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双水平气道正压通气联合舒利迭对 COPD 合并呼吸衰竭患者呼吸衰竭症状、免疫功能及生活质量的影响 *

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摘要 目的:探讨双水平气道正压通气(Bi-PAP)联合舒利迭对慢性阻塞性肺疾病(COPD)合并 II 型呼吸衰竭患者呼吸衰竭症状、免疫功能以及生活质量的影响。**方法:**按照随机数字表法将 2012 年 6 月至 2016 年 12 月间我院收治的 157 例 COPD 合并 II 型呼吸衰竭患者分为观察组(n=79)和对照组(n=78),对照组患者在平喘、解痉、化痰、抗感染等常规治疗同时联合 Bi-PAP 治疗,观察组患者在对照组治疗方案的基础上给予舒利迭治疗。比较两组患者治疗前后呼吸衰竭症状、免疫功能以及生活质量改善情况。**结果:**观察组治疗后有效率为 89.87%(71/79),显著高于对照组的 73.08%(57/78)(P<0.05)。治疗后两组患者的呼吸、心率、动脉二氧化碳分压较治疗前降低,动脉氧分压较治疗前升高,且观察组患者呼吸、心率、动脉二氧化碳分压低于对照组,动脉氧分压高于对照组(均 P<0.05)。治疗后两组患者血清免疫球蛋白 M(IgM)、免疫球蛋白 G(IgG)以及免疫球蛋白 A(IgA)水平均较治疗前明显升高,且观察组患者治疗后的 IgM、IgA、IgG 水平高于对照组(均 P<0.05)。随着时间的推移,两组患者治疗后的圣·乔治医院呼吸问卷(SGRQ)评分逐渐降低,且观察组治疗后 3 个月、6 个月的 SGRQ 评分均低于对照组(均 P<0.05)。**结论:**Bi-PAP 联合舒利迭能明显改善 COPD 合并 II 型呼吸衰竭患者呼吸衰竭症状,提高机体免疫力和患者的生活质量,临床推广应用价值高。

关键词:双水平气道正压通气;舒利迭;慢性阻塞性肺疾病;II 型呼吸衰竭;免疫功能;生活质量

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Effect of Bi-Level Positive Airway Pressure Combined with Seretide on Immune Function, Quality of Life and Respiratory Failure Symptoms of Patients with COPD Complicated with Respiratory Failure*

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ABSTRACT Objective: To investigate effect of bi-level positive airway pressure combined with seretide on immune function, quality of life and respiratory failure symptoms of patients with COPD complicated with type II respiratory failure. **Methods:** 157 patients with COPD complicated with type II respiratory failure in our hospital from June 2012 to December 2016 were divided into observation group (n=79) and control group (n=78) according to the random number table method, the patients in the control group were treated with routine treatment such as relieving asthma, relieving spasm, resolving phlegm and anti infection, and combined with Bi-PAP treatment, the patients in the observation group were treated with seretide treatment on the basis of the treatment plan in the control group. Respiratory failure symptoms, immune function and quality of life were compared between the two groups before and after treatment. **Results:** The effective rate of the observation group after treatment was 89.87% (71/79), which was significantly higher than that of the control group 73.08% (57/78)(P<0.05). After treatment, the respiratory rate, heart rate, arterial partial pressure of carbon dioxide in the two groups were lower than before treatment, and the arterial partial pressure of oxygen was higher than before treatment, and the respiratory rate, heart rate and arterial partial pressure of carbon dioxide in the observation group were lower than those in the control group, and the arterial partial pressure of oxygen was higher than that of the control group (all P<0.05). After treatment, levels of serum immunoglobulin M (IgM),immunoglobulin G (IgG) and immunoglobulin A (IgA) of patients in two groups were significantly higher than those before treatment, and the levels of IgM, IgA and IgG in the observation group after treatment were higher than those in the control group (all P<0.05). Over time, the St.George Hospital Respiratory Questionnaire (SGRQ) score in the two groups after treatment was decreased gradually, and the SGRQ scores of the observation group at 3 months and 6 months after treatment were lower than that of the control group (all P<0.05). **Conclusion:** Bi-PAP combined with Seretide can significantly improve the symptoms of respiratory failure in patients with COPD complicated with type II respiratory failure, improve immune function and quality of life of patients, clinical application value is high.

