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论著

多种药物对急性羰基镍中毒大鼠肺组织和细胞损伤的治疗作用

刘 静[1], 王秋英[2], 陈 琼[3], 吴喜江[2], 闫铭锋[1], 宣小强[2], 程 宁[1,4]

（1. 兰州大学基础医学院医学实验中心, 甘肃 兰州 730000; 2. 金川集团有限公司职工医院, 甘肃 金昌 737103; 3. 兰州大学公共卫生学院流行病与卫生统计学研究所, 甘肃 兰州 730000; 4. 甘肃省新药临床前研究重点实验室, 甘肃 兰州 730000）

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摘要 目的 评价多种药物对急性羰基镍中毒大鼠肺细胞DNA损伤的治疗作用以及形态学变化。方法 SD大鼠静态吸入羰基镍250 mg·m^{-3}染毒30 min，分别在4 h和30 h后ip给予甲泼尼龙、扎西他滨(DDC)、亚硒酸钠、参附回阳汤和甲泼尼龙+DDC。在3 d和7 d后取肺细胞，单细胞凝胶电泳实验检测肺细胞DNA损伤，并通过光学显微镜和透视电镜观察大鼠肺肺组织病理变化和细胞超微结构改变。结果 与染毒对照组比较，甲泼尼龙、DDC、亚硒酸钠、参附回阳汤及甲泼尼龙+DDC对急性羰基镍中毒后大鼠肺细胞DNA损伤均有明显修复作用（P<0.05），肺组织渗出性改变明显减轻，线粒体损伤明显修复。与正常对照组比较，甲泼尼龙和甲泼尼龙+DDC治疗后DNA损伤和线粒体等细胞器损伤修复已接近正常水平，且4 h给药各组的治疗作用好于30 h给药（P<0.05）。结论 甲泼尼龙和甲泼尼龙+DDC组对急性羰基镍中毒后大鼠肺组织细胞损伤有明显修复作用，早期治疗效果明显优于晚期。

关键词 羰基镍 DNA损伤 甲泼尼龙 扎西他滨 亚硒酸钠 参附回阳汤

分类号 R994.3

Therapeutic effect of drugs on damage of tissues and cells in rats with acute carbonyl nickel poisoning

LIU Jing[1], WANG Qiu-ying[2], CHEN Qiong[3], WU Xi-jang[2], YAN Ming-feng[1], XUAN Xiao-qiang[2], CHENG Ning[1,4]

(1. Laboratory Center for Medical Science, School of Basic Mediciae, Lanzhou University, Lanzhou 730000, China; 2. Workers' Hospital, Jinchuan Group Ltd. Jinchang 737103, China; 3. Institute of Epidemiology and Health Statistics, School of Public Health, Lanzhou University, Lanzhou 730000, China; 4. Gansu Province Key Laboratory of Drugs Pre-clinical Studies, Lanzhou University, Lanzhou 730000, China)

Abstract

OBJECTIVE To assess the treatment efficacy and morphological changes of screening drugs on DNA damage in rat lung cells affected by acute carbonyl nickel poisoning. **METHODS** SD rats passively inhaled carbonyl nickel 250 mg·m^{-3} for 30 min, separated into prednisolone, sodium diethyl dithiocarbamate(DDC), sodium selenite, Shenfuhuiyangtang or methylprednisolone combined with DDC at 4 or 30 h after exposure. Lung cells were examined by single cell gel electrophoresis (SCGE) 3 and 7 d after exposure to examine treatment efficacy for lung cell DNA damage, pathological changes in lung tissue and changes in lung cell ultra microstructure. **RESULTS** Compared to carbonyl nickel group, methylprednisolone, DDC, sodium selenite, Shenfuhuiyangtang and methylprednisolone combined with DDC exhibited therapeutic effects for rat lung cells exposed to acute carbonyl nickel poisoning (P<0.05), with significantly reduced lung tissue inflammation and restoration of damaged mitochondria. Compared to the control group, repair of damage to DNA, mitochondria and other organelles by methylprednisolone and methylprednisolone plus DDC approached pre-exposure levels. Treatment efficacy was much better at 4 h after exposure than after 30 h (P<0.05). **CONCLUSION** Methylprednisolone and methylprednisolone combined with DDC exhibit significant restorative effects for rat lung tissue cells affected by acute carbonyl nickel poisoning, with earlier treatment more effective than later treatment.

Key words nickel carbonyl DNA damage methylprednisolone zalcitabine sodium selenite Shenfuhuiyang decoction

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通讯作者 程 宁 hengn@lzu.edu.cn