

doi: 10.13241/j.cnki.pmb.2015.19.026

持续声门下吸引术在预防呼吸机相关性肺炎中的效果研究*

朱文峰¹ 徐亮¹ 任斌¹ 刘潮勇¹ 朱李兵^{1△} 潘灵辉²

(1 解放军第171医院 江西九江 332000; 2 广西肿瘤防治研究所 广西南宁 530027)

摘要 目的:探究持续声门下吸引术在预防呼吸机相关性肺炎中的临床效果。**方法:**选取我院入住重症监护病房并需要机械通气的患者46例,随机分为两组,每组23例。实验组患者予以持续性负压吸引装置,对照组患者不添加负压吸引装置。观察两组患者在机械通过程中呼吸机相关性肺炎的发生率,以及气道滞留物的菌落培养情况。**结果:**实验组患者机械通气时间、重症监护住院时间均短于对照组,差异有统计学意义($P < 0.05$);实验组呼吸机相关性肺炎发病率低于对照组,差异有统计学意义($P < 0.05$);实验组大肠杆菌、非发酵菌、革兰阳性球菌的发现率均低于对照组,差异有统计学意义($P < 0.05$)。**结论:**持续声门下吸引术能够减少患者机械通气的时间,降低呼吸机相关性肺炎的发病率,提高安全性,值得临床推广。

关键词:呼吸机相关性肺炎;机械通气;持续声门下吸引术

中图分类号:R563.1 **文献标识码:**A **文章编号:**1673-6273(2015)19-3701-03

Research on the Subglottic Aspiration in the Prevention of Ventilator Associated Pneumonia*

ZHU Wen-feng¹, XU Liang¹, REN Bin¹, LIU Chao-yong¹, ZHU Li-bing^{1△}, PAN Ling-hui²

(1 171 Hospital of PLA, Jiujiang, Jiangxi, 332000, China; 2 Tumor Institute of Guangxi, Nanning, Guangxi, 530027, China)

ABSTRACT Objective: To explore the clinical effect of subglottic aspiration in prevention of ventilator associated pneumonia.

Methods: 46 cases admitted to the intensive care unit and require mechanical ventilation from our hospital were randomly divided into two groups, each group of 23 patients. 23 cases in experimental group were treated immediately with continuous negative pressure suction device, while the control group without it. Then the incidence of ventilator associated pneumonia, and airway retentate colony culture situation were observed and compared between the two groups. **Results:** The time of mechanical ventilation and hospitalization of the patients in the experimental group were much shorter than those of the patients in the control group with statistically significant differences ($P < 0.05$); the incidence of the ventilator associated pneumonia in the experimental group was lower than that of the control group with statistically significant differences ($P < 0.05$); the incidence of the enterobacteriaceae colonies, the fermentation bacteria colony, and the gram positive coccus in the experimental group were significantly lower than those of the control group, and the differences were statistically significant between two groups ($P < 0.05$). **Conclusions:** Subglottic aspiration continuously can reduce the time of mechanical ventilation and the hospitalization, as well as improve the retention of upper respiratory tract, that could reduce the incidence of ventilator associated pneumonia and improve the clinical efficacy.

Key words: Ventilator associated pneumonia; Mechanical ventilation; Subglottic aspiratio

Chinese Library Classification(CLC): R563.1 **Document code:** A

Article ID: 1673-6273(2015)19-3701-03

前言

呼吸机相关性肺炎(VAP)是机械通气(MV)引起的一种严重并发症。机械通气是利用机械装置来代替、控制或改变自主呼吸运动的一种通气方式。由于机械通气患者气管的气囊上滞留了大量分泌物,细菌可以通过误吸直接进入患者的下呼吸道系统,引起严重的呼吸系统炎症反应^[1]。据调查统计,使用机械

通气的患者中,发生呼吸机相关性肺炎的机率高达20%-75%,其中死亡率可达20%-50%^[2,3]。随着机械通气技术的成熟及临床广泛的应用,呼吸机相关性肺炎的早期预防和治疗越来越受到重视。大量研究表明,持续声门下吸引术(CASS)能够通过引流气囊上的分泌物,有效降低机械通气患者呼吸机相关性肺炎的发病率^[4,6]。本研究通过分析我院行机械通气患者的临床资料,探讨持续声门下吸引术对呼吸机相关性肺炎的临床效果,

* 基金项目:国家自然科学基金地区项目(81060008)

作者简介:朱文峰,男,副主任医师,主要研究方向:呼吸、老年病、内分泌

△通讯作者:朱李兵,男,博士,副主任医师,主要研究方向:泌尿外科

(收稿日期:2014-11-24 接受日期:2014-12-20)

为相关研究提供参考。现将研究结果报道如下。

1 资料与方法

1.1 一般资料

选取 2013 年 8 月 -2014 年 2 月与我院入住重症监护病房并进行机械通气的患者 46 例, 采用随机数字表分为实验组和对照组。实验组 23 例, 其中男 13 例, 女 10 例, 平均年龄 (54.7 ± 16.8) 岁; 对照组 23 例, 其中男 14 例, 女 9 例, 平均年龄 (52.9 ± 17.5) 岁。两组患者的一般资料无显著性差异 ($P > 0.05$), 具有可比性。

