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Lumbar epidural anesthesia and celiac plexus blockade for cholecystectomy in two patients with severe chronic obstructive pulmonary disease

To the Editor:

Open cholecystectomy (OC) usually necessitates general anesthesia and endotracheal intubation. General anesthesia + epidural anesthesia (EA), thoracic EA, EA + intrapleural anesthesia, EA + *iv* anesthesia, and EA + local anesthesia have been used for upper abdominal surgery (UAS) in patients with pulmonary disease previously.^{1–3} Although celiac plexus blockade (CPB) can be recommended as an adjunct to EA for UAS, it is not common because of technical difficulties and risks. We report the effects of combined CPB and EA on metabolic and endocrine responses to surgery, respiratory function and pain intensity in two patients with chronic obstructive pulmonary disease (COPD) for OC.

Case 1: A woman (44 yr old) with chronic cholelithiasis had bronchiectasis (wheezing, sibilant rhonchi and clubbing) for ten years. (FEV₁/FVC: 60% and pH: 7.43, PaCO₂: 29 mmHg, PaO₂: 85 mmHg, BE: -3 mmol·L⁻¹, SaO₂: 96%.)

Case 2: A woman (65 yr old) had COPD (expiratory wheezing and rhonchi) and hypertension. (FEV₁/FVC: 58%, pH: 7.46, PaCO₂: 44 mmHg, PaO₂: 70 mmHg, BE: 6.9 mmol·L⁻¹, SaO₂: 95%). Both patients were admitted for OC. Other laboratory tests were normal.

Lumbar EA and CPB were planned in order to prevent deep visceral pain during OC. Premedication and bronchodilator medication were given. With standard monitors in place, an epidural catheter was placed at the L1–2 level. A test dose (3 mL 1.5 % lidocaine with 1:200,000 epinephrine) was given and 6 mL bupivacaine 0.25% given to provide analgesia during CPB by a posterior approach with a 12-cm 22 gauge needle. After a test dose, 30 mL 0.25% bupivacaine were injected to the celiac plexus bilaterally. After 15 min, 16 mL 0.25% bupivacaine were given epidurally and sensory blockade reached the T4 dermatome level in both patients.

During the procedure, mild hypotension was corrected with ephedrine 5 to 10 mg *iv*. Shivering was treated with meperidine 12.5 to 20 mg *iv* and midazo-

lam 2 mg *iv* was administered for sedation. The patients felt moderate pain [visual analogue scale (VAS) 4–5] only during subhepatic retraction, relieved with fentanyl 50 µg *iv*. Forty-five minutes into surgery, blood glucose and cortisol levels were normal or slightly elevated. At the end of surgery, bupivacaine 0.25% 8 mL was given epidurally for postoperative analgesia. Eight hours after surgery, pain (VAS 5–7) was relieved with 0.25% bupivacaine 8 mL epidurally. Intraoperative and postoperative arterial blood gas analyses were normal. The epidural catheters were removed on the morning after surgery. Postoperatively, glucose and cortisol levels were in the normal range. No complications of CPB were observed. The patients were discharged on the fourth and fifth day after surgery.

The celiac and splanchnic nerves are responsible for producing endocrine-metabolic responses to gastric surgery even under epidural blockade.⁴ Even when sensory blockade reaches the T4 dermatome sensory blockade to the viscera can be inadequate.⁵ It has been suggested that celiac plexus or superior hypogastric blockade should be performed in UAS.⁵

In conclusion, cholecystectomy can be performed under EA with CPB, almost inhibiting the stress responses to surgery, in patients with severe COPD. Cases should be selected carefully and CPB should be practiced by a skilled anesthesiologist. Alternatively, an intraoperative abdominal approach for CPB can be considered in order to prevent complications. Further studies are needed to compare EA and EA plus CPB for cholecystectomy in patients with severe COPD.

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Transcutaneous electrical nerve stimulation prevents visceral pain in mice

To the Editor:

We assessed transcutaneous electrical nerve stimulation (TENS) antinociceptive activity in visceral pain in an experimental murine model.

Sixty-four mice were divided into eight groups. Group I, received perezona, *ip* while Group II received only the vehicle. The 5 mg·kg⁻¹ dose was chosen based on the results obtained in a previous dose-response study to perezona. The number of abdominal constrictive responses (ACR) was registered immediately after its administration. TENS electrodes were placed on Group III without stimulation during 30 min; afterwards, the mice received perezona *ip*. Groups IV to VIII underwent TENS (by means of two electrodes in the mouse's abdominal wall at different frequencies (10, 20, 40, 80, and 160 Hz) during 30 min. Immediately after the stimulation period, these last groups received perezona *ip* and the number of ACR was recorded.

A stimulator [Acupoint 2000, Instituto Politécnico Nacional (IPN) Mexico City, Mexico] was used for the generation of the electric impulses of TENS, with fixed parameters for all groups (except for the stimulation frequency); the pulse amplitude was 150 J·sec⁻¹, the relaxation pattern 1.8 sec, and the contraction pattern four seconds. Outcomes were analyzed with the Kruskal Wallis test and a $P \leq 0.05$ was considered statistically significant.

Perezona induced ACR accompanied by behavioural and autonomic responses (defecation, urination and tachycardia). The average of ACR during the observation in Group I TENS was 6.75 contractions, while it was zero for Group II.

For mice from Group III that only underwent electrode placement without stimulation before receiving perezona, ACR averaged seven contractions. The mice from Groups IV, V, VI and VII that underwent TENS

FIGURE The influence of transcutaneous electrical stimulation on the abdominal constrictive response in eight groups of eight mice.

30 min with frequencies of 10, 20, 40, and 80 Hz before the administration of perezona presented significant inhibition of ACR ($P < 0.05$) of 83, 87, 92 and 74%, respectively. Finally, in Group VIII the inhibition of the nociceptive effect was of 20% ($P > 0.05$; Figure).

We conclude that a decrease in ACR induced by perezona can be observed when TENS is applied at low frequencies. Applied prior to nociception, TENS appears to be useful as a non-pharmacological resource for visceral pain management.

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