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References

- 1 Hubler M, Litz RJ, Albrecht DM. Combination of balanced and regional anaesthesia for minimally invasive surgery in a patient with myasthenia gravis. *Eur J Anaesthesiol* 2000; 17: 325–8.
- 2 Lorimer M, Hall R. Remifentanyl and propofol total intravenous anaesthesia for thymectomy in myasthenia gravis. *Anaesth Intensive Care* 1998; 26: 210–2.
- 3 Troy AM, Hutchinson RC, Easy WR, Kenney GN. Tracheal intubating conditions using propofol and remifentanyl target-controlled infusions. *Anaesthesia* 2002; 57: 1204–7.
- 4 Erhan E, Ugur G, Gunusen I, Alper I, Ozyar B. Propofol - not thiopental or etomidate - with remifentanyl provides adequate intubating conditions in the absence of neuromuscular blockade. *Can J Anesth* 2003; 50: 108–15.

Catastrophic venous air embolus during prostatectomy in the Trendelenburg position

To the Editor:

A 37-yr-old, otherwise healthy patient with adenocarcinoma of the prostate was scheduled for radical retropubic prostatectomy (RRP) under epidural anesthesia.

During dissection of the venous plexus of the prostate in the Trendelenburg position, the patient reported chest tightness and light headedness. The SpO₂ decreased rapidly from 99% to 91% and a blood pressure drop was noted. Mask ventilation with 100% O₂ was initiated. Auscultation of the chest revealed no respiratory abnormalities and the anesthetic level was at T5 distribution. Vigorous *iv* fluid resuscitation was initiated just before he developed sudden bradycardia and became unresponsive. A bolus of atropine 1 mg and ephedrine 25 mg were given intravenously seconds before asystole was recorded on the electrocardiogram. The surgical team was instructed to start cardiac compressions. Heart rate and blood pressure were restored within half a minute. ETCO₂ with good

mask fit was 17. Suspecting venous air embolism (VAE), the surgeon was instructed to flood the field and the operating table was placed in a right-side-up position. A precordial Doppler (PD) confirmed air in the chambers of the heart. An arterial blood gas analysis revealed a PaCO₂ of 48 and a PaO₂ of 83 on 100% O₂ via face mask. Upon regaining consciousness, the patient exhibited seizure-like symptoms. General endotracheal anesthesia was induced. Suspecting paradoxical air emboli, a transesophageal echocardiogram was performed, but excluded intracardiac shunts. With volumes of air decreasing under observation and increase of ETCO₂ to 29, the insertion of a central venous catheter was deemed unnecessary. No further complications were encountered and the patient was extubated upon conclusion of surgery.

Although uncommon, VAE during RRP has been reported in the past.^{1,2} An open venous system and a subatmospheric central venous pressure can lead to introduction of air into the blood stream. Pressure gradients of just 5 cm H₂O have been reported to be sufficient,³ making procedures with the operative field above heart level most prone to this complication.⁴ Introduction of only 100 mL of air might lead to fatal outcomes as a consequence of pulmonary embolization.

In light of a potentially catastrophic event, some authors recommend routine monitoring with PD for RRP.² This diagnostic tool is relatively easy to use, inexpensive and more timely and specific than clinical findings that might occur relatively late.⁵

Concluding, the anesthesiologist's high index of suspicion as well as familiarity with the procedure, diagnosis and treatment of VAE may be life saving.

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References

- 1 Ravzi HA, Chin JL, Bhandari R. Fatal air embolism during radical retropubic prostatectomy. *J Urol* 1994; 151: 433–4.
- 2 Albin MS, Ritter RR, Reinhart R, Erickson D, Rockwood A. Venous air embolism during radical retropubic prostatectomy. *Anesth Analg* 1992; 74: 151–3.
- 3 Lucas WJ. How to manage air embolism. In: Vaughn RW (Ed.). *Problems in Anesthesia Vol 1*. Philadelphia: J.B. Lippincott Co.; 1987: 228–52.
- 4 Black S, Ockert DB, Oliver WC Jr, Cucchiara RF. Outcome following posterior fossa craniectomy in patients in the sitting or horizontal positions. *Anesthesiology* 1988; 69: 49–56.

