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双水平气道正压通气对 88 例重叠综合征患者的临床疗效 *

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摘要 目的:探讨双水平气道正压通气(BiPAP)治疗重叠综合征(OS)患者的临床疗效。**方法:**选取 2012 年 7 月-2014 年 2 月本院收治的 88 例诊断为重叠综合征的患者,随机分成实验组与对照组,对照组 43 例,给予常规药物治疗;实验组 45 例,在常规药物治疗的基础上辅以双水平气道正压通气治疗,对两组治疗前后的监测结果进行比较分析。**结果:**治疗后,实验组患者在不同时间点上 pH 和 PaO₂ 高于对照组,PaCO₂、呼吸暂停指数(AHI)、睡眠紊乱指数、最长呼吸暂停时间以及病死率和不良反应发生率均低于对照组,差异均有统计学意义(均 P<0.05)。**结论:**采用 BiPAP 治疗 OS 患者,能够有效降低患者病死率、减少不良反应发生率,并改善患者呼吸情况,提高睡眠质量。

关键词:双水平气道正压通气;重叠综合征;慢性阻塞性肺疾病;阻塞性睡眠呼吸暂停低通气综合征

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Clinical Effects of Biphase Positive Airway Pressure Ventilation on 88 Cases of Patients with Overlap Syndrome*

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ABSTRACT Objective: To study the clinical effect of Biphase positive airway pressure (BiPAP) on patients with overlap syndrome (OS). **Methods:** To select 88 patients with overlap syndrome who were treated in the hospital from July 2012 to February 2014 and randomly divide them into the control group (43 cases) and the experimental group (45 cases). Control group received conventional drug treatment and experimental group were treated with Biphase positive airway pressure on the basis of conventional drug therapy. The monitoring results of with the two groups were analyzed and compared before and after treatment. **Results:** After the treatment, pH and PaO₂ in experimental group at different time points were higher than those in control group. And the PaCO₂, AHI, sleep disturbance index, the longest time of apnea, the mortality and the incidence of adverse reaction were lower than those in control group with significant differences (all P<0.05). **Conclusion:** BiPAP therapy can effectively reduce the mortality and the incidence of adverse reaction, and improve the breathing and sleep quality in patients with overlap syndrome.

Key words: Biphase positive airway pressure(BiPAP); Overlap syndrome; Chronic obstructive pulmonary disease; Obstructive sleep apnea and hypopnea syndrome

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前言

重叠综合征(overlap syndrome, OS)是阻塞性睡眠呼吸暂停低通气综合征(obstructive sleep apnea-hypopnea syndrome, OSAHS)和慢性阻塞性肺疾病(chronic obstructive pulmonary disease, COPD)二者合并存在的一种疾病,临床观察发现,OS 患者较单一的 OSAHS 或 COPD 患者更易引起严重的低氧血症以及二氧化碳潴留,常导致患者发生严重的心肺疾病和呼吸

衰竭,死亡率较高^[1]。近年来,随着多导睡眠图(PSG)技术的不断发展,采用双水平气道正压通气法(BiPAP)取得的效果十分显著^[2,3]。本研究对我科收治的 88 例 OS 患者在常规治疗的基础上应用 BiPAP 进行治疗,取得显著性的效果,现报道如下。

1 对象与方法

1.1 研究对象

选择我科 2012 年 7 月至 2014 年 2 月收治的 88 例重叠综

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合征患者作为研究对象,所有病例均经病史、体检、胸部 X 线检查和肺功能检查而确诊,且符合中华医学会呼吸分会制定的 COPD 诊治指南的诊断标准^[4],多导睡眠检测图(PSG)符合 OS-AHS 的诊断标准^[5]。将 88 例患者随机分成实验组与对照组,对照组 43 例,其中男 32 例,女 11 例,年龄 42~75 岁,平均(57.6±3.5)岁,体质指数 21~29 kg/m²,平均(25.6±1.7)kg/m²,病程 1~5 年,平均(2.7±0.5)年;实验组(BiPAP 组)45 例,其中男 33 例,女 12 例,年龄 43~77 岁,平均(59.2±2.8)岁,体质指数 22~30 kg/m²,平均(25.8±1.9)kg/m²,病程 1~6 年,平均(2.8±0.7)年。所有入组患者均经医院伦理委员会同意,并签署知情同意书。两组患者在性别、年龄、体质指数、病程方面差异均无统计学意义(P>0.05),具有可比性。

