我院CCU應用Chlorhexidine溶液對機械通氣病人進行口腔護理的實踐總結

呂咚咚 黃小燕 李秀玲 孫可欣 韦名揚

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背景

機械通氣是重症監護病房最重要的治療手段之一，曾搶救過無數病人的生命。隨之而發生的呼吸機相關性肺炎(VAP)則成爲最常發生的院內感染形式，是呼吸機通氣病人最重要的發病及死原因之一。

文獻指出，吸入口腔及咽喉部定植的細菌是VAP最常見的感染途徑，因此有效的口腔護理也被一些醫療機構和相關的組織(CDC、AACN等)納入VAP的預防措施之中 。

呼吸機相關性肺炎(VAP)的定義

- Ventilator- Associated Pneumonia is defined as that developing in the period from 48 h initiation of mechanical ventilation to 48 h after extubation [5,8,10]。
- 是由細菌引致的肺炎，發生於經人工氣道接受呼吸機輔助通氣的病人。
- 在機械通氣48-72小時內發生爲早發，發生在72小時以後爲遲發。
- 是最常發生的院內感染，是機械通氣病人最重要的發病及死亡原因之一。

VAP常見的病原微生物：

- 咽喉部定植的潛在微生物是產生呼吸機相關性肺炎的關鍵所在。
- 早發：金黃色葡萄球菌(AS)、流感嗜血桿菌(Hi)、肺炎鏈球菌等菌屬(SP)。
- 遲發：耐甲氧西林金黃色葡萄球菌(MRSA)、銅綠假單胞菌(PA)、不動桿菌屬(AB)、腸桿菌等菌屬(EB)。

VAP的發生機制

- 細菌定植於上呼吸道及上消化道。
- 氣管插管使病人呼吸道的防護機制不能正常發揮作用，使細菌可以繞過防禦系統直接進入遠端氣道。
- 抵抗力下降使重症病人不能對細菌的入侵產生有效的免疫反應。
- 口腔內的氣管導管、牙墊、固定用的膠布增加了口腔護理的難度，容易發生細菌定植
- 口咽部的細菌經吸入進入下呼吸道，在遠端支氣管內繁殖並侵入肺實質，引起小支氣管壁的炎症反應，累及肺泡間隔及肺泡，產生支氣管肺炎。

氣管插管病人口腔護理的作用

- 氣管插管患者，口腔呈張開狀，導致口腔粘膜乾燥，加之由於交感神經興奮使唾液分泌減少，加重了口腔粘膜的乾燥程度，致使病人移除牙菌斑和細菌的能力減弱。
- 充足而有效的口腔護理可以移除及殺滅口腔內過渡增殖的細菌，維持一個清潔、濕潤、並具有防禦功能的口腔環境

消毒液Chlorhexidine用於口腔護理去除細菌定植的作用機制

- 可以快速吸收至細菌的細胞表面，破壞細胞膜，具有殺菌及抑菌的隻重作用。
- 具有表皮粘膜的可吸收性，不僅可以起到即時的殺菌效果，也可在一段時間內通過緩慢釋放起到抑菌作用。
- 對大多數的G+及G-細菌均有較好的殺滅作用，對真菌及帶有胞膜的病毒也有一定的殺滅作用，可以去除牙菌斑及口腔內的細菌。對某些G-桿菌的效果可能稍差，
- 也有副作用，長期使用可使牙齒染色和暫時性的味覺改變，牙齒通過清潔可以除色，味覺可以在停用後恢復。

Chlorhexidine用於口腔護理對VAP發生率的影響 --相關的薈萃分析

- Ee Yuee Chan et al : Oral decontamination for prevention of pneumonia in mechanically ventilated adults: systematic review and meta-analysis [(1)].

Methods of oral care	Numbers of studies	results
Chlorhexidine 0.12-2%, Solution or Gel, twice or three times daily	6	Analysis of the seven trails (2144 patients) that tested the effect of antiseptic oral decontamination on VAP showed a significant reduction.
Povidone iodine 10% 20ml reconstituted to 60ml with sterile water, six times daily	1	
Antibiotic oral decontamination 3-6 times daily with Gentamycine, Vancomycine atc.	4	Analysis of four trails (1098 patiens) tested antibiotic oral decontamination did not show a statistically significant reduction in VAP.

Chlorhexidine用於口腔護理對VAP發生率的影響 --相關的薈萃分析

- Carolina Contador Beraldo et al : Oral hygiene with chlorhexdine in preventing pneumonia associated with mechanical ventilation [5].

