

and a second adapter (Vital Signs®), both of which are interposed between the y piece of the circle and the mask. Stimulation of the pharynx in an inadequately anesthetized patient may cause bucking and coughing. Therefore, as when inserting an airway, the probes should be placed in the pharynx only after the patient is anesthetized.

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Use of Etomidate for Elective Cardioversion

To the Editor:—Recently, the use of etomidate for elective cardioversion has been described.¹ We present a case where myoclonic movements secondary to etomidate interfered with an elective cardioversion.

A 67-yr-old, 60-kg man was scheduled for an elective cardioversion for atrial fibrillation. The patient was given .15 mg/kg of etomidate intravenously. The patient became unresponsive to verbal stimuli, and then developed gross myoclonic movements. The patient was then immediately cardioverted. The myoclonic movements continued after the cardioversion such that it was impossible to ascertain by the electrocardiogram whether the patient still had atrial fibrillation. When the myoclonic movements finally stopped, it was determined that the cardiac rhythm was still atrial fibrillation. Four minutes after the initial bolus of etomidate, the patient was awake and responsive to verbal commands. We then elected to give the patient 125 mg of thiopental intravenously. After administration of the thiopental, there were no myoclonic movements, and cardioversion restored cardiac rhythm to normal sinus rhythm.

The incidence of myoclonus after etomidate administration has been reported to be 10–38% (1.2). Any drug that causes significant myoclonus can cause difficulty in

the interpretation of electrocardiograms. The inability to readily interpret a patient's cardiac rhythm because of myoclonus can be especially troubling to both the anesthesiologist and the cardiologist. Therefore, we feel that etomidate may not be the ideal anesthetic agent for cardioversions.

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Inadvertent Intra-arterial Injection of Vecuronium

To the Editor:—The inadvertent intra-arterial injection of anesthetic agents has been a well-recognized operating room hazard for many years.^{1,2} Severe tissue ischemia, gangrene, and loss of a limb may follow the intra-arterial injection of a wide variety of agents, in-

cluding barbiturates, narcotics, and phenothiazines,³ although other frequently used drugs appear not to cause tissue damage.^{3,4} Awareness of the likely sequelae of intra-arterial administration of specific drugs is clearly of prognostic value, as well as of relevance to the man-

agement of this complication. We report a case of inadvertent intra-arterial administration of vecuronium, which did not result in any adverse effects to the patient.

The patient was a 77-yr-old man scheduled for major reconstructive facial surgery under general anesthesia. Upon arrival in the operating room, a right radial arterial catheter was inserted under local analgesia, and a peripheral intravenous infusion was commenced *via* a cannula sited on the dorsum of the distal right forearm. Both the venous and arterial infusion sets incorporated stopcocks separated from their respective cannula hub by a 50-cm tubing extension. During the induction sequence, but prior to the injection of thiopental, a syringe containing 1 mg/cc of vecuronium was mistakenly attached to the arterial stopcock. After 2 cc of vecuronium solution had been injected, the error was recognized and, at about the same time, the patient complained of severe pain in his right hand. The injection was immediately discontinued, and the arterial catheter was allowed to bleed back freely with evident relief of the pain. Nevertheless, lidocaine 50 mg, papaverine 40 mg, and heparin 5000 IU were immediately injected into the arterial catheter. Anesthetic induction was completed, and, after securing the airway, a right stellate ganglion block was performed. General anesthesia was maintained with nitrous oxide, oxygen, and halothane, and surgery allowed to proceed. The right hand and fingers remained warm and well perfused throughout induction, surgery, and recovery. The arterial catheter was removed 24 h postoperatively without the need for further therapeutic measures, and no adverse effects were apparent at the time of discharge from hospital 8 days after surgery.

To our knowledge, the effects of inadvertent intra-arterial vecuronium injection have not previously been reported. Vecuronium bromide solution, with a pH of between 3 and 4, may be expected to cause endothelial irritation and arteriolar spasm following intra-arterial injection. Furthermore, since the severity of tissue necrosis caused is believed to be related to lipid solubility,³ it would be expected that vecuronium would be more

noxious by the arterial route than pancuronium or tubocurarine, both of which are less lipid soluble.⁵

While the effects of intra-arterial pancuronium may be relatively innocuous,⁴ tubocurarine by the same route causes considerable local histamine release.⁶ Although we cannot exclude the fortunate outcome in our patient being due to the prompt recognition and treatment of the complication, it does seem likely that vecuronium lacks serious injurious properties when administered intra-arterially. Nevertheless, this incident illustrates once again the necessity for the clear labelling of arterial pressure tubing, and for the particular care which is required when injecting a drug into any intravascular catheter infusion system.

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Placement of a Morbidly Obese Patient in the Prone Position

To the Editor:—We offer the following approach to facilitate positioning an obese patient into the prone position.

A 28-yr-old man with morbid obesity (173 cm, 177 kg, BMI > 59) was admitted to the hospital with a her-

niated L₄₋₅ intervertebral disc. While in the supine position following extensive topical anesthesia, bilateral superior laryngeal nerve blocks were performed. After allowing the patient to breathe 100% oxygen for several minutes, his trachea was successfully intubated