

高压氧辅助治疗新型冠状病毒肺炎的介入时机及其临床疗效

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【摘要】目的:探讨高压氧辅助治疗新型冠状病毒肺炎(COVID-19)的临床疗效及其不同介入时机对疗效的影响。**方法:**回顾性分析湖北医药学院附属东风医院2020年1~3月收治的符合《新型冠状病毒感染的肺炎诊疗方案(试行第五版)》诊断标准的患者88例,按是否进行高压氧治疗分为常规治疗组(50例)及高压氧辅助治疗组(38例),比较两组患者治疗后在核酸转阴时间、CT病灶吸收好转时间、淋巴细胞恢复正常时间及住院时间等方面的差异。同时将高压氧辅助治疗的COVID-19(普通型)患者33例按介入时机分为早期组(入院1~10 d)15例、晚期组(入院后10 d)18例,比较两组患者间在住院时间上的差异。**结果:**高压氧辅助治疗组的核酸转阴时间、CT病灶吸收好转时间、淋巴细胞恢复正常时间、住院时间均短于常规治疗组,介入高压氧治疗早期组住院时间明显优于晚期组,差异均有统计学意义($P<0.05$)。**结论:**在常规治疗的基础上辅以高压氧治疗可以加快COVID-19患者核酸转阴、CT病灶吸收及淋巴细胞恢复时间,缩短住院时间,并且高压氧介入时间越早住院时间越短。

【关键词】新型冠状病毒肺炎;高压氧治疗;介入时机;住院时间

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Timing of intervention and therapeutic efficacy of adjuvant hyperbaric oxygen therapy against COVID-19

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Abstract: Objective To investigate the therapeutic efficacy of adjuvant hyperbaric oxygen therapy (HBO) against COVID-19 and the effects of timing of intervention on the efficacy. **Methods** The clinical information of 88 patients who met the criteria for COVID-19 protocol (the fifth trial edition) and were treated in Affiliated Dongfeng Hospital, Hubei University of Medicine from January to March in 2020 were studied retrospectively. A according to treatment methods, the patients were divided into conventional treatment group ($n=50$) and adjuvant HBO group ($n=38$). The differences in the indexes including the time of negative transformation of nucleic acid, the time of CT improvement, the time of lymphocyte normalization and hospital stay between two groups were compared. Meanwhile, 33 patients with ordinary type of COVID-19 in adjuvant HBO group were further divided into early phase group (1-10 days after admission to hospital, $n=15$) and late phase group (>10 days after admission to hospital, $n=18$ patients) to compare the differences in hospital stays. **Results** Compared with those in conventional treatment group, the patients in adjuvant HBO group achieved the negative transformation of nucleic acid, CT improvement and lymphocyte normalization earlier, and had a shorter hospital stay in adjuvant HBO group was shorter than that in conventional treatment group. Moreover, the hospital stay in early phase group was shorter than that in late phase group, with statistical differences ($P<0.05$). **Conclusion** Adjuvant HBO plus conventional treatment can accelerate the time of negative transformation of nucleic acid, CT improvement, lymphocyte normalization, and shorten hospital stays, and the earlier HBO is adopted, the shorter the hospital stay is.

Keywords: COVID-19; adjuvant hyperbaric oxygen; timing of intervention; hospital stay

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前言

新型冠状病毒肺炎 (Corona Virus Disease 2019, COVID-19)已造成全球 300 多万人确诊感染,20 多万人死亡,对生命健康、国家经济造成了严重威胁和影响。SARS-CoV-2 病毒首先攻击患者的呼吸系统^[1],使血氧饱和度下降,危重症患者需要机械通气纠正缺氧。尸检报告显示,肺脏出现早期弥漫性肺泡损伤和纤维性肺炎^[2],支气管及肺泡内可见大量黏稠的分泌物^[3],导致气体交换受阻,患者持续缺氧。高压氧是在高于当地大气压力的环境下吸入纯氧的方法,具有无创、稳定、技术成熟等特点,在临床缺氧疾患中得到了广泛应用。本研究通过回顾性分析,对高压氧辅助治疗 COVID-19 患者的疗效及介入时机进行初步的探究。

1 对象与方法

1.1 一般对象

回顾性分析 2020 年 1~3 月期间在湖北医药学院附属东风医院就诊的 COVID-19 患者 88 例,按是否进行高压氧治疗分成常规治疗组(50 例)及高压氧辅助治疗组(38 例),患者年龄、性别、分型差异无统计学意义($P>0.05$),具有可比性,详见表 1。

表 1 各组一般对象资料比较

Tab.1 Comparison of general information between different groups

组别	男/女	普通型/重型	年龄/岁
常规治疗组	27/23	44/6	57.85±13.47
高压氧辅助治疗组	23/15	33/5	59.05±14.21
χ^2/t 值	0.375	0.026	2.970
P 值	0.540	0.871	0.194

