The effect of planned breathing exercises on pulmonary complications in patients undergoing coronary artery bypass surgery

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Abstract

Introduction: Pulmonary complications, impaired oxygenation and decline in physical function are common after coronary artery bypass graft surgery and cause the increase in hospital stay and health care costs. Breathing exercises are used commonly in the management of CABG patients in many hospitals, but scientific evidence for the efficacy of this treatment has been lacking. This study was performed to evaluate the effect of planned breathing exercises on pulmonary complications in patients undergoing coronary artery bypass surgery.

Materials and methods: In a clinical trial 100 patients in Shahid Rahaei heart hospital (1389-90) who were undergoing CABG randomly allocated in planned breathing exercises (n=50) and control group (n=50). Patients who were allocated in experimental group received our research breathing exercises protocol (deep breathing, incentive spirometer and directed cough maneuvers) and control group patients received daily routine hospital physiotherapy. Other therapies were similar between groups. Arterial blood gasses, incidence of atelectasis, distance walked in 6 minute, oxygen consumption and length of hospital stay were compared between groups.

Results: The results of this study showed that there was no significant statistically difference between groups in demographic data, history of chronic diseases and PaO$_2$ and SaO$_2$ before surgery and the first and second days after surgery. On the third postoperative day, SaO$_2$ and PaO$_2$ were higher in the experimental group. Incidence of atelectasis, length of hospital stay was lower in experimental group patients and distance walked in 6 minute was higher in these patients compared to control group. There was no significant difference in Co$_2$ and oxygen consumption between groups.

Conclusion: In the present study, it was found that patients who received planned breathing exercises including deep-breathing exercises, incentive spirometry and directed cough maneuvers had better oxygenation, lower incidence of atelectasis and improvement in distance walked in 6 minutes compared to the hospital routine physiotherapy.

Keywords: Breathing exercises, coronary artery bypass surgery, pulmonary complications