- 5 Chang JL, Albin MS, Bunegin L, Hung TK. Analysis and comparison of venous air embolism detection methods. *Neurosurgery* 1980; 7: 135–41.

Prevention of nausea and vomiting after dental surgery: a comparison of small doses of propofol, droperidol, and metoclopramide

To the Editor:

Postoperative nausea and vomiting (PONV) occur frequently after dental surgery, with an incidence as high as 50% when no prophylactic antiemetic is given.^{1,2} We previously showed that a single small dose (0.5 mg·kg⁻¹) of propofol administered *iv* at the end of surgery was effective for preventing PONV.³ In the present study, we compared the efficacy of low dose propofol with traditional antiemetics, droperidol and metoclopramide, for the prophylaxis of PONV following dental surgery.

Ninety patients, 32 males and 58 females, aged 15 to 49 yr, scheduled for dental surgery performed under general anesthesia were enrolled. Anesthesia was induced with *iv* thiopentone 5 mg·kg⁻¹ and fentanyl 2 µg·kg⁻¹, with tracheal intubation facilitated by vecuronium 0.2 mg·kg⁻¹. Anesthesia was maintained using sevoflurane 1.0 to 3.0% and N₂O/O₂ (2:1). At the end of surgery, patients received *iv*, in a randomized, double-blinded manner, propofol 0.5 mg·kg⁻¹, droperidol 20 µg·kg⁻¹, or metoclopramide 0.2 mg·kg⁻¹ (*n* = 30 in each group). The dose of each antiemetic was based on previous studies.^{1,2,4} Atropine 0.02 mg·kg⁻¹ and neostigmine 0.04 mg·kg⁻¹ were administered *iv* for reversal of muscle relaxation, and the trachea was extubated. Postoperatively, all episodes of emetic symptoms (nausea, retching, vomiting) from zero to 24 hr after anesthesia were recorded by the nursing staff. The level of sedation was graded on a three-point scale: (0 = awake; 1 = drowsy; 2 = asleep). Statistical analyses were performed by ANOVA, χ^2 test, Fisher's exact probability test, and Kruskal-Wallis rank test. *P* < 0.05 was considered significant. Results are mean $\pm$ SD or *n* (%). Patient demographics, types of surgery and levels of sedation were not different between groups. The rate of PONV during zero to 24 hr after anesthesia was less in patients who had received propofol (10%) than in those who had received droperidol (37%) or metoclopramide (40%; *P* < 0.05; Table available as additional material at www.cja-jca.org).

To our knowledge, this is the first report to compare the efficacy of low dose propofol, droperidol, and

metoclopramide for the prophylaxis of PONV in patients undergoing general anesthesia for dental surgery. When these antiemetics were administered *iv* at the end of surgery, a single small dose of propofol was most efficacious without excessive sedation in this population. The exact mechanism by which propofol acts as an antiemetic is unknown, but there is a possibility that reduced levels of serotonin in the area postrema may be related to its antiemetic property.⁵

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References

- 1 Muir VM, Leonard M, Haddaway E. Morbidity following dental extraction. A comparative survey of local analgesia and general anaesthesia. *Anaesthesia* 1976; 31: 171–80.
- 2 Smith BL, Young PN. Day stay anaesthesia. A follow-up of day patients undergoing dental operations under general anaesthesia with tracheal intubation. *Anaesthesia* 1976; 31: 181–9.
- 3 Fujii Y, Uemura A, Nakano M. Small dose of propofol for preventing nausea and vomiting after third molar extraction. *J Oral Maxillofac Surg* 2002; 60: 1246–9.
- 4 Watcha MF, White PF. Postoperative nausea and vomiting. Its etiology, treatment, and prevention. *Anesthesiology* 1992; 77: 162–84.
- 5 Cecchetto DF, Diab T, Gibson CJ, Gelb AW. The effects of propofol in the area postrema of rats. *Anesth Analg* 2001; 92: 934–42.