

Abstract

The effect of two different levels of positive end expiratory pressure on the incidence of pulmonary complications in patients undergoing coronary artery bypass surgery.

A Thesis Presented for the Degree of Master of Sciences

In Critical Care Nursing

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Introduction: Coronary artery bypass surgery is one of the most popular and successful practices in the treatment of coronary artery disease and can have positive benefits for the patient to be followed. However, the incidence of pulmonary complications after surgery is high. Positive end expiratory pressure of exercise can play an important role in the prevention and treatment of these complications. But the best way to prevent complications of the surgery creates new problems, there is not consensus. The aim of this study was to evaluate the effects of different levels of PEEP in preventing these complications.

Materials and Methods: This clinical trial study was performed. The sample size in this study was 90 patients. Sampling was conducted convenient and block design stratified patients into two groups intervention and control (each group n = 45) were included. In the control group of patients

after surgery, upon arrival in the intensive care unit extubated until a PEEP of 5 cm/H₂O received. Patients in the intervention group after arrival in the intensive care unit for an average of 4 hours a PEEP of 10 cm/H₂O received. And then extubated until a PEEP of 5 cm/H₂O received. The main consequences (atelectasis, pneumonia, pleural effusion, pneumothorax) during six hours after removal of the endotracheal tube and five days after removal of the endotracheal tube were studied. Changes in systolic and diastolic blood pressure were recorded before and after the intervention. And the duration of intubation, length of hospital stay in both groups was assessed. For statistical analysis, descriptive statistics and the chi-square test, t-test, dependent t-test was used for repeated measures analysis.

Results: In this paper based on statistical analysis between the two groups in terms of age, sex, smoking history, and there was no significant difference in surgical technique. In other words, the combination of subjects in both groups was similar. Based on the results of the chi-square test for two groups of patients suffering from high blood pressure, diabetes and hyperlipidemia was not significantly different. The main outcomes at six hours after extubation between groups in the incidence of pneumonia, pneumothorax and pleural effusion were not significantly different from each other. But the incidence of atelectasis in the group receiving PEEP: 5 were higher (P=0.03). During the five days after extubation between groups for incidence of pneumonia, pneumothorax, pleural effusion and atelectasis were not significantly different from each other. Groups in terms of the ratio of arterial oxygen pressure to inspiratory oxygen fraction at four hours after admission to the ICU (P<0.0001), one hour after extubation (P<0.0001) and six hours after extubation (P<0.0001) and mean arterial oxygen saturation during the six hours after extubation (P=0.025) were significantly different from each other. The mean duration of hospital stay, the mean duration of intubation was not significantly different between the two groups. The mean changes in systolic blood pressure and diastolic after the intervention was not significantly different between the two groups.

Conclusions: The use of positive end expiratory pressure of 10 cm/H₂O may reduce the incidence of atelectasis, improve oxygenation and alveolar ventilation and given that the levels of PEEP may cause barotrauma effects of changes in hemodynamic status of patients is not. It is recommended that this method be used in the intensive care unit.

Key words: positive end expiratory pressure (PEEP), coronary artery bypass graft