The Effects of Thyme Inhalation Therapy on Airway Status and Oxygen Saturation of Patients under Mechanical Ventilation: A Randomized Clinical Trial

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Abstract

Background and Objective: A wide range of intensive care patients on ventilator are at risk for pneumonia and atelectasis. It seems that thyme essential oil administered by nebulization is useful in preventing these complications. Therefore, the present study aimed to determine the effect of thyme inhalation therapy on airway status and oxygen saturation in patients under mechanical ventilation.

Materials and methods: This randomized clinical trial was performed on 66 patients on ventilator in two groups. The experimental group received the thyme essential oil (4 drops of pure thyme essential oil with 10 mL distilled water) every 8 hours for 30 minutes in 3 days through a nebulizer. The control group received 10 mL distilled water every 8 hours for 30 minutes in 3 days through a nebulizer. A questionnaire collected information on socio-demographic characteristics and clinical parameters and a checklist was used to record variables related to airway status (weight, volume, and concentration of secretions; respiratory sounds; airway plateau pressure; and airway maximum pressure) and oxygen saturation.

Findings: The concentration of airway secretions in the experimental group was significantly lower than that of the control group (p=0.000, f=61.901). The mean airway maximum pressure was significantly decreased (p=0.000, f=17.315) and showed a significant difference in the mean oxygen saturation at 8 am and 10 am between the day

before intervention and the first to third days after intervention in the experimental group (p=0.000, f=13.972).

Conclusion: Thyme inhalation therapy diminishes the concentration of airway secretions through increasing the volume and reducing the weight of secretions, and decreases the airway maximum pressure through a decline in the stimulation of airway. It also facilitates the discharge of mucous membranes, improves gas exchange, and increases the oxygen saturation of patients under mechanical ventilation through direct stimulation of the mucosa, increasing the secretion of respiratory mucosa, and increasing the activity and movements of the respiratory tract cilia. Therefore, thyme inhalation therapy is recommended to improve the condition of respiratory tract in patients under mechanical ventilation.

Keywords: thyme, nebulizer, airway secretions, oxygen saturation, plateau pressure