Kind of publicaions	Numbers	results
RCTs	5	3 RCTs and 2 meta-analysises favored the use of chlorhexidine as a preventive measure against VAP. 4 of the 5 RCTs revealed preventive effects of chlorhexidine. Conclusion: topical use of chlorhexidine in the oral hygiene of patients on mechanical ventilation seems to reduce the coonization of the oral cavity, thereby reduce the incidence of VAP
Meta-analysis	3	

Chlorhexidine用於口腔護理對VAP發生率的影響 --相關的薈萃分析

- Maciej Piotr Chlebicki et al: Topical chlorhexidine for prevention of ventilator-associated pneumonia: A meta-analysis [13].

VAP(%) with chlorhexidine	**1.73%**	**1.48%**	**16.67%**	**11.40%**	**10.24%**	**35.16%**	**57.14%**
VAP(%) with comparator	**5.00%**	**9.89%**	**50.00%**	**10.53%**	**17.69%**	**32.82%**	**60.00%**

Analysis combining the results of 7 RCTs found that chlorhexidine is associated with a 30% relative reduction in the risk of VAP. Subgroup analysis showed that the beneficial effect of chlorhexidine was most apparent. It is likely that topical Chlorhexidine may delay rather than prevent the development of VAP.

Chlorhexidine用於口腔護理對VAP發生率的影響 --相關的薈萃分析

- Lilibeth A Pineda et al: Effect of oral decontamination with chlorhexidine on the incidence of nosocomial pneumonia: a meta-analysis [18].

Incidence of pneumonia in Treatment group	3/173	4/30	4/270	13/114
Incidence of pneumonia in Control group	9/180	11/30	9/291	12/114

The incidence of nosocomial pneumonia in the control group was 7% compared to 4% in the treatment group, but overall , the use of oral decontamination with chlorhexdine did not result in significant reduction in the incidence of nosocomial Pneumonia in patients who received mechanical ventilation, nor altered the mortality rate.

Chlorhexidine用於口腔護理對VAP發生率的影響 --相關的文獻回顧

- Jennifer A. Browne at el: Pursuing Excellence: Development of an oral hygiene protocol for mechanically ventilated patients [(2)].

Showed :

Chlorhexidine swabbing has been recognized as an easy and inexpensive way to perform oral care with few adverse effects.

Oral swabbing with 5 ml of 0.12% chlorhexidine twice daily is the most effective oral care for VAP prevention.

Toothbrushing in conjunction with chlorhexidine oral care may not increase the effectiveness of VAP prevention.

The oral care guidelines include an oral assessment every shift and chlorhexidine swabbing every 12 hours.

Chlorhexidine用於口腔護理對VAP發生率的影響 --相關的文獻回顧

- Karen stomecypher: Ventilator associated pneumonia: The importance of oral care in intubated adults [7] .

Showed:

A 69% reduction in respiratory tract infections related to twice daily use of 0.12% CHG in surgical patients postoperatively. It is most effective in patients intubated for more than 24 hours who had the highest concentration of colonized bacteria.

Intubated patients require frequent oral care to include the brushing of teeth at the beginning and at the end of the day.

The addition of an antiseptic rinse and moisturizer will also support a healthy environment.

Chlorhexidine用於口腔護理對VAP發生率的影響 --相關的文獻回顧

- Margo A. Halm et al: Effective of oral care on bacterial colonization and ventilator-associated pneumonia [15] .

Showed:

Results of most studies indicated that chlorhexidine interventions reduced VAP rates.

Lower rates of VAP were found in chlorhexidine patients who were at high risk

Toothbrushing significantly reduce plaque colonization.

Chlorhexidine用於口腔護理對VAP發生率的影響 --相關的文獻回顧

- Angila M. Berry et al: Systematic literature review of oral hygiene practices for intensive care patients receiving mechanical ventilation [17].

Type of trail	Results in treatment group with chlorhexidine
PRCT	Reduction in daily risk of VAP.
PRCT	Day 10 cultures of dental plaque that showed growth were less than common.
PCT	Reduction in oral cultures and clinical pulmonary infection score.
PRCT	VAP reduced by 52% overall , and 71% lower in the intubated more than 24 hours
PCT	Reduced plaque colonization. Nosocomial infection rates significantly reduced
PRCT	Incidence of VAP was 4.6% in the treatment group and 13% in the control group

Chlorhexidine用於口腔護理對VAP發生率的影響 --相關的文獻回顧

- Sanja Jelic et al: Clinical review: airway hygiene in the intensive care unit [19].

Showed:

Oral antiseptic rinses such as chlorhexidine gluconate reduce the rate of nosocomial pneumonia in critically ill patients.

The twice daily use of CHG 0.12% oral rinse reduced respiratory tract infection by 69% and antibiotic use by 43% in cardiac surgical patients postoperatively.

The cost of nursing care did not significantly increase with the use of chlorhexidine oral rinse, and the liquid form was easier and quicker to apply than antibiotic paste.

