of P3 potential were determined with auditory addball stimulation in different time-phase after injury. The hippocampal content of Glu, GABA, Asp and Tau were measured with a Beckman-6300 amino acid analysis system. **Results**: Hippocampal Glu content was decreased gradually after injury and showed a negative correlation with the prolongation of the latency of P3a and P3b. The content of GABA was decreased and was in a positive correlation with the depression of P3 amplitude. The hippocampal Asp and Tau content showed no significant changes. **Conclusion**: The decrease of hippocampal Glu can prolong the latency of P3a and P3b and low GABA content is able to lower P3 amplitude after septal lesions.

Key words P3 potential; hippocampus; septal lesion; Glu; GABA

高压氧综合治疗小儿外伤性脑梗塞 4例

Treatment of 4 cases of traumatic cerebral infarction in children by hyperbaric oxygen combined therapy

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作者在 1996年 7月至 1998年 7月间收治小儿外伤性脑梗塞 4例,给予药物与高压氧综合治疗,取得了满意疗效,现介绍如下。

1 临床资料

1.1 病例情况

本组 4例,均为男性,3例 2岁以内,1例 9岁。发病前均有明确的头部外伤史(跌伤 3例、床上坠落 1例)。伤后无明显意识障碍,3例婴幼儿有哭闹呕吐,但无明显颅内压升高表现,全部患儿均于伤后 12 h内出现一侧肢体偏瘫(肌力I ~ III级),3例合并同侧中枢性面瘫,1例合并构音障碍,但痛、触觉存在,无全身或局灶性癫痫发作。

1.2 头颅 CT表现

发现低密度影均在受伤 24 h以后,1例受伤当天偏瘫症状出现后行此检查未见异常,第 3天复查才发现症灶。部位:左基底节区 3例,右基底节区 1例,症灶最小 0.5 cm× 0.8 cm,最大 1 cm× 2 cm× 2 cm,1例合并左额叶挫伤。

1.3 治疗措施

均在伤后 5 d内开始高压氧治疗,治疗方案随年龄而异,治疗期间均服用抗氧化剂维生素 C,3例婴幼儿每次进舱前予 10%水合氯醛(0.5 ml/kg)口服,使患儿入睡,配合治疗。同时给予思泰、胞二硷胆硷、能量合剂、脑活素、氢化麦角硷、低分子右旋糖苷或血塞通等药物治疗,及功能锻炼,2例行患肢针灸。

1.4 结果

4例均临床痊愈,未残留神经系统后遗症,1例 2周内、3例 5周内恢复,随访至今未见反复。典型病例如下。

例 1:男,1岁 2个月。从床上坠落,头部着地,渐有右侧肢体活动障碍,第 2日当地医院头颅 CT示"左侧丘脑、内囊区 1 cm× 2 cm× 2 cm低密度影",对症治疗。第 4日入我科。查体:神志清楚,右上、下肢肌力II 级,双侧巴氏征(+),立即给予思泰、脑组织注射液等药物与高压氧治疗[多人舱,面罩主动给氧,压力 1.6 ATA,加压 20 min,吸氧 30 min× 2(5 min),减压 20 min,每日 1次,10次为 1疗程],2疗程后右上、下肢肌力基本正常,手持物稳,可独站,牵手可行走,1个月后痊愈出院。

例 2:男,9岁。在家玩水时后仰滑倒,无昏迷、呕吐,自己更换衣服后渐有右上、下肢无力,不能持物、行走,语言含糊不清,当晚入当地医院,34 h后头颅 CT示左基底节 0.5 cm× 0.8 cm低密度影、左额叶挫伤,对症治疗 3 d,症状无变化,第 4日入我科。查体:神志清楚,反应理解力可,语言含糊不清,右侧中枢性面瘫,右上、下肢肌力III级,右侧巴氏征(+),立即给予血塞通、胞二硷胆硷等药物与高压氧治疗[多人舱,面罩被动吸氧,压力 2.0 ATA,吸氧 40 min× 2(5 min),加减压各 20 min,每日 1次],10次治疗后,语言清楚,面瘫征消失,右上、下肢肌力接近正常,行动基本自如,返家上学。

