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孙 涛 马秀岩 张倩茹 赵 红 陈学新

首都医科大学附属北京天坛医院神经外科，北京，100076

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摘要：

摘要 目的：探讨高压氧（HBO）和SB203580联合应用对大鼠脑缺血再灌注紧密连接蛋白claudin-1的表达及血脑屏障的通透性影响。方法:雄性Wistar大鼠，随机分成假手术组(sham)、脑缺血再灌注组(IR)、HBO+脑缺血再灌注组(HBO+IR)、脑缺血再灌注组+SB203580 (IR+SB203580)、HBO+脑缺血再灌注+SB203580组 (IR+HBO+SB203580)。复制局灶性脑缺血再灌注模型，IR+SB203580组和IR+HBO+SB20358组于脑缺血再灌注前30min经侧脑室注射100μl P38MAPK信号传导通路抑制剂SB203580，HBO+IR组与IR+HBO+SB203580组并于再灌注期间行0.25MPa(2.5ATA) HBO治疗5次，在处死动物前1h经尾静脉注射2%伊文思兰（EB），采用EB法检测缺血再灌注后血脑屏障通透性的变化。应用免疫组织化学的方法和Western blot法分别观察claudin-1蛋白缺血再灌注72h后脑组织中的分布及claudin-1蛋白的表达水平的变化。结果:Claudin-1的蛋白表达与sham组相比于再灌注后72h表达显著降低（P＜0.01），同时伴有脑组织EB的含量显著增高（P＜0.01）。HBO+IR组与IR+ SB203580组较IR组脑组织claudin-1蛋白表达水平明显增加（P＜0.01，P＜0.05），脑组织EB的含量显著降低（P＜0.01）。IR+HBO+SB203580组相比脑组织中claudin-1蛋白表达与IR+HBO组、IR+SB203580较比显著增加（P＜0.01），脑组织EB的含量显著降低（P＜0.01）。结论:高压氧从蛋白水平可明显增加脑缺血再灌注脑组织中紧密连接相关蛋白claudin-1的蛋白表达，从而降低血脑屏障通透性；高压氧与SB203580二者具有协同作用。

关键词：高压氧 血脑屏障 脑缺血再灌注 claudin-1 SB203580 大鼠

Synergic effects of hyperbaric oxygen and SB203580 on expression of claudin-1 in brain tissues and blood brain barrier permeability after cerebral ischemia-reperfusion in rat

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Beijing Tiantan Hospital Affiliated to Capital Medical University, Beijing, 100076

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Abstract:

Abstract Objective: To investigate the effects of hyperbaric oxygen (HBO) and SB203580 on expressions of claudin-1 in brain tissues and blood brain barrier (BBB) permeability after cerebral ischemia-reperfusion. Method: Male Wistar mice were randomly assigned into sham, ischemia-reperfusion (IR), IR+HBO, IR+SB203580, IR+HBO+SB203580 groups. After cerebral ischemia-reperfusion models were established, 0.25MPa (ATA) HBO were applied 5 times during the reperfusion period, and 2% Evans blue (EB) was injected into tail veins 1h before animals were executed. Expressions of claudin-1 and the contents of EB were determined by immunohistochemistry, Western blot, and spectrophotometer, respectively. Result: In IR group, the EB contents in brain tissue increased successively compared with sham group (P＜0.01). While the expressions of claudin-1 decreased significantly consecutively in IR group, The protein expressions of claudin-1 increased significantly and contents of EB decreased significantly in IR+HBO group and IR+SB203580 group compared with IR group (P＜0.01, P＜0.05). The protein expressions of claudin-1 in IR+HBO+SB203580 group increased as compared with IR+HBO group (P＜0.01) and IR+SB203580 group(P＜0.01). Conclusion: HBO intervention can decrease the permeability of BBB via boosting the protein expressions of claudin-1. HBO and SB203580 have synergic effect.

Keywords:hyperbaric oxygen blood brain-barrier ischemia-reperfusion SB203580 rat

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