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喉罩与气管插管在呼吸衰竭患者院前和急诊急救中的应用效果比较 *

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摘要 目的:探讨喉罩与气管插管在呼吸衰竭患者院前和急诊急救中的应用效果。**方法:**选择 2016 年 1 月至 2018 年 5 月由中国人民解放军第 174 医院急诊医学科出诊抢救的呼吸衰竭患者 92 例,所有患者根据通气方法的不同分为 A 组和 B 组。其中 A 组使用喉罩人工通气方法进行急救,共有 47 例,而 B 组则使用气管插管人工通气方法进行急救,共有 45 例,比较两组患者治疗前与治疗 1 h 后呼吸频率(RR)、心率(HR)以及血氧饱和度(SpO₂)等生命体征指标,对比喉罩与气管插管置入时间、一次性成功率、心肺复苏成功率情况,记录两组并发症发生情况。**结果:**两组患者治疗前 HR、RR 以及 SpO₂ 比较差异无统计学意义(P>0.05),两组患者治疗 1 h 后 HR、RR 均较治疗前降低,SpO₂ 较治疗前升高(P<0.05),两组患者治疗 1 h 后 HR、RR 以及 SpO₂ 比较差异无统计学意义(P>0.05)。A 组的喉罩插管置入时间明显短于 B 组的气管插管置入时间,且 A 组插管一次性成功率明显高于 B 组,两组比较差异具有统计学意义(P<0.05),而两组心肺复苏成功率比较差异无统计学意义(P>0.05)。A 组并发症发生率为 2.13%(1/47),低于 B 组的并发症发生率 13.33%(6/45),差异具有统计学意义(P<0.05)。**结论:**喉罩通气与气管插管通气效果基本一致,但其操作更简单更安全,可缩短插管置入时间,提高一次性成功率,争取抢救时间。

关键词:喉罩;气管插管;人工通气;呼吸衰竭;急救;应用效果

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Comparison the Applicative Effect of Laryngeal Mask and Endotracheal Intubation for Patients with Respiratory Failure in Pre-hospital Care and Emergency Treatment*

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ABSTRACT Objective: To explore the applicative effect of laryngeal mask and endotracheal intubation for patients with respiratory failure in the pre-hospital care and emergency treatment. **Methods:** 92 cases of patients with respiratory failure who were rescued by emergency medicine department in The 174th Hospital of PLA from January 2016 to May 2018 were selected. All patients were divided into group A and group B according to different ventilation methods. Group A were used laryngeal mask artificial ventilation to carry out pre-hospital care, it had a total of 47 cases. Group B were used endotracheal intubation and artificial ventilation to carry out pre-hospital care, it had a total of 45 cases. The vital signs of respiratory rate(RR), heart rate(HR) and blood oxygen saturation (SpO₂) were compared between the two groups before treatment and 1h after treatment. The time of laryngeal mask and endotracheal intubation, one-time success rate and success rate of cardiopulmonary resuscitation were compared, and the complications of the two groups were recorded. **Results:** There was no significant difference in HR, RR and SpO₂ between the two groups before treatment (P>0.05). 1 h after treatment, the HR and RR in the two groups were lower than before treatment, the SpO₂ was higher than before treatment(P<0.05). 1 h after treatment, there was no significant difference in HR, RR and SpO₂ between the two groups (P>0.05). The laryngeal mask insertion time in group A was significantly shorter than group B, and the one-time success rate in group A was obviously higher than group B, the differences between the two groups were statistically significant (P<0.05). There was no significant difference in the success rate of cardiopulmonary resuscitation between the two groups(P>0.05). The incidence of complications in group A were 2.13% (1/47), were lower than 13.33%(6/45) in group B, and the differences were statistically significant(P<0.05). **Conclusion:** The effect of laryngeal mask ventilation and endotracheal intubation ventilation is basically the same, but the operation is simpler and safer, it can shorten the insertion time of intubation, increase the one-time success rate, and strive for rescue time.

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前言

在院前和急诊急救中呼吸衰竭属于较常见的急危重症之一,其起病急、病情发展迅速,临床表现主要为呼吸功能障碍造成机体发生低氧血症以及呼吸窘迫症状^[1-3]。快速地建立安全有效的人工气道来纠正呼吸功能障碍,是进行院前急救的主要内容^[45]。气管插管是指将一特制的气管内导管经声门置入气管,是临床呼吸道管理中应用最广泛、最有效最快捷的手段之一,对抢救患者生命、降低病死率方面起到至关重要的作用^[67]。然而该急救方式操作繁琐,操作人员需进行一定的培训,且后期易并发感染,影响患者预后。随着医学的不断发展,喉罩因其操作简单、放置成功率高、通气可靠以及刺激小等优势逐渐应用于临床。临床针对喉罩的使用已取得了较大的进展,应用范围越来越广^[89]。目前有关喉罩与气管插管在呼吸衰竭患者急救中的系统比较研究较为少见,鉴于此,本研究通过探讨喉罩与气管插管在呼吸衰竭患者院前和急诊急救中的应用效果,以期为临床操作提供数据支持,现作如下报道。