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Key words: Bi-level positive airway pressure; Seretide; Chronic obstructive pulmonary disease; Type II respiratory failure; Immune function; Quality of life

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前言

慢性阻塞性肺疾病(Chronic obstructive pulmonary disease，COPD）是一种以肺功能进行性下降及持续性气流受限为主要特征的呼吸系统疾病,临床症状有气急、气喘、气促、胸闷,并伴有不同程度的呼吸困难[1]。COPD 病情迁延将发生通气和换气功能障碍,引发不同程度的缺氧和二氧化碳潴留,出现高碳酸血症及低氧血症，并最终导致呼吸衰竭,COPD 合并呼吸衰竭严重影响患者生命质量,严重者甚至会窒息死亡。临床对于用药物治疗无法阻止 COPD 合并呼吸衰竭病情发展的患者常辅以机械通气治疗,以改善患者通气情况。双水平气道正压通气(Bi-PAP)呼吸机是临床上应用广泛的一种通气装置,具有操作简便、迅速纠正二氧化碳潴留、明显改善患者肺部功能、延缓气管萎陷的优点[2]。沙美特罗替卡松粉吸入剂又称舒利迭,内含长效β2 受体激动剂以及第一代糖皮质激素，是呼吸内科常见的复合吸入制剂,具有松弛支气管平滑肌、降低炎症性反应等优点[3]。研究显示[4],舒利迭可显著改善 COPD 患者的临床症状,减少急性加重的次数。本研究采用 Bi-PAP 联合舒利迭治疗 COPD 合并 II 型呼吸衰竭患者,临床治疗效果显著。现做如下报告。

1 资料与方法

1.1 一般资料

选取 2012 年 6 月至 2016 年 12 月我院呼吸内科收治的 157 例 COPD 合并 II 型呼吸衰竭患者为研究对象，纳入标准：① 符合慢性阻塞性肺疾病诊治指南（2007 年修订版）中关于 COPD 以及 II 型呼吸衰竭的诊断标准[5];② 进入研究前的 2 个月内未接受糖皮质类激素药物治疗者;③ 无双水平气道正压通气禁忌症;④ 无舒利迭过敏史者;⑤ 患者及家属对本研究知情同意。排除标准:① 心脏功能不全者;② 肝、肾功能障碍者;③ 神经性疾病或者意识障碍者;④ 高血压、糖尿病等急慢性疾病患者;⑤ 炎症反应性疾病、类风湿性关节炎等可能影响本研究结果的疾病患者;⑥ 肺结核、肺癌等肺部疾病患者;⑦ 其它可能影响研究对象生活质量的疾病患者。按照随机数字表法将研究对象分为两组,观察组 79 例,男 49 例,女 30 例;年龄 60~78 岁,平均（69.45± 7.51）岁;COPD 病程 10~16 年，平均（11.72± 3.26)年;COPD 分级:III 级 57 例,Ⅳ级 22 例。对照组 78 例,男 53 例,女 25 例;年龄 61~83 岁,平均(71.28± 6.36)岁;COPD 病程 11~17 年,平均(11.55± 3.40)年;COPD 分级:III 级 55 例,Ⅳ级 23 例。两组患者的一般资料比较差异无统计学意义(P>0.05),可行组间比较。