Chlorhexidine用於口腔護理對VAP發生率的影響 --相關的科研實驗報告

- Cindy L. Munro et al: Chlorhexidine, toothbrushing, and preventing ventilator-associated pneumonia in critically ill adults [6] .

Method: Critically ill patients were randomly designed to 1of 4 treatments. 0.12% solution chlorhexidine oral swab twice daily, toothbrushing thrice daily, both toothbrushing and chlorhexidine, or control.

results: chlorhexidine significantly reduced the incidence of pneumonia on day 3 among patients who had CPIS<6 at baseline. Toothbrushing had no effect on CPIS and did not enhance the effect of chlorhexidine.

Chlorhexidine用於口腔護理對VAP發生率的影響 --相關的科研實驗報告

- Mirelle Koeman et al: Oral decontamination with chlorhexidine reduce the incidence of ventilator-associated pneumonia [(9)].

Method: Consecutive patients needing mechanical ventilation for 48 h or more were enrolled in a randomized, double-blind, placebo-controlled trial with three arms: CHX, CHX/COL and placebo.

Results: CHX/COL provided significant reduction in oropharyngeal colonization with both gram-negative and gram-positive microorganisms, whereas CHX mostly affected gram-positive microorganisms. Endotracheal colonization was reduced for CHX/COL patients and to a lesser extent for CHX patients.

Chlorhexidine用於口腔護理對VAP發生率的影響 --相關的科研實驗報告

- Yu-Chih Chen at el: Effectiveness of an oral care protocol for preventing ventilator-associated pneumonia [16].

Method: Using a double-blind, randomized, experimental study design; 202 critically ill mechanical-ventilated patients from the ICU of a medical center were enrolled in this study. The study attempted to establish an oral care protocol with 1% chlorhexidine for mechanical-ventilated critically ill patients, and to test its effectiveness in improving oral hygiene, reducing colonization of the oral cavity, and ventilator-associated pneumonia.

Results: The experimental group had better oral hygiene and less colonization of oral and tracheal suction. Meanwhile, the control group had higher rates of VAP infection, significantly longer period of ventilator dependence.

Chlorhexidine 的使用濃度、制劑、口腔護理的間隔時間及方法

- 濃度:　傾向於 **0.12%**或**0.2%**
- 制劑:　溶液、凝膠、噴劑
- 間隔時間：每**6**、**8**、**12**小時一次
- 方法：溶液洗口、凝膠外涂、噴劑外噴

將應用chlorhexidine 進行口腔護理列入指引的相關機構

機構	相關指引
Society for Healthcare Epidemiology of America (SHEA), Infection Disease Society of America (IDSA) [20].	Perform regular oral care with an antiseptic solution.
American Association of Critical Care Nurse (AACCN), CDC, the Healthcare Infection Control Practices Advisory Committee (HICPAC) [3,4].	Use an oral chlorhexidine gluconate (0.12%) rinse twice a day during the perioperative period for adults patients who undergo cardiac surgery.
Scottish Intensive Care Society Audit Group [23].	Use chlorhexidine as part of daily mouth care.
The Nethersole Nursing Practice and Research Unit [22].	For patients can not rinse and spit out rinsing agent, 0.2% chlorhexidine is used as oral rinsing agent.

我院CCU應用Chlorhexidine進行口腔護理的實踐總結

1. 使用的溶液：含有**0.2% Chlorhexidine** 的院外產嗽口水
   含有**0.02% Chlorhexidine** 的院產嗽口水

2. 適用人群： 帶**ETT**或鼻胃管
   不能自理
   有體位限制
   口腔疾患不能刷牙
   虛弱危重

3. 間隔時間：**8**小時, 或適當增加次數

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4. 口腔護理方法：棉球或紗布以**Chlorhexidine**沾濕，清潔部位包括：

