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高压氧对实验兔脑血管前、后循环超微结构的影响*

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摘要：

摘要目的：观察高压氧（HBO）作用下及停用2d后，实验兔颈内动脉和基底动脉血管壁超微结构的变化。探讨高压氧作用下前循环收缩，后循环扩张的可能机制。方法：30只实验兔随机分为实验组、对照组和HBO+休息2d组，实验组暴露于2.2 ATA HBO下60min，连续3d，对照组正常饲养，HBO+休息2d组同实验组经HBO处理3d后正常饲养2d。电镜下分别观察3组实验兔颈内动脉和基底动脉超微结构的变化。结果：实验组颈内动脉与对照组比较，其血管壁内弹力膜疏松，脂质空泡形成，内皮细胞及细胞器呈轻度变性；基底动脉实验组与对照组比较，其超微结构变化不明显。HBO+休息2d组基底动脉和颈内动脉超微结构与对照组比较，基本恢复正常。结论：HBO作用下颈内动脉和基底动脉内膜的形态学改变，提示HBO可能影响了线粒体内氧化磷酸化过程，从而出现脑组织供能不足，进而启动脑血管自动调节机制使前循环血管收缩，而供应脑干的后循环血管扩张，以提供充足的血供维持正常的物质代谢。在2.2 ATA HBO作用下，对脑血管壁超微结构造成的轻度损伤是暂时的、可逆的。

关键词：高压氧 颈内动脉 基底动脉 超微结构

Effects of hyperbaric oxygen on ultrastructures of cerebrovascular anterior and posterior circulation in rabbits

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Fund Project:

Abstract:

Abstract Objective:To investigate the changes of ultrastructures of internal carotid artery(ICA) and basal artery(BA) after hyperbaric oxygen(HBO) and rest for 2d after HBO. Methord: A total of 30 rabbits were randomly divided into three groups: trial group, control group and HBO+rest 2d group.The rabbits of trial group were exposed to HBO at 2.2 ATA for 60min with 3d. The rabbits of control group were fed normally.The rabbits of HBO+rest 2d group were exposed to HBO at 2.2 ATA for 60min with 3d and then fed normally for 2d. The ultrastructures of ICA and BA of rabbits in three groups were examined with electron microscope. Result:In trial group, internal elastic lumina of ICA loosened and lipid vacuoles formed. endothelial cells and organelles degenerated slightly. Ultrastructures of BA did not change obviously. Compared to control group, ultrastructures of BA and ICA returned to basal level in HBO+rest 2d group. Conclusion:The morphologic changes of ICA and BA after HBO showed that HBO could influence mitochondrial oxidative phosphorylation.The deficiency of cerebral energy would turned with cerebrovascular self-regulating mechanism.The constriction of anterior circulation and dilatation of posterior circulation could supply ample blood and normal substance metabolism. The effects of HBO at 2.2 ATA on ultrastructures and ET-1, eNOS of ICA and BA were temporary and reversible in this study.

Keywords:hyperbaric oxygen internal carotid artery basal artery ultrastructure