1.2 研究方法

两组患者均实施常规的临床综合治疗措施,如给予抗感染、解痉平喘、纠正水电解质紊乱等,进行对症支持治疗。对照组采用鼻导管吸氧法进行治疗,而实验组在常规治疗的同时使用美国 ST-D 型双水平气道正压通气治疗(BiPAP)。具体操作方法为:根据患者鼻面结构不同选择合适的鼻面罩,保证不漏气,并予以面罩吸氧(氧流量控制在 3~6 L/min)。保持血氧饱和度大于或等于 90%为宜,均配有恒温湿化装置。选用工作模式 S/T,根据患者的治疗效果和耐受情况,吸气压(IPAP)由 8 cm H₂O(1 cm H₂O=0.098 kPa)逐渐增加到 20 cm H₂O,呼气压力控制在(EPAP)4~12 cm H₂O 之间,呼吸频率为 12~20 次/min,

注意监测血气分析。两组患者均连续治疗 7 d,每天治疗 4~16 h,其余时间为鼻导管吸氧。通气期间要及时清除患者气道分泌物,保持其呼吸道畅通。同时给予患者常规的心电监护以及行血氧饱和度监测,并于治疗前、治疗 24 h、48 h、72 h 分别行动脉血气分析以及 PSG 监测。

1.3 观察指标

观察治疗前后的动脉血气相关指标(包括 pH、血氧分压 PaO₂ 和二氧化碳分压 PaCO₂)、多导睡眠检测图(PSG)的变化(包括呼吸暂停指数 AHI、最长呼吸暂停时间、夜间最低血氧饱和度 SaO₂)、病死率以及发生不良反应的情况。

1.4 统计学方法

采用 SPSS17.0 统计软件进行相关分析,计量资料采用($\bar{x} \pm s$)表示,组间比较采用 t 检验;计数资料间的比较采用 χ^2 检验,以 P<0.05 为差异具有统计学意义。

2 结果

2.1 两组患者治疗前后动脉血气分析指标比较

两组患者在治疗前的相关动脉血气分析指标(pH、PaO₂ 和 PaCO₂)差异均无统计学意义(P>0.05)。治疗后两组患者在不同时间点上的动脉血气相关指标对比,各指标均有明显改善,差异均有统计学意义(均 P<0.05),且实验组 pH、PaO₂ 和 PaCO₂ 对比对照组差异显著。见表 1。

表 1 两组患者治疗前后不同时段动脉血气比较($\bar{x} \pm s$)

Table 1 Comparison of the arterial blood gas in different treatment periods between two groups($\bar{x} \pm s$)

组别 Groups	指标 Index	治疗前 Before treatment	治疗后 24 h After 24 h treatment	治疗后 48 h After 48 h treatment	治疗后 72 h After 72 h treatment
实验组(n=45) Experimental group	pH	7.21±0.02	7.35±0.05*	7.37±0.06*	7.41±0.05*
(n=45)	PaO ₂ (mmHg)	56.2±12.8	70.4±11.5*	79.6±10.8*	86.2±8.5*
	PaCO ₂ (mmHg)	78.8±8.3	67.6±7.8*	53.1±9.2*	45.8±7.2*
对照组(n=43) Control group(n=43)	pH	7.23±0.03	7.28±0.05	7.31±0.05	7.36±0.04
	PaO ₂ (mmHg)	56.5±13.6	60.3±13.1	68.7±11.5	76.8±8.7
	PaCO ₂ (mmHg)	78.2±8.9	72.5±8.1	63.9±9.6	54.5±8.1

注:与治疗前和对照组比较,*P<0.05。

Note: Compared with before treatment or control group, *P<0.05.

2.2 两组患者治疗后 PSG 监测指标比较

与对照组相比较,治疗后实验组的最长呼吸暂停时间(TL)、睡眠紊乱指数以及呼吸暂停指数(AL)显著降低(均 P<

0.05),各指标均有明显改善,而两组夜间 SpO₂ 对比差异无统计学意义(P>0.05)。见表 2。

表 2 两组患者治疗后 PSG 监测指标的比较($\bar{x} \pm s$)

Table 2 Comparison of PSG monitoring index after treatment between two groups($\bar{x} \pm s$)

组别 Groups	最长呼吸暂停时间(s) The longest apnea time(s)	呼吸暂停指数 Apnea index	睡眠紊乱指数 Sleep disturbance index	SpO ₂ (%)
实验组(n=45) Experimental group(n=45)	10.1±3.7*	3.8±0.5*	2.5±0.6*	82.3±4.2
对照组(n=43) Control group(n=43)	98.3±16.9	36.6±4.2	19.3±3.5	80.5±4.6

注:与对照组比较,*P<0.05。

Note: Compared with control group, *P<0.05.

