variables and increasing the bolus dose in the parturient, they do not mention any adverse effects, maternal or fetal. Unfortunately, we did not have access to their anecdotal experience to guide our management of this patient. Therefore, we encourage Drs. Gavelin and Janzen to publish their data so that the technique of iv PCA fentanyl administration for the parturient can be improved.

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Obstetric anaesthesia and spinal cord injury

To the Editor:

We enjoyed reading the review by Crosby *et al.*¹ on the management of obstetrical patients with spinal cord injuries. These authors provided a complete analysis of the pathophysiology and risks of these patients during labour and delivery, with emphasis on the prevention and treatment of autonomic hyperreflexia. However, there was no discussion of the potential airway management problems in these patients. We recently cared for a woman during labour and delivery with Kugelberg-Welander disease, a form of spinal muscle atrophy. Although not a spinal cord injury, she suffered from progressive spinal cord weakness and deterioration, and in all respects had the same implications for anaesthetic management, except for the potential for autonomic hyperreflexia.

We were asked to provide anaesthesia for primary Caesarean section for this 34-yr-old, G₁P₀, hispanic female who presented at 37 wk gestation in active labour. She had a history of progressive spinal muscle atrophy since birth. She had several hospital admissions during her pregnancy for treatment of pneumonia. Her past surgical history included placement of Harrington rods (cervical through lumbar) and cholecystectomy under general anaesthesia without complication. She suffered frequent bouts of asthma. Her medications included penicillin, iron, nasal cannula oxygen prn, and inhaled albuterol prn. Pulmonary function tests five months earlier revealed FVC 1.03 L (31% predicted) and a FEV₁ 0.89 L (34% predicted). Vaginal delivery was considered not to be possible, because of cephalopelvic disproportion, and her weak abdominal and pelvic musculature.

On physical examination, the patient was unable to lie supine and there was severe limitation of neck movement, confined to the neutral position. Her tongue was large and the uvula could not be visualized.

The patient was premedicated with intravenous metaclopramide 10 mg, and 30 ml of oral sodium citrate solution. Nasotracheal intubation was preferred, after topical anaesthesia with the help of a flexible fiberoptic endoscope. General anaesthesia was induced with thiopentone and maintained with isoflurane, and a healthy male infant was delivered uneventfully. At the completion of surgery, the patient was transferred to the surgical intensive care unit. She received positive-pressure ventilation, optimization of her bronchodilators and pulmonary toilet, and the trachea was extubated without difficulty the following day. She was discharged home one week later.

We were faced with the problem of providing anaesthesia for this woman with marginal pulmonary reserve, who could not lie supine, nor move her neck from the neutral position. Epidural anaesthesia was considered but rejected because of her previous back surgery. Spinal anaesthesia was undesirable due to lack of precise controllability. Either may have exacerbated respiratory muscle weakness.

Our case illustrates the difficulties anaesthetists may encounter when managing the airway of spinal cord-injured obstetric patients. The problems are considerable and should be addressed prospectively. After considering the various methods for anaesthesia, the safest, most conservative approach should be utilized.

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Malignant hyperthermia susceptibility in patients with Duchenne's muscular dystrophy

To the Editor:

Duchenne's muscular dystrophy (DMD) is a severe and progressive form of myopathy that is transmitted by an X-linked recessive gene with symptoms becoming apparent in males between the ages of two and six years. There are conflicting reports regarding the susceptibility of patients

with DMD to malignant hyperthermia (MH) when exposed to triggering agents. Richard's report of 61 uneventful general anaesthetics in 43 patients with DMD¹ is countered by recent case reports of cardiac arrest and MH during general anaesthesia in patients with DMD.^{2,3}

We conducted a retrospective study to investigate our experience in providing general anaesthesia to patients with DMD. The anaesthesia and recovery room records of all patients with DMD who underwent surgery between the years 1980 and 1990 were reviewed. Most of the surgical procedures were tendon transfers, releases and posterior spinal fusions. Only those patients with a muscle biopsy confirmed diagnosis were included. Induction technique, anaesthetic agents and the use of muscle relaxants were recorded. In addition, any clinical sign or laboratory changes suggestive of MH were sought.

We administered 84 general anaesthetics to 36 patients. The patients' ages at the time of surgery ranged from 5 to 21 yr (mean 11.2 ± 4.6 yr). The induction techniques were as follows: 52% received inhalational induction with halothane, 45% received *iv* induction using thiopentone, propofol, midazolam or ketamine and one patient received a nitrous oxide/narcotic technique. Except in one patient anaesthesia was maintained with a halogenated volatile agent. One patient received succinylcholine and nondepolarizing muscle relaxants were used in 31%.

None of the patients developed signs or symptoms suggestive of MH. The uneventful perioperative course of our patients parallels Richard's experience and is quite different from that of Sethna *et al.*⁴ Despite our uneventful experience with the administration of MH triggering agents to patients with DMD, the relationship between DMD and MH remains unclear and the experience of previous investigations should not be overlooked.

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Axillary block

To the Editor:

I would like to comment on several aspects of the study "Axillary brachial plexus block using a peripheral nerve stimulator: single or multiple injections," by Dr. Lavoie *et al.*¹

First, I wish to congratulate the authors on their work. Second, the authors claim that this study was "double-blind." Assessment of the blocks may have been "blinded," but the performance of each block certainly was not. In addition, how was the patient blinded? Editors, reviewers and investigators are fixated on prospective, randomized, double-blind study designs. This is often difficult, if not impossible, to do with regional anaesthetic techniques and is not necessarily desirable. What is important is that this study was prospective, randomized and the same endpoint (i.e., muscle twitch at 0.5 m.a.) was used on every patient. The fact that the endpoint that was accepted as indicating proper needle position was constant, provides objective evidence that there was no attempt, deliberate or otherwise, to influence the results of this study during the performance of the blocks. Blinded assessment assures that there is not an opportunity to direct the study results during this phase only. Finally, it is not entirely clear how the axillary brachial plexus blocks were performed from the manuscript. The authors claim that "stimulation of two nerves inside the axillary sheath was not performed" (Discussion - Line 11). This does not seem compatible with the study design (Methods: G-1 and G-2).

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REPLY

We appreciate the interest of Doctor Lang in our paper. We consider that our study was double-blind because the patient did not know what aspect of his axillary block was studied specifically (all the patients had at least one nerve stimulated) and the anaesthetist who did the block was not the one who evaluated it. We considered the musculo-cutaneous nerve as being outside the axillary sheath. Consequently no group had stimulation of this