1.2 方法

两组患者均给予吸氧、祛痰、解痉、平喘以及抗感染等常规治疗,对照组患者在常规治疗的基础上采用 BiPAP Vision 型无创呼吸机(美国伟康公司生产)经鼻面罩气道正压通气治疗:将 Bi-PAP 的初始吸气相压力设置为 6~8 cmH_2O，并根据患者的耐受程度以及病情需要逐渐调至 10~24 cmH_2O,初始的呼气相压力为 4~6 cmH_2O,并根据患者的血气分析指标以及血氧饱和度对其适当调整,但需保持血氧饱和度≥ 90%,将备用的呼吸频率设置在 12~16 次 /min，将呼吸机的氧气流量控制在 3~5 L/min。呼吸机治疗的时间＞8 小时 /d,撤机的标准为呼气末压在 8~12 mmHg 范围之间浮动,同时气道的峰压≤ 30 mmHg。观察组在对照组治疗方案的基础上联合沙美特罗替卡松粉吸入剂（生产公司：法国 Laboratoire GlaxoSmithKline，批号：20150324,规格:每泡内含 50 微克沙美特罗和 250 微克丙酸氟替卡松)吸入治疗,1 天 2 次,每次 1 吸,连续治疗 10 天。

1.3 评价指标

(1)对两组患者治疗后的的临床疗效进行评价[6]:① 有效:患者意识恢复,能够脱离呼吸机进行自主呼吸,患者体征和各项临床症状得到明显改善，血气指标控制在正常值范围内;② 无效:患者意识不清甚至昏迷,不能脱离呼吸机进行自主呼吸,患者体征和各项临床症状未得到改善,血气指标不在正常值范围内。(2)比较两组患者治疗前、治疗后 10 d 呼吸衰竭症状改善情况,包括呼吸、心率、动脉二氧化碳分压和动脉氧分压。(3)比较两组患者治疗前、治疗后 10 d 的免疫球蛋白 IgM、IgA、IgG。(4)采用圣·乔治医院呼吸问卷(SGRQ)[7]对两组患者治疗前、治疗后 10 d、3 个月、6 个月的生活质量进行评价,问卷主要对活动能力、呼吸症状以及疾病对生活造成的影响这三个部分进行评定,总分为 100 分,患者生活质量越差所得分数越高。

1.4 统计学处理

采用 SPSS19.0 进行统计分析,免疫功能指标、SGRQ 评分等计量资料采用($\bar{x}\pm s$)表示,采用 t 检验,COPD 分级、性别比例等计数资料采用率(%)表示,采用 x^2 检验,以 α=0.05 为检验标准。

2 结果

2.1 两组患者治疗后的临床疗效比较

治疗后观察组有效 71 例，无效 8 例，有效率为 89.87%(71/79),对照组有效 57 例,无效 21 例,有效率为 73.08%(57/78),观察组有效率显著高于对照组，差异有统计学意义(x^2=7.353,P=0.007)。

2.2 两组患者治疗前后呼吸衰竭指标比较

治疗前两组患者的呼吸、心率、动脉氧分压、动脉二氧化碳分压比较无统计学差异（P>0.05），治疗后 10d 两组患者的呼吸、心率、动脉二氧化碳分压均较治疗前降低,动脉氧分压较治疗前升高,且观察组患者呼吸、心率、动脉二氧化碳分压低于对照组,动脉氧分压高于对照组,差异有统计学意义(P<0.05)。见表 1。

2.3 两组患者治疗前后免疫功能指标比较

治疗前两组患者的 IgM、IgA、IgG 比较无统计学差异(P>0.

05），治疗后 10d 两组患者 IgM、IgA、IgG 水平均较治疗前明显升高，且观察组患者治疗后的 IgM、IgA、IgG 水平高于对照组，差异有统计学意义（P<0.05）。见表 2。

表 1 两组患者治疗前后呼吸衰竭指标比较（$\bar{x}\pm s$）

Table 1 Comparison of respiratory failure indexes between the two groups before and after treatment($\bar{x}\pm s$)

Groups	n	respiratory rate(times/min)		Heart rate(times/min)		Arterial partial pressure of oxygen(mmHg)		Arterial partial pressure of carbon dioxide(mmHg)	
		Before treatment	10 d after treatment	Before treatment	10 d after treatment	Before treatment	10 d after treatment	Before treatment	10 d after treatment
Observation group	79	38.82± 2.27	22.34± 3.01*#	129.60± 17.75	81.33± 18.09*#	50.97± 5.82	98.85± 6.77*#	75.64± 8.22	42.09± 8.67*#
Control group	78	37.38± 2.95	27.64± 2.56*	132.17± 18.33	98.62± 18.12*	49.61± 5.98	79.20± 5.71*	71.17± 7.89	55.62± 8.13*

Note: compared with before treatment, *P<0.05; compared with the control group, #P<0.05.