1.2 方法

常规治疗组给予《新型冠状病毒感染的肺炎诊疗方案(试行第五版)》^[4]推荐的治疗方法,高压氧辅助治疗组在常规治疗的基础上加予高压氧辅助治疗。高压氧辅助治疗方案:治疗压力 0.20 MPa,稳压吸氧 60 min,中间休息 5 min。升压时长 20 min,减压时长 15 min,治疗中全程吸氧,1 次/d。每个患者均治疗 5 次。同时将高压氧辅助治疗的 COVID-19(普通型)患者 33 例按介入时机分为早期组(入院 1~10 d) 15 例、晚期组(入院后 10 d)18 例。

1.3 观察指标

统计各组患者的核酸转阴时间、CT 病灶吸收好转时间、淋巴细胞恢复正常时间及住院时间等,分析各组间差异是否有统计学意义。

1.4 统计学方法

采用 SPSS 21.0 软件分析处理数据,各组满足正态分布的定量资料以均数±标准差表示,样本均数比较采用独立样本 t 检验;不满足正态分布的定量资料以中位数及其四分位数间距 $M(P_{25}, P_{75})$ 表示,样本均数比较采用 Mann-Whitney U 检验;定性资料样本均数比较使用卡方检验, $P<0.05$ 为差异有统计学意义。

2 结果

2.1 临床疗效比较

高压氧辅助治疗组的核酸转阴时间、CT 病灶吸收好转时间、淋巴细胞恢复正常时间、住院时间均短于常规治疗组,差异均有统计学意义($P<0.05$),详见表 2。

2.2 早、晚期治疗组住院时间比较

高压氧治疗早期组住院时间明显优于晚期组,差异均有统计学意义($P<0.05$),详见表 3。

表 2 高压氧辅助治疗与常规组比较

Tab.2 Comparison between adjuvant HBO group and conventional treatment group

组别	核酸转阴时间/d	CT 大部吸收时间/d	淋巴细胞恢复时间/d	住院时间/d
常规治疗组	15(12, 19)	17(12, 22)	15(9, 19)	24(17, 34)
高压氧组	13(11, 18)	15(12, 19)	13(8, 20)	22(15, 32)
Z 值	-2.651	-2.327	-2.166	-2.185
P 值	0.008	0.020	0.030	0.029

3 讨论

COVID-19 患者尸检结果提示 SARS-CoV-2 主要引起以深部气道和肺泡损伤为特点的渗出性炎症

反应^[3,5]。COVID-19 患者呼吸功能障碍以肺泡换气功能障碍为主,低氧血症最为突出^[6-8]。怎样及时快速地纠正缺氧所导致的继发多器官损伤和功能障碍对改善患者预后具有重要意义。

表3 高压氧(普通型)早期治疗组与晚期治疗组比较
Tab.3 Comparison between early phase group and late phase group in adjuvant HBO for ordinary type of COVID-19

组别	n	住院时间/d
早期高压氧组	15	15(14, 18)
晚期高压氧组	18	27(21, 33)
Z值	-	-19.592
P值	-	0.000

高压下吸纯氧,可使患者的缺氧状态变为富氧状态,在3ATA下吸氧,体液中的物理溶解氧量将提高20倍^[9]。高压氧治疗可在短时间内迅速提高肺泡氧分压,使氧气的弥散率大大增加,从而提高了血氧含量和血氧张力,可迅速减轻或纠正机体的严重缺氧状态,并使肺毛细血管的渗透性降低、渗出物减少,减轻肺水肿程度,从而减少了呼吸相关并发症的发生发展^[10-11]。

本研究是回顾性分析,结果表明在常规治疗的基础上加予高压氧辅助治疗可以加快COVID-19患者核酸转阴、CT病灶吸收及淋巴细胞恢复正常,这可能与避免组织缺氧、改善机体的免疫系统有关。这与陈锐勇等^[12]、仲小玲等^[13]研究一致,高压氧治疗阻止了缺氧的发展,可以降低机体应激水平和有利于恢复机体免疫系统功能,使淋巴细胞回升,从而提高病毒清除能力。评价早、晚期高压氧对COVID-19患者疗效时,因考虑到湖北医药学院附属东风医院开展高压氧治疗在2月份中旬,有部分病人做高压氧时入院治疗时间已经超过10 d,因此未对核酸转阴、淋巴细胞恢复等做分析,仅对住院时间做了统计学比较。发现早期行高压氧治疗,普通型患者住院时间明显缩短,患者缓解症状快,提示高压氧介入时间越早疗效越明显。

持续的缺氧是COVID-19由普通型转成重型的主要原因^[14-15],高压氧治疗为处于缺氧状态的组织细胞提供了充足氧供,有利于机体免疫功能、呼吸功能、炎症水平的恢复,从而促进病情好转。同时,我们也发现在COVID-19患者中,尤其是危重型及年老者,即便通过系统综合治疗,临床治愈,但是肺部阴影仍未完全吸收,患者可能会遗留肺功能方面的障碍,而高压氧治疗有利于受损的肺泡上皮修复,其对患者后期肺功能康复的影响值得进一步研究。

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