granulomas in the liver of infected mice, and may regulate the concentration of MDA and the activity of SOD in the liver.

Keywords: N-acetylcysteine; *Schistosoma japonicum*; Superoxide dismutase; Malondialdehyde

引用本文:

范志刚, 李凯杰, 张玲敏. N-乙酰半胱氨酸对日本血吸虫病小鼠肝组织中丙二醛和超氧化物歧化酶的影响[J] 中国寄生虫学与寄生虫病杂志, 2011, V29(6): 457-460

FAN Zhi-Gang, LI Kai-Jie, ZHANG Ling-Min. Effect of N-acetylcysteine on Malondialdehyde and Superoxide Dismutase in Hepatic Tissue of Mice with Schistosomiasis japonica[J], 2011, V29(6): 457-460

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