

Non-Invasive Ventilation in the Elderly Care

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Abstract: Non-invasive ventilation refers to the use of ventilator support without using an invasive artificial airway to avoid intubation and improve oxygenation. Non-invasive ventilation has now become an important tool in the management of respiratory failure, in both the hospital care and in home setting provided that the patient can tolerate the therapy and breathe spontaneously. This article describes the use of non-invasive ventilation in the elderly. There is a lot of evidence supporting its use, but many questions still remain. Used early in appropriately selected patients, there are advantages over conventional invasive ventilation. It could be used in certain conditions, but careful monitoring and ongoing assessment is required.

I. INTRODUCTION

Patients with impending respiratory failure will be sent to the emergency department. The usual management involved mechanical ventilation by endotracheal intubation. However invasive treatment may cause a higher incidence of infection, mortality, longer stay and higher costs of hospital care. Non-invasive ventilation such as bi-level positive airway pressure (BiPAP) could sometimes provide an alternative of treatment. The use of noninvasive ventilation is now being used in emergency room, regular ward and in home care. This review focuses on recent studies for non-invasive ventilation used in the elderly care.

II. METHODS

This is a literature review of non-invasive ventilation use in the elderly care. This article provides an overview of uses of noninvasive ventilation, including the risk, benefits and complication of its use.

III. RESULTS

Patients who develop respiratory failure with hypercapnia may need invasive ventilator support. The decision is difficult due to the fact that the patients are usually very old with irreversible changes in the respiratory tract. Non-invasive ventilation, which involves the use of oxygen and air without intubation, may avoid the need of intubation, reduce hospital stay and prolong life.

Non-invasive ventilation was preferred especially in patients 80 years of age or older, because invasive ventilation is associated with higher mortality and morbidity.

Noninvasive ventilation is the use of ventilator support without artificial airway such as endotracheal tube or tracheostomy tube. The use of noninvasive ventilation has become a choice for the management of both chronic and acute respiratory failure in recent years. It could be used in home as well as in intensive care unit.

Endotracheal intubation affects airway defenses, impairs cough clearance, and leading secretions with bacteria pooling over the endotracheal tube cuff. These conditions start the beginning for ventilator-associated pneumonia which usually develops 48 hours after intubation and is a leading cause of death in patients with hospital-acquired infections with mortality about 35%. Ventilator-associated pneumonia prolongs hospital stays and adds a much higher cost compared to a typical hospital admission.

In contrast, noninvasive ventilation preserves airway protective mechanisms, such as the cough and gag reflexes which leads to reduction of secretion into the lower respiratory tract, decreasing pneumonia risk and improving patient outcomes.

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The success of noninvasive ventilation depends mainly on appropriate patient selection. Patients who have problems such as chronic obstructive pulmonary disease, cardiogenic pulmonary edema may be good candidates.

IV. DISCUSSION

If your patient is on noninvasive ventilation, you need to monitor cough and secretions frequently. Gastric distention usually comes from air pressure. It may be eased by lowering inspiratory pressures and maintaining the head of the bed at 30 degrees or higher. Careful medical therapy, including anxiolytics and analgesics, may improve tolerance with noninvasive ventilation. But even with appropriate sedation, patients may feel anxious and require frequent reassurance, and psychological support. Frequently assessing mental status, vital signs, work of breathing, and ability to protect the airway may help prevent from intolerance. Stay alert for hemodynamic instability and other findings that warrant a switch to invasive ventilation or a hospice care.

A common problem with the use of noninvasive ventilation has been the development of pressure sores around the mask. Inspect the skin over the bridge of the patient's nose, and face; skin in these areas may break down from attempts to obtain an adequate seal with masks and straps. To reduce or prevent such breakdown, use protective dressings. To detect intolerance to noninvasive ventilation use, frequently assess the patient's skin integrity, vital signs and other responses. If the patient will be on noninvasive ventilation for a period of time, a high-quality mask with good fitness should be used.

In selected patients, non-invasive ventilation can be a choice which reduces the risk of pneumonia and other complications. However, patients must be carefully selected based on the latest guidelines.

While literature supports the use of non-invasive ventilation in hypercapnic respiratory failure, its role in hypoxic condition remains unclear. Studies have shown that non-invasive ventilation, such as BiPAP, could be effective in treating respiratory failure or congestive heart failure and have fewer complications compared with endotracheal intubation. The use of non-invasive ventilation has been shown to increase oxygenation, improve hemodynamic stability, and decrease the need for intubation. When non-invasive ventilation is selected, the nurse in charge of care needs to be vigilant in assessing and monitoring these patients. Studies are needed to evaluate the timeliness of BiPAP, appropriate setting of pressure, nursing care of these patients and other indicators in the long term. More randomized controlled studies are needed to ensure its safe and effective application despite the theoretical advantages of non-invasive ventilation.

Management difficulties, assessment training, troubleshooting, and problems related with transportation of patients receiving noninvasive ventilation needs to be further studied. Advanced practice and education may provide leadership and increase use in appropriate patients.

Questions need to be answered include: Can non-invasive ventilation be delivered at home on a long term basis? Another ethical question: Is non-invasive ventilation considered appropriate and tolerable in the elderly? Does non-invasive ventilation use provide good life quality?

V. CONCLUSION

The key to the successful application of non-invasive ventilation in the elderly is in recognizing its capabilities and limitations. This also requires identification of the appropriate patient for the use of non-invasive ventilation without too much unrealistic expectation.

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