2 讨论

外伤性脑梗塞发病率极低,发病机理尚未完全明了,易被误诊为脑挫伤、烟雾病。本病好发于基底节区,是由于供应该区域的深穿支小动脉从 Willis环发出后与颅底呈垂直方向走行,为终末支,且少有吻合,头部外伤时,颅内组织的相对运动,使该处血管扭曲、牵拉、移位,造成血管内膜损伤,继发血栓形成,产生缺血性改变[1]。小儿 Willis环及其穿通支发育尚不完善,加之小儿颈部肌肉发育较头颅相对迟缓,其支撑和保护头颅的作用相对较差,易受外力作用发生血管痉挛、甚至闭塞而引起基底节区的梗塞[2]。CT扫描是诊断本病的有力佐证,CT表现常迟于临床症状体征的出现,1次阴性并不能绝对除外腔隙梗塞,应注意复查。

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An experimental study of plasma disinfection with short wave ultraviolet rays and cross-linked starch iodine

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Abstract Objective: To construct an effective and practical disinfector for plasma disinfection with short wave ultraviolet rays (UVC) and cross-linked starch iodine (CSI). Methods: A disinfector was designed and constructed. Sindbis virus (SV) was used to infect the blood cells. The infected plasma was treated with UVC and CSI. In order to determine the efficacy of disinfection and the viability of the virus, the changes of the IgG activity in the treated plasma was measured with immunochemistry technique. Results: After the infected plasma was irradiated with 9 860 J/m^2 UVC, the plasma flowed through a column of CSI. The longer the infected plasma stayed in the CSI column, the lower the titration concentration of SV in the plasma. When the infected plasma stayed in the CSI column for 120 min, the viability of SV was reduced to a degree of log 6.78. Simultaneously, no significant change of the molecular integrity and activity of IgG was found. Conclusion: UVC and CSI could effectively inactivation SV without affecting the antibody activity in the treated plasma.

Key words UVC; iodine complex; inactivation of virus; plasma

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目前国内高压氧治疗小儿外伤性脑梗塞的报道极少[3],文献报道结果与作者的观察结果表明,高压氧对促进本病的早日康复具有独到之处,表现在两个方面:① 缩短病程,本组 4例均在 5周内恢复健康,最快 2周,而既往报道[1,2]单纯药物治疗,痊愈一般需 4周到 6月;② 恢复彻底,后遗症发生率低,本组 4例无 1例残留后遗症,既往单纯药物治疗时,少数病人遗留神经损害表现。高压氧治疗机制为:提高血氧含量与氧张力;增加血氧弥散距离;刺激病灶区域内毛细血管新生,促进侧支循环建立;减轻脑水肿,有利于改善局部缺氧状态,使濒死的脑细胞重新恢复正常功能。

采用高压氧治疗时,应注意以下问题:① 必须使患儿配合治疗,尽量采用纯氧舱、婴儿氧箱,只具备多人舱、面罩吸氧条件时,应予主动供氧;进舱前根据患儿情况适当使用镇静剂。② 文献报道高压氧可使体内自由基增多,导致神经元等结构损伤,损伤程度与高压氧压力、吸氧时间、疗程呈正相关[4,5],缺乏维生素 E饮食饲养的大鼠经高压氧处置后,视网膜电流图 a波、b波消失,中心视网膜的外核层厚度显著变薄[6]。因此,应根据患儿年龄选择适宜的压力、吸氧时间与疗程,高压氧治疗期间适当使用抗氧化剂(维生素 E、C等)。

关键词 高压氧;小儿外伤;脑梗塞
中图法分类号 R726.5

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