

NEBULIZATION WITH 3% HYPERTONIC SALINE – GUIDELINE FOR PEDIATRIC NURSING PRACTICE

Nebulizacja 3% roztworem soli hipertonicznej – wytyczne dla praktyki pielęgniarskiej w pediatrii

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STRESZCZENIE

Zakażenia układu oddechowego są jedną z najczęstszych przyczyn chorób wśród dzieci. Odrębności anatomiczno-fizjologiczne dróg oddechowych sprawiają, że dzieci bardziej niż dorośli są podatne na ciężkie zaburzenia układu oddechowego. Nebulizacja pełni ważną rolę w praktyce pediatrycznej. Celem pracy było przedstawienie wytycznych nebulizacji 3% roztworem soli hipertonicznej.

Słowa kluczowe: 3% NaCl, nebulizacja, pielęgniarka.

SUMMARY

Respiratory infections are the most common causes of illness among children. Differences in anatomy and physiology makes children more vulnerable to severe respiratory dysfunction than adults. Nebulized therapy has a very important role in pediatric practice. The purpose of the study was to present the guidelines on nebulization with 3% hypertonic saline.

Key words: 3% NaCl, nebulization, nurse.

INTRODUCTION

Respiratory infections are the most common causes of illness among children. Differences in anatomy and physiology makes children more vulnerable to severe respiratory dysfunction than adults. Knowledge of the basic anatomy and physiology of the respiratory system helps nurses to understand diagnoses and to improve nursing interventions [1]. The nurse is able to perform the basic examination of lungs through a sequence of inspection, palpation, percussion and auscultation to assess respiratory status. The nurse must always be alert to common clinical symptoms indicating airway emergencies.

Difficulty in breathing and cough are the most common problems among young children. Most infections are caused by a common cold and range from a mild illness, that goes away by itself, to severe, life-threatening disease. Some cases are brief, others are long term. Children might deteriorate as quickly as the disease progresses; therefore some of them may require hospitalization. Difficulty with breathing can frighten parents and their children.

NEBULIZATION WITH 3% HYPERTONIC SALINE

Nebulized therapy has a very important role in pediatric practice. Current data suggests that nebulization with 3% saline may significantly reduce the length of hospitalization and improve children's clinical scores [2].

Nebulization with hypertonic saline has been shown to be effective especially in management of acute bronchiolitis [3].

Sticky and thick secretion induce breathlessness. By loosening secretion with hypertonic saline nebulizations can speed up the child recovery. Hypertonic saline is thought to have this effect by lowering the viscosity of mucus secretion and reducing airway oedema [4, 5].

In some cases, nebulization therapy is restricted:

- bronchospasm,
- hyperresponsiveness – in history,
- complications,
- wheezing,

- sinusitis,
- patient discomfort,
- infection.

Concern about the safety of hypertonic saline has been raised in patients with asthma as to induce bronchospasm [6].

Nebulization is the process of medical administration via nebulizer. This therapy delivers medications to the lungs in the form of vapor. It is used when a medication needs to be deposited into the airway. Nurses caring of children with respiratory problems should possess expert skills and knowledge about respiratory problems, should be familiar with respiratory conditions affecting child. Nurses should support the patients and other family members and provide education. The procedure of nebulizations can be challenging for some nurses as the child does not stay still in one place and does not cooperate with the stuff. Some of them might be frightened by the face mask. For an infant we can use a nebulizer while the child is sleeping or while being held. To make nebulization more enjoyable, we can allow children to decorate the nebulizer with stickers, read stories or sing songs.

ADMINISTERING NEBULIZER AEROSOL THERAPY

- Verify the identity of the child and review or explain the procedure to the parents and child.
- Assist the patient into a comfortable position.
- Explain that the medicine has a salty taste and that coughing may occur.
- To minimize dyspnea and to allow lung expansion, upright sitting position is preferred.
- Place the mask over the mouth and nose.
- It is important to use a mask of suitable size.
- The mask should extend from the bridge of the nose to the cleft of the chin. It should fit snugly on the face but put no pressure on the eyes to avoid stimulating a vagal response.
- Advise to take normal steady breaths.
- During the procedure observe the patient for any side effects and any change in patient's condition.
- Provide a sputum mug for spitting the expectorations.

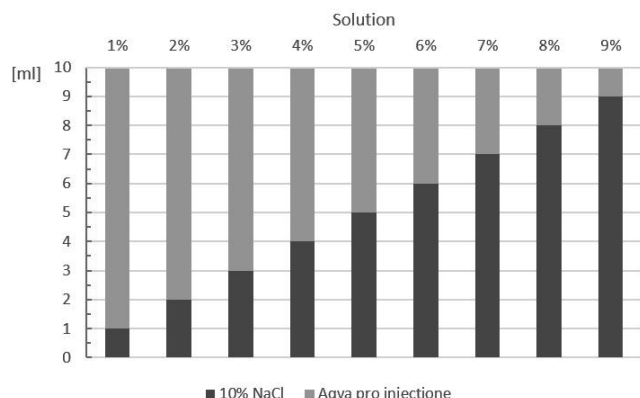


Figure 1. 3% Sodium chloride – prepare using 10% NaCl and aqua pro injection

- Each child must have his own nebulizer.
- It is important to teach patients the proper procedure to ensure that the therapy is effective and to prevent complications.
- The aerosol administration should last about 10 minutes. Reassess the child's condition after the therapy.
- Document the procedure and the child's response.
- After the procedure, the patient should be observed for changes in respirations. Inhaled medications may be administered to open narrowed airways, to liquefy or loosen thick secretions (mucolytic agents), or to reduce inflammation in airways

HOW TO PREPARE 3% SODIUM CHLORIDE

There are two ways of preparing 3% Sodium Chloride solution. First, by using 10% NaCl and 0,9% NaCl, second by using 10% NaCl and Aqua pro injection. Figures below show how to prepare the solution using both ways.

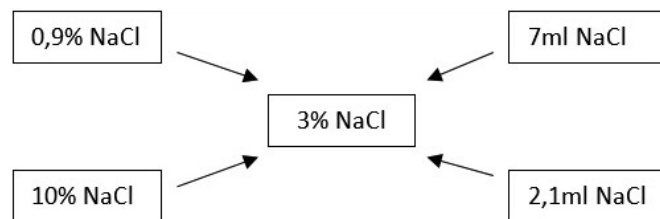


Figure 2. 3% Sodium chloride – prepare using 10% NaCl and 0,9% NaCl

CONCLUSIONS

Teaching children and their families can be one of the most challenging parts of providing care. It is important to teach patients the proper way of doing the nebulization therapy to facilitate effective result. The nurse plays an important role in assuring that patients are able to do nebulization by themselves. While educating patients she must be sure that the patient performs all the steps correctly.

Source of funding: This work was funded by the authors' resources.

Conflict of interest: The authors declare no conflict of interests.

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Received: 18.02.2016

Revised: 20.02.2016

Accepted: 01.03.2016