1.2 纳入及排除标准

纳入标准: 经肺功能检查确诊为需要入住重症监护病房, 建立人工气道并采取机械通气患者; 年龄 18-78 岁; 尚无短期内死亡征象患者, 家属签署知情通知书; 本次实验经当地伦理小组全程监督。排除标准: 在入院前的患者已发生呼吸衰竭, 呼吸系统细菌感染的患者; 气管、食管或咽喉有过手术或外伤的患者, 患者及家属不愿参与本次实验。

1.3 方法

根据患者需要, 随时使用一次性开放式导管吸痰。研究期

间首日及每隔两日将气道滞留物标本进行真菌和细菌培养。实验组开始研究立即予以持续性负压吸引装置, 压力设定为 80-120 mmHg ($0.1 \text{ mmHg} = 0.133 \text{ kPa}$)。如引流不畅, 需在严格无菌的条件下, 使用无菌生理盐水进行冲洗; 对照组则不添加负压吸引装置。

1.4 观察指标

观察两组患者机械通气天数, 留住重症监护病房天数; 在机械通气过程中呼吸机相关性肺炎的发生率以及两组患者气道滞留物的菌落培养情况。

1.5 统计学方法

采用统计学软件 SPSS 19.0 对数据进行分析处理, 计量资料以 ($\bar{x} \pm s$) 表示, 计数资料以 (%) 表示, 进行 t 检验及卡方检验, 以 $P < 0.05$ 为差异有统计学意义。

2 结果

2.1 两组患者机械通气和重症监护时间

实验组患者机械通气天数和重症监护天数明显低于对照组, 差异具有统计学意义 ($P < 0.05$)。见表 1。

表 1 两组患者机械通气天数, 留住重症监护病房天数比较情况 ($\bar{x} \pm s$, 天)

Table 1 Comparison of mechanical ventilation time and days in ICU ($\bar{x} \pm s$, day)

Group	Case	Mechanical ventilation	Stay in intensive-care
Experimental group	23	$7.1 \pm 2.9^{\Delta}$	$15.7 \pm 4.4^{\Delta}$
Control group	23	10.8 ± 2.3	21.6 ± 3.7

Note: $\Delta P < 0.05$, compared with the control group.

2.2 两组患者研究阶段呼吸机相关性肺炎发病率比较

在本实验研究过程中, 两组患者均有呼吸机相关性肺炎发

生, 与对照组比较, 实验组呼吸机相关性肺炎发病率明显较低, 差异有统计学意义 ($P < 0.05$)。见表 2。

表 2 两组患者研究阶段呼吸机相关性肺炎发病率比较 (%)

Table 2 Comparison of the incidence of the ventilator-associated pneumonia (%)

Group	Case	Incidence of ventilator-associated pneumonia (n)
Experimental group	23	13.0 (3) ^Δ
Control group	23	34.8 (8)

Note: $\Delta P < 0.05$, compared with control group.

2.3 声门下滞留分泌物菌落比较

在本实验研究过程中, 培养的两组患者声门下滞留的分泌物, 均有一定数量的患者培养出了菌落, 且肠杆菌科细菌菌落

发现率, 实验组显著低于对照组; 非发酵菌菌落发现率, 实验组显著低于对照组; 革兰阳性球菌菌落发现率, 实验组显著低于对照组, 差异均有统计学意义 ($P < 0.05$)。见表 3。

表 3 声门下滞留分泌物菌落情况 (例, %)

Table 3 Retention of colony in subglottic secretion (n, %)

Group	Case	Enterobacteriaceae	Non fermentation bacteria	Gram positive cocci
Experimental group	23	3 (13.0) ^Δ	4 (17.4) ^Δ	1 (4.3) ^Δ
control group	23	7 (30.4)	9 (39.1)	5 (21.7)

Note: $\Delta P < 0.05$, compared with control group.

3 讨论

呼吸机相关性肺炎(VAP)是由于自主通气困难患者长期采取机械通气(MV)而引起的一种致死率极高的炎症性并发症。相关研究表明,声门下滞留分泌物引起的细菌感染是呼吸机相关性肺炎发生的主要原因^[11-13]。

本研究中,实验组患者机械通气天数、重症监护天数明显少于对照组($P < 0.05$);实验组呼吸机相关性肺炎发病率明显低于对照组($P < 0.05$)。结果说明,持续性声门下吸引术可降低上呼吸道滞留的细菌及真菌。这是因为持续声门下吸引术通过引流气囊上的分泌物,进而有效降低机械通气患者呼吸机相关性肺炎的发病率。有研究对 92 例 MV 患者使用 CASS, CASS 组患者 MV 时间与 ICU 天数明显低于对照组^[14]。Ewig S 等^[17]对 79 例患者使用持续性声门下吸引术的研究中,呼吸机相关性肺炎的获得率下降了 17 个百分点。而在本研究培养的两组声门下滞留分泌物中,实验组肠杆菌科细菌、非发酵菌及革兰阳性球菌的菌落发现率均低于对照组($P < 0.05$)。本研究结果与上述研究结果相似,进一步证实了本研究的准确性和科学性。