表 2 两组患者治疗前后免疫功能指标比较（$\bar{x}\pm s$）

Table 2 Comparison of immune function indexes between two groups before and after treatment($\bar{x}\pm s$)

Groups	n	IgM(g/L)		IgA(g/L)		IgG(g/L)	
		Before treatment	10 d after treatment	Before treatment	10 d after treatment	Before treatment	10 d after treatment
Observation group	79	3.16± 1.38	5.85± 1.50*#	2.28± 0.79	3.34± 0.85*#	9.37± 2.28	15.59± 3.11*#
Control group	78	2.89± 1.67	3.76± 1.44*	2.13± 0.81	2.66± 0.72*	9.58± 2.87	12.02± 2.95*

Note: compared with before treatment, *P<0.05; compared with the control group, #P<0.05.

2.4 两组患者治疗前、后的 SGRQ 评分比较

治疗前、治疗后 10d、治疗后 3 个月、治疗后 6 个月两组患者的 SGRQ 评分逐渐降低，组内两两比较差异均有统计学意义（P<0.05），观察组治疗前、治疗后 10 d 的 SGRQ 评分与对照组比较无统计学差异（P>0.05），观察组治疗后 3 个月、6 个月的 SGRQ 评分均低于对照组，差异有统计学意义（P<0.05）。见表3。

表 3 两组患者治疗前、治疗后 10 d、3 个月、6 个月的 SGRQ 评分比较（$\bar{x}\pm s$，分）

Table 3 Comparison of SGRQ score between two groups before treatment and 10 d, 3 months and 6 months after treatment($\bar{x}\pm s$, scores)

Groups	n	Before treatment	10 d after treatment	3 months after treatment	6 months after treatment
Observation group	79	82.24± 11.75	63.36± 12.19△	46.57± 13.06△ #	37.95± 12.20△ #*
Control group	78	80.69± 12.53	70.28± 11.65△	58.38± 12.25△ #	49.22± 11.78△ #*
t	-	2.108	1.376	3.287	3.529
P	-	0.351	0.519	0.021	0.019

Note: compared with before treatment, △ P<0.05; compared with 10 d after treatment, #P<0.05; compared with 3 months after treatment, *P<0.05.

3 讨论

由于 COPD 患者存在肺部和气道气体交换障碍，导致患者呼吸肌需要克服通气阻力来保证正常的通气，而呼吸肌长期过度疲劳则会进一步使通气功能发生障碍，进而出现缺氧以及二氧化碳潴留，最终导致 II 型呼吸衰竭[8]。COPD 合并呼吸衰竭多见于中老年人，是临床的常见病和多发病，严重影响患者的健康和生命质量。

无创正压通气主要经口鼻面罩或者鼻面罩进行通气，是目前临床治疗 COPD 合并 II 型呼吸衰竭患者的常见无创通气技术。报道表明[9,10]，无创正压通气可降低气管插管的使用率，同时可减少患者的住院时间和病死率，而且在治疗的过程中，患者的耐受性好、痛苦少。外界气体可通过 Bi-PAP 进入到肺部肺泡组织中，改善患者的通气状况，同时 Bi-PAP 的外力气压可增大支气管管径，缓解支气管平滑肌痉挛，正面优化通气 / 血流。临床研究显示[11,12]，Bi-PAP 可以迅速恢复 COPD 合并 II 型呼吸衰竭患者肺泡气体交换功能，减少血液中的二氧化碳含量，同时促进血液中的含氧量增加，最终改善患者的缺氧状态，纠正二氧化碳潴留现象。另有报道[13]，无创正压通气可增加吸气时的吸气相气道正压，可有效防止咽腔内负压，避免气道闭陷；在呼气时可降低呼气相气道正压，通过与内源性呼气末正压对抗，可有效防止功能残气量增加，在避免肺泡萎陷的同时又有利于呼吸肌的呼吸，减轻其疲劳。

