

注射剂中小粒径不溶性微粒对炎症相关指标的影响

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【摘要】目的 探讨4种盐酸氨溴索注射剂中小粒径不溶性微粒在小鼠体内对相关炎症指标的影响。**方法** 比较4种制剂不同剂量下所含不溶性微粒静脉给药后对小鼠血清及肺组织中一氧化氮(NO)、丙二醛(MDA)、超氧化物歧化酶(SOD)水平的影响;比较不同制剂高剂量所含不溶性微粒对小鼠肺和尾静脉组织结构的影响。**结果** A制剂低剂量组对小鼠血清NO水平没有显著性影响($P>0.05$),而其他各组与对照组相比NO水平均明显降低,且呈一定剂量依赖关系;各制剂高剂量组小鼠血清MDA水平均明显高于对照组,尤其是D制剂高剂量组,差异均有统计学意义(均 $P<0.05$);各组中除A制剂和B制剂低剂量组外,其余制剂组小鼠血清SOD水平均明显低于对照组,差异均有统计学意义(均 $P<0.05$);B、C制剂高剂量组和D制剂低高剂量组小鼠肺组织中MDA水平明显高于对照组,差异均有统计学意义(均 $P<0.05$);D制剂高、低剂量组小鼠肺组织中SOD水平均明显低于对照组,差异均有统计学意义(均 $P<0.05$),而其他各组与对照组相比差异均无统计学意义(均 $P>0.05$)。**结论** 盐酸氨溴索注射剂中小粒径不溶性微粒对炎症相关指标有不同程度的影响。

【关键词】 盐酸氨溴索;注射剂;不溶性微粒;炎症;质量评价

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The effect of the small size particle matters on the related indexes of inflammation

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【Abstract】 Objective To evaluate the effect of the small size particular matter from four kinds of ambroxol hydrochloride injections on mice inflammatory index. **Methods** Comparison of 4 different dosage under water insoluble particles after intravenous administration of nitric oxide in serum and lung tissue in mice(NO), malondialdehyde (MDA), superoxide dismutase (SOD) levels of influence; comparison of different preparations of high dose containing insoluble particles on lung tissue and the effect of tail vein structure in mice. **Results** Preparation of A low dose group has no significant influence on serum NO level($P>0.05$), while other groups compared with the control group NO level was significantly reduced, and in a dose-dependent manner; the preparation of high dose group serum MDA levels were significantly higher than the control group, especially the preparation of D high dose group. The differences were statistically significant($P<0.05$); each group except A preparation and formulation of B low dose group, the preparation group serum SOD levels were significantly lower than the control group, the differences were statistically significant($P<0.05$); B, C preparation in high dose group and low dose group D preparation of mouse lung in the level of MDA was significantly higher than the control group, the differences were statistically significant($P<0.05$); the level of SOD D preparation of high and low dose of lung tissue in mice were significantly lower than the control group, the differences were statistically significant($P<0.05$). There was no significant difference between the other groups and the control group($P>0.05$). **Conclusion** The small diameter particular matter of ambroxol hydrochloride injections had different effects on the related indexes of inflammation.

【Key words】 Ambroxol hydrochloride; Injections; Particular matter; Inflammation; Quality evaluation

静脉注射液中不溶性微粒可使患者出现严重不良反应,近年来已逐渐引起医疗人员的关注,如不溶性微粒可造成局部组织缺血、严重肺功能障碍甚至病死^[1]。目前,包括中国在内各国药典对注射剂中控制的不溶性微粒是 $>10\mu\text{m}$ 和 $>25\mu\text{m}$ 两种粒径,

对于小于 $10\mu\text{m}$ 的不溶性微粒没有控制要求^[2]。在前期研究中已报道了注射剂中存在数量庞大的小粒径不溶性微粒(平均粒径为 $1\mu\text{m}$ 左右),并且粒子数在同一品种不同上市制剂之间存在明显差异性^[3]。

目前,由于缺乏标准的体内检测方法及伦理方

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