1 资料与方法

1.1 一般资料

选择 2016 年 1 月至 2018 年 5 月由中国人民解放军第 174 医院急诊医学科出诊抢救的呼吸衰竭患者 92 例,纳入标准^[10]:(1)所有患者经血气分析符合呼吸衰竭诊断标准, $\text{pH}<7.25$,血氧分压 $<60\text{ mmHg}$,血二氧化碳分压 $>45\text{ mmHg}$;(2)均符合人工通气适应症;(3)患者临床资料齐全;(4)家属知情本次研究并签署同意书。排除标准:(1)合并急性心脑血管疾病者;(2)伴有肺结核、肺部肿瘤疾病者;(3)肝肾功能不全者;(4)既往有气管插管史者;(5)合并精神疾病不能配合研究者。所有患者根据通气方法的不同分为 A 组($n=47$)和 B 组($n=45$),其中 A 组患者男 26 例,女 21 例;年龄 33-76 岁,平均 (56.53 ± 6.49) 岁;I 型呼吸衰竭 27 例,II 型呼吸衰竭 20 例;发病原因:阻塞性肺疾病并发呼吸衰竭 24 例,重症哮喘 12 例,心肺复苏 11 例。B 组患者男 22 例,女 23 例;年龄 35-79 岁,平均 (57.28 ± 7.51) 岁;I 型呼吸衰竭 24 例,II 型呼吸衰竭 21 例;发病原因:阻塞性肺疾病并发呼吸衰竭 20 例,重症哮喘 13 例,心肺复苏 12 例。本次研究已经获得我院伦理委员会的批准,并允许实施。

1.2 方法

所有患者均采用常规抢救措施以改善呼吸困难症状,如使呼吸道保持通畅、吸入 β_2 受体激动剂、静脉滴注氨茶碱松弛支气管平滑肌等措施,当患者处于稳定状态后及时送至医院治疗,入院后对患者的呼吸频率(respiratory rate,RR)、心率(heart rate,HR)以及血氧饱和度(blood oxygen saturation, SpO_2)等进行全程连续监护。所有患者均取平卧头正中位并清理呼吸道,A 组使用喉罩方法进行人工通气:润滑喉罩,在打开患者口腔后用压舌板或舌钳将舌体牵拉离开咽后壁,用右手食指协助喉罩插入至前端受到阻力后从气囊中打入适量气体,将牙垫置入并固定,连接简易呼吸器后进行通气,听诊若双肺呼吸音对称,表示已成功插管。B 组使用气管插管方法进行人工通气:将患者头后仰,左手拿喉镜将舌头推开使会厌暴露,再挑起会厌使声门暴露,右手持气管导管从声门中插入,将管芯拔出后调整气管导管至合适深度,对患者胸廓进行轻压若有气流声表示导管已在气管中,在置入牙垫后将喉镜拔出,也使用简易呼吸器进行通气,若听诊双肺呼吸音对称后在气管套囊中打入气体(5~10)mL 并将气管插管固定。

1.3 观察指标

比较治疗前与治疗 1 h 后两组患者 RR、HR、 SpO_2 等生命体征指标,同时记录每位患者插管置入时间、一次性成功率、心肺复苏成功率,观察患者有无唇或咽喉黏膜擦伤出血、牙齿脱落或断裂以及呛咳憋气等并发症情况。

1.4 统计学方法

本研究数据均录入 SPSS20.0 软件进行统计分析,采用 $(\bar{x}\pm s)$ 表示 SpO_2 、插管置入时间等计量资料,实施 t 检验,采用 $[n(\%)]$ 表示计数资料,实施 χ^2 检验,以 $\alpha=0.05$ 为统计学检验水准。

2 结果

2.1 两组患者生命体征指标比较

两组患者治疗前 HR、RR 以及 SpO_2 比较差异无统计学意义($P>0.05$),两组患者治疗 1 h 后 HR、RR 均较治疗前降低, SpO_2 较治疗前升高($P<0.05$),两组患者治疗 1 h 后 HR、RR 以及 SpO_2 比较差异无统计学意义($P>0.05$),见表 1。

表 1 两组患者生命体征指标比较($\bar{x}\pm s$)
Table 1 Comparison of vital signs between the two groups($\bar{x}\pm s$)

Groups	n	Time	HR(times/min)	RR(beats/min)	$\text{SpO}_2(\text{mmHg})$
Group A	47	Before treatment	110.23 $\pm$ 10.31	28.98 $\pm$ 3.23	55.03 $\pm$ 3.75
		1 h after treatment	78.53 $\pm$ 5.32*	19.02 $\pm$ 1.16*	84.52 $\pm$ 6.75*
Group B	45	Before treatment	114.66 $\pm$ 10.73	28.53 $\pm$ 4.17	54.15 $\pm$ 3.99
		1 h after treatment	80.47 $\pm$ 6.30*	19.24 $\pm$ 1.26*	85.33 $\pm$ 6.89*

Note:compared with before treatment,* $P<0.05$.