舒利迭内含沙美特罗及丙酸氟替卡松，其中沙美特罗是长效β_2受体激动剂，具有以下功能[14,15]：① 具有较好的亲脂性和被吸收性，激活支气管平滑肌表面的 β_2 受体的药理性，进而能够促进支气管平滑肌的舒张而使其痉挛解除；② 预激活支气管平滑肌表面的糖皮质激素受体，并使其敏感性加强，促进丙酸氟替卡松发挥最大的药理作用；③ 激活支气管平滑肌细胞线粒体中的腺苷酸活化酶，促进三磷酸腺苷转化为环磷酸腺苷，同时通过降低钙离子含量来延长支气管平滑肌的松弛状态。丙酸氟替卡松是第一代糖皮质激素，具有极强的脂溶性，具有以下功

能[16,17]：① 吸入给药后很好进入血液循环，主要在肺部集中，因而能在肺部和支气管局部明显发挥作用，可以抑制炎症因子，缓解气道非特异性炎症性反应；② 促进支气管平滑肌细胞合成大量的 β_2 受体，并提高 β_2 受体的敏感性，可使沙美特罗的药效更长久。因此，沙美特罗与丙酸氟替卡松具有协同作用，两药以复合制剂的形式存在不仅能最大程度的发挥各自药效，还能相互促进而发挥更强的药效[18]。

本研究结果显示，观察组治疗后的有效率为 89.87%，明显高于对照组的 73.08%，提示 Bi-PAP 联合舒利迭能明显改善 COPD 合并 II 型呼吸衰竭患者的临床治疗效果。呼吸、心率、动脉氧分压、动脉二氧化碳分压是呼吸衰竭的常见评价指标，本研究结果显示，治疗后两组患者的呼吸衰竭症状明显改善，并且观察组治疗后呼吸衰竭症状改善程度明显优于对照组，提示两种治疗方案均能一定程度改善患者的病情，且观察组治疗方案对呼吸衰竭症状的改善程度更为显著。可能是因为舒利迭成分中的沙美特罗可以使支气管平滑肌舒张，痉挛解除，使支气管黏膜血管的通透性降低有关[19]。COPD 合并 II 型呼吸衰竭患者年龄偏大、病程迁延难愈，因此患者免疫功能降低，IgM、IgA、IgG 分别是能较好反映机体体液免疫和细胞免疫的主要免疫球蛋白，其水平越高表明机体的免疫功能越强。本研究发现，治疗后两组患者 IgM、IgA、IgG 水平均较治疗前明显升高，并且观察组治疗后 IgM、IgA、IgG 水平高于对照组，说明 Bi-PAP 联合舒利迭能明显改善患者的免疫功能。可能是因为联合治疗方案明显改善患者的病情，提高了患者的抵抗力，进而增强了免疫功能。因 COPD 合并 II 型呼吸衰竭病程长、慢性迁延难愈，且患者年龄偏大，对自身疾病的认知能力较差，同时患者肺部功能进行性减退，免疫功能下降，因此患者的生活质量明显下降，体现为丧失劳动能力、限制了社会活动、生活无法自理等[20]。本研究结果显示，随着时间的推移，患者的生活质量明显改善，并且观察组患者治疗后 3 个月、6 个月的生活质量明显优于对照组，说明两种治疗方案均能让患者的生活质量得到提高，并且联合治疗方案的效果更为明显。可能是因为联合治疗方案能显著改善患者的临床治疗效果，缓解患者呼吸衰竭症状，因此患者的生活质量明显提高。

综上所述，Bi-PAP 联合舒利迭能明显改善 COPD 合并 II 型呼吸衰竭患者呼吸衰竭症状，提高机体免疫力和患者的生活质量，临床推广应用价值高。

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