Effect of Thoracic Epidural Analgesia on Proinflammatory Cytokines in Patients Subjected to Protective Lung Ventilation During Ivor Lewis Esophagectomy

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Abstract:

Background: Thoracic epidural analgesia (TEA) has a well-known effect on neurohormonal response. Attenuation of stress response by post-operative epidural analgesia has shown beneficial effects such as lower pain scores and less immunological alterations. Objectives: Investigation of the combined effects of TEA and protective lung ventilation on proinflammatory cytokines and patients' outcome after Ivor Lewis esophagectomy. Study Design: A randomized controlled study. Setting: Academic medical center. Methods: Thirty patients of the American Society of Anesthesiologists (ASA) I and II were randomly allocated into 2 groups: G1 (n = 15) patients received general anesthesia and were mechanically ventilated with 9 mL/kg during 2 lung ventilations, reduced to 5 mL/kg and 5cm H2O positive end expiratory pressure (PEEP) during one lung ventilation (OLV) or GII (n = 15) patients received TEA and the same general anesthesia and mechanical ventilation used in G1. Assessment parameters included hemodynamics, pain severity, total analgesic consumption, and measurement of interleukins (IL) (IL-6 and IL-8) at baseline time after anesthetic induction (TBaseline,); at the end of the abdominal stage of the operation (TAbdo,); 15 minutes after initiation and at the end of OLV (TOLV 15) and (TOLV End) respectively; one and 20 hours after the end of the surgical procedure (TPostopI and TPostop20), respectively, and patient's outcome also recorded. Results: There was a significant reduction in mean arterial blood pressure (MAP) and pulse rate in GII during the intraoperative period, at Tabdo, TOLV15, and TOLV End (P < 0.05). The duration of stay in PACU was significantly decreased in GII (10 ± 2 days) compared to G1 (15 ± 3 days) (P = 0.001). Limitations: This study is limited by its sample size. Conclusion: Our study concluded that TEA reduced the systemic pro-inflammatory response and provided optimal post-operative pain relief. Although there were no significant differences in adverse events, there was a trend towards improved outcome. Further clinical studies with larger numbers of patients are required.

Keywords:

Esophagectomy, one lung ventilation, thoracic epidural analgesia pro inflammatory cytokines

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