2.2 喉罩与气管插管置入时间、一次性成功率、心肺复苏成功率比较

A 组的喉罩插管置入时间明显短于 B 组的气管插管置入

时间,且 A 组插管一次性成功率明显高于 B 组,两组比较差异具有统计学意义($P<0.05$),而两组心肺复苏成功率比较差异无统计学意义($P>0.05$),见表 2。

表 2 喉罩与气管插管置入时间、一次性成功率、心肺复苏成功率比较

Table 2 Comparison of laryngeal mask airway and endotracheal intubation time,one-time success rate and success rate of cardiopulmonary resuscitation

Groups	n	Intubation time(min)	One-time success rate[n(%)]	Success rate of cardiopulmonary resuscitation[n(%)]
Group A	47	1.77± 0.55	46(97.87)	38(80.85)
Group B	45	5.34± 1.21	23(51.11)	36(80.00)
t/x ²		18.084	26.810	0.011
P		0.000	0.000	0.918

2.3 两者患者并发症发生情况比较

A 组中有 1 人发生咽喉黏膜擦伤出血, 并发症发生率为 2.13%(1/47), 而 B 组中有 3 人发生咽喉黏膜擦伤出血, 3 人出现呛咳憋气现象, 并发症发生率为 13.33%(6/45), A 组并发症发生率低于 B 组, 差异具有统计学意义($\chi^2=4.106$, $P=0.043$)。

3 讨论

呼吸衰竭是因各种原因造成肺通气或换气功能障碍, 使机体不能进行有效的气体交换而导致的缺 O₂ 症状, 有时可伴有 CO₂ 潴留, 此时机体的生理及代谢等功能紊乱从而出现了一系列的临床症状^[11-13]。呼吸衰竭是一种功能障碍状态不是一种疾病, 可因肺部疾病引起, 也可并发于其他疾病^[14-16]。建立快速安全有效地人工气道可使呼吸衰竭患者的通气功能障碍得以改善, 是院前急救的重点^[17,18]。气管插管是一种建立人工气道的常用方法, 有效且可靠但插管技术要求高, 操作程序复杂^[19,20]。而喉罩通气是近年来临床院前急救过程中采用的一种新型通气方式, 其介于面罩与气管插管之间, 属于半嵌入式, 其操作简单, 无需暴露喉部声门, 可短时间内迅速建立有效地人工通气, 在临床上得到越来越多的应用^[21-23]。本研究通过比较喉罩与气管插管通气方法在治疗前后生命体征指标的变化以及两者置入时间、一次性成功率及并发症发生情况, 进而探讨两者在呼吸衰竭患者院前和急诊急救过程中价值。

本研究结果显示, 两组患者治疗 1 h 后 HR、RR 均较治疗前降低, SpO₂ 较治疗前升高 ($P<0.05$), 而两组患者治疗 1h 后 HR、RR 以及 SpO₂ 比较, 差异均无统计学意义($P>0.05$), 说明喉罩和气管插管均可改善患者的生命体征, 且效果相当。气管插管作为一种安全有效的通气技术, 现已在临床广泛使用, 其治疗效果不容忽视, 而喉罩作为新兴的通气技术, 已渐渐被临床广泛使用^[24,25]。同时本研究发现呼吸衰竭患者在院前和急诊急救中喉罩的置入时间明显短于气管插管的置入时间, 且一次性成功率也明显高于气管插管($P<0.05$), 表明喉罩更易操作且有助于缩短建立人工通气的时间, 因此能有效节约抢救时间, 是一种可靠的人工气道建立工具。这主要是由于喉罩通气具有以下特点^[26-28]: (1) 通气管和引流管设计, 其中引流管可插入胃管引流胃液, 防止患者胃胀气以及误流返吸。(2) 喉罩主管呈 90° 弯曲, 且喉罩远端位于食管开口, 不易移位;(3) 双气囊设计, 通气罩符合咽喉部解剖设计, 密封性佳。而两组心肺复苏成

功率比较差异无统计学意义, 这可能主要是由于本次研究纳入病例数过少, 结果存在一定的偏倚, 后续报道将增大样本量以获取更为准确的数据。另外气管插管人工通气方法发生并发症的几率高于喉罩人工通气方法, 差异具有统计学意义($P<0.05$), 表明喉罩通气相对于气管插管喉罩更安全。这可能主要是由于气管插管虽安全可靠, 但要求技术非常高, 需要专业的人员进行整项操作, 加之操作时间较长, 反复的气管插管会延长患者低氧时间, 易造成喉头水肿、呛咳憋气、咽喉黏膜擦伤出血等症状, 而喉罩通气操作简便, 减少插管时间, 提高插管成功率, 进而减少并发症发生率^[29,30]。

综上所述, 喉罩通气在呼吸衰竭患者院前和急诊急救过程中具有明显效果, 相对于气管插管通气而言, 其操作更简单更安全, 可有效节约抢救时间, 降低并发症, 提高患者生命质量, 在临床上具有推广价值。

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