综上所述,持续声门下吸引术能够降低患者的机械通气时间,改善各类细菌、真菌的上呼吸道滞留率,降低呼吸机相关性肺炎的发病率,减少抗菌药物的使用量,提高机械通气的安全,对临床应用具有指导意义。

参考文献(References)

- [1] Eom JS, Lee MS, Chun HK. The impact of a ventilator bundle on preventing ventilator-associated pneumonia: a multicenter study [J]. American journal of infection control, 2014, 42(1): 34-37
- [2] Caserta RA, Marra AR, Durao MS. A program for sustained improvement in preventing ventilator associated pneumonia in an intensive care setting[J]. BMC infectious diseases, 2012, 12(1): 234
- [3] Ramirez P, Bassi GL, Torres A. Measures to prevent nosocomial infections during mechanical ventilation [J]. Current opinion in critical care, 2012, 18(1): 86-92
- [4] Ashraf M, Ostrosky ZL. Ventilator-associated pneumonia: a review[J]. Hospital practice, 2012, 40(1): 93-105
- [5] Nseir S, Zerimech F, Jaillette E. Microaspiration in intubated critically ill patients: diagnosis and prevention [J]. Infectious disorders drug targets, 2011, 11(4): 413-423
- [6] Nseir S, Ader F, Lubret R. Pathophysiology of airway colonization in critically ill COPD patient [J]. Current drug targets, 2011, 12(4): 514-520
- [7] Marra AR, Cal RG, Silva CV. Successful prevention of ventilator-associated pneumonia in an intensive care setting [J]. American journal of infection control, 2009, 37(8): 619-625
- [8] Wip C, Napolitano L. Bundles to prevent ventilator-associated pneumonia: how valuable are they [J]. Current opinion in infectious diseases, 2009, 22(2): 159-166
- [9] Bouza E. Continuous aspiration of subglottic secretions in the prevention of ventilator-associated pneumonia in the postoperative period of major heart surgery[J]. Chest, 2008, 134(5): 938-946
- [10] Yang CS, Qiu HB, Zhu YP. Effect of continuous aspiration of subglottic secretions on the prevention of ventilator-associated pneumonia in mechanically ventilated patients: a prospective, randomized, controlled clinical trial [J]. Chinese Journal of Internal Medicine, 2008, 47(8): 625-629
- [11] Safdari R, Yazdannik A, Abbasi S. Effect of intermittent subglottic secretion drainage on ventilator-associated pneumonia: A clinical trial [J]. Iran J Nurs Midwifery Res, 2014, 19(4): 376-380
- [12] Poelaert J, Haentjens P, Blot S. Association among duration of mechanical ventilation, cuff material of endotracheal tube, and postoperative nosocomial pneumonia in cardiac surgical patients: a prospective study[J]. J Thorac Cardiovasc Surg, 2014, 148(4): 1622-1627
- [13] Keyt H, Faverio P, Restrepo MI. Prevention of ventilator-associated pneumonia in the intensive care unit: a review of the clinically relevant recent advancements [J]. Indian J Med Res, 2014, 139(6): 814-821
- [14] Li BG, Marti JD, Saucedo L, et al. Gravity predominates over ventilatory pattern in the prevention of ventilator-associated pneumonia[J]. Crit Care Med, 2014, 42(9): e620-627
- [15] O'Neal PV, Grap MJ, Munro CL, et al. Subglottic secretion volume and viscosity: effect of systemic volume and oral hydration [J]. Dynamics, 2014, 25(1): 19-25
- [16] Frost SA, Azeem A, Alexandrou E, et al. Subglottic secretion drainage for preventing ventilator associated pneumonia: a meta-analysis[J]. Aust Crit Care, 2013, 26(4): 180-188
- [17] Ewig S, Torres A. Prevention and management of ventilator-associated pneumonia[J]. Current opinion in critical care, 2012, 8(1): 58-69
- [18] Rouzé A, Nseir S. Continuous control of tracheal cuff pressure for the prevention of ventilator-associated pneumonia in critically ill patients: where is the evidence [J]. Curr Opin Crit Care, 2013, 19(5): 440-447
- [19] Pérez, Granda MJ, Barrio JM, et al. Routine aspiration of subglottic secretions after major heart surgery: impact on the incidence of ventilator-associated pneumonia [J]. J Hosp Infect, 2013, 85 (4): 312-325
- [20] Mietto C, Pinciroli R, Patel N, et al. Ventilator associated pneumonia: evolving definitions and preventive strategies [J]. Respir Care, 2013, 58(6): 990-1007