2.3 两组病死率及不良反应发生率比较

实验组患者死亡 1 例(2.22%),对照组患者死亡 6 例(13.95%),实验组患者病死率低于对照组,差异有统计学意义($\chi^2=4.133, P=0.042 < 0.05$)。实验组患者有 2 例出现腹胀,5 例出现口鼻咽干燥(其中 2 例合并出现腹胀),不良反应发生率为 11.11%;对照组患者出现腹胀 7 例,口鼻咽干燥 9 例(其中合并 5 例出现腹胀),气胸 3 例,不良反应发生率为 32.56%。实验组患者不良反应发生率低于对照组,差异有统计学意义($\chi^2=5.974, P=0.015 < 0.05$)。

3 讨论

COPD 是一种破坏性的以不完全可逆的气流受限为特征的肺部疾病,长期患病会导致气道阻力升高、呼吸驱动增强,肺动态过度充气形成呼吸肌疲劳等,引起小气道病变;OSAHS 是由于睡眠时上气道塌陷引起的呼吸暂停和通气不足,伴有打鼾、睡眠结构紊乱、低氧血症等病症的一种疾病^[6]。而 OS 是 COPD 与 OSAHS 合并存在的疾病,导致更为严重的通气障碍,表现为持续严重的低氧血症、呼吸困难,并在短期内可发展为呼吸衰竭、肺动脉高压、心力衰竭等多脏器衰竭,甚至猝死,病情更加凶险,病死率也更高^[78]。COPD 和 OSAHS 都是临床常见多发病,二者合并发生的几率也很高,有研究表明约 30%~40% COPD 患者合并发生 OSAHS,10% OSAHS 患者合并发生 COPD^[9]。

因此,在对 COPD 患者进行治疗的过程中,应密切注意其是否有明显的睡眠低氧血症以确定其是否合并 OSAHS,便于进行正确的诊断和治疗^[10]。当下有创通气治疗能够有效治疗呼吸衰竭,但该方法需要进行气管插管或将气管切开,给患者带来身心上的痛苦,而且还可能引起多种并发症;而无创通气治疗尽管可免于气管插管,但有研究表明该治疗方法也未能取得较为满意的治疗效果^[11]。既要满足能够有效治疗 COPD 与 OSAHS 两种疾病,同时又能够避免气管插管或气管切开给患者带来的风险,目前双水平气道正压通气治疗(BiPAP)成为解决该问题的最理想方法。BiPAP 是一种操作简单且安全性较高的非侵入性通气手段,可以分别对吸气和呼气时相提供不同水平的正压无创通气,患者依从性高^[12,13]。BiPAP 呼吸功能在气道内吸气相和呼气相分别施加不同压力,恰当的吸气压力可克服气道阻力、增加肺泡通气,促进 CO₂ 有效排出,而合适的呼气压力可使上气道维持开放状态、改善氧合,排除肺泡内 CO₂^[14,15]。BiPAP 分别对呼气相和吸气相提供不同水平的压力,开放上、下呼吸道,灵活地调整气道正压增加通气量,因此 BiPAP 能有效地改善气体交换的通气状况,减少患者呼吸做功以及减轻呼吸肌疲劳^[16],有利于提高患者体内氧含量并排出 CO₂,同时改善其睡眠质量。

本研究在实施常规的临床综合治疗措施的基础上,应用双水平气道正压通气治疗方法治疗 OS 患者,结果发现,实验组患者治疗后 24h、48 h、72 h 动脉血气分析结果以及 PSG 指标改善均优于对照组($P < 0.05$)。可见,通过 BiPAP 呼吸机治疗不仅可以改善患者的血气分析,二氧化碳潴留得以改善,低氧血症有显著改善,而且也能明显改善患者的呼吸相关事件,使睡眠中最长呼吸暂停时间缩短,睡眠紊乱指数和睡眠呼吸暂停低

通气指数降低,这样短时间内纠正高碳酸血症、酸中毒以及呼吸衰竭,对改善患者的睡眠质量有着重要意义。国外研究表明,与常规通气模式相比,BiPAP 通气模式具有低气道压、血流动力学损害小的优点^[17]。应用 BiPAP 呼吸机治疗 OS 患者的临床疗效优于常规治疗,这与相关研究结果^[18-21]相一致。另外 BiPAP 通气的能充分发挥患者的自主呼吸,锻炼患者呼吸肌,减少镇静剂的用量,在一定程度上可以减少住院费用^[22]。本研究结果还显示,治疗后实验组病死率及不良反应发生率均低于对照组,提示 BiPAP 治疗可以有效缓解患者的不良反应症状,具有良好的疗效。

综上所述,采用双水平气道正压通气治疗重叠综合征患者,能够显著改善患者的呼吸情况,提高机体氧含量缓解低氧血症,减少二氧化碳蓄积,同时提高睡眠质量,有效降低病死率以及减少不良反应发生率,临床上可以进一步推广应用。

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