Effect of protective ventilation on pro-inflammatory cytokine response during one lung ventilation in esophagectomy: a randomized controlled study

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Abstract:

Abstract Background: Esophagectomy is associated with increase in pro-inflammatory cytokine whose extent has been claimed as a causative agent of postoperative acute lung injury. Objectives: The aim of this study was to determine whether a ventilatory strategy based on the reduction of tidal volume (VT) and a moderate level of positive end-expiratory pressure (PEEP) during one lung ventilation (OLV) could reduce the pro-inflammatory cytokine response associated with esophagectomy. Also, its impact on oxygenation and postoperative outcome were evaluated. Patients and methods: Thirty patients were randomly allocated into two groups: Group (CV), Patients (n = 15) received a conventional ventilation strategy (tidal volume of 9 ml/kg during two-lung and OLV); no PEEP was applied and group (PV), Patients (n = 15) received a protective ventilation strategy (tidal volume of 9 ml/kg during two-lung ventilation, reduced to 5 ml/kg during OLV and PEEP 5 cm H2O was applied. Serum level of interleukins (IL-6 and IL-8) were measured at baseline time after anesthetic induction (TBaseline,); at the end of abdominal stage of the operation (TAbdo,); at the end of OLV (TOLV end, ); 1 hour and 20 hour after The end of the surgical procedure respectively (TPostop1) and (TPostop20,). Also, peri-operative oxygenation and post-operative outcome were evaluated. Results: There were significant increases in blood level of IL-6 and IL-8 all over the time in both groups in comparison to their baseline values (p= 0.001). However there were significant reduction in blood level of IL-6 and IL-8 in group PV compared to CV group all over the study period (p

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