上下齒及牙床的內側面、外側面及咬合面

舌的上、下面

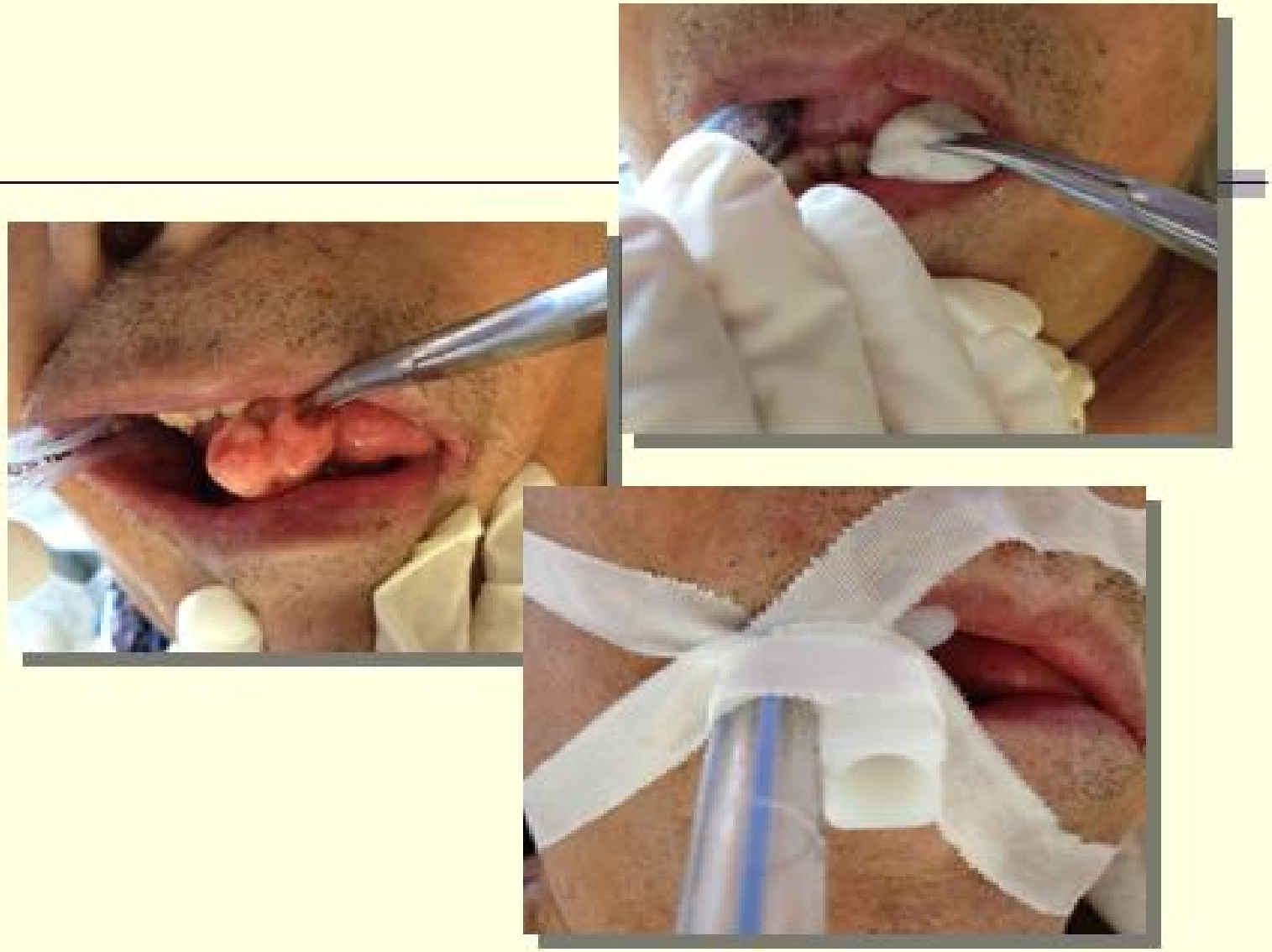
雙頰內側

上鄂面

ETT的外壁

雙唇

更換牙墊及膠紙



我院CCU應用Chlorhexidine進行口腔護理的實踐總結

5.成效總結：

痰標本 / 時間	痰標本數	有菌生長	有菌率
2010年1-10月 用 Acid Boric	182	129	**70.9%**
2011年3-10月 用 Chlorhexidine	95	50	**52.6%**

註：有菌生長率下降**18.3% (**文獻報道最高可下降**69%-71%)**

我院CCU應用Chlorhexidine進行口腔護理的實踐總結

6. 限制：

- 沒有做好嚴密的設計，兩年的樣本收集方法沒有按科研標準設置特定的排除條件。

- 新的口腔護理方法是三月開始實施，所以2011年的樣本數量有限。

- 用於口腔護理的濃度遠遠低於報道所需要的濃度(文獻報道使用濃度爲0.1-2.0%)，影響了口腔護理的成效。

結 論

- 在回顧的文獻中，大多數文獻都論證了使用Chlorhexidine溶液爲氣管插管進行呼吸機通氣的病人進行口腔護理可以減少VAP的發生率、延遲VAP的發生時間，能够有效地預防VAP。

- 濃度標準則差異較大，以較低的濃度可能較爲安全，可以通過縮短口腔護理的間隔時間及增加口腔護理的次數，以維持口腔的清潔及健康。

- Chlorhexidine 用於口腔護理具有良好的殺菌效果，而且不容易產生耐藥菌株，加之成本較低、操作簡便、容易使用，相對於VAP的高昂代價，其成本效益淺顯易見。

展望

- 現在： 醫囑處方
- 近期： 進行護理科研？
- 稍遠期：形成口腔護理常規或指南？

結語

從某種意義上來說，口腔護理就是重症護理。有效的口腔護理可以預防呼吸機相關性肺炎，可以挽救病人的生命！

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