Correspondence

Apology

To the Editor:
Patient data that we published in the Canadian Journal of Anaesthesia[1] were used as a comparison group in two subsequent papers.[2,3] One of the latter papers[2] made a comparison with an entirely new group of patient data, whereas the other[3] reported use of a unique statistical treatment to analyze data among groups.

In the first paper[1] a much more thorough treatment of the effects on both neuromuscular blockade and circulation caused by mivacurium during nitrous oxide-narcotic anaesthesia was compared to patients receiving mivacurium during nitrous oxide-isoflurane anaesthesia (90 patients were described in the nitrous oxide-narcotic group, whereas 45 of these were used as a comparison group in the other two papers*). We used data from those patients who received mivacurium doses of 0.03–0.15 $mg \cdot kg^{-1}$ during nitrous oxide-narcotic anaesthesia so as to provide comparison data for our studies during other anaesthetics. We failed to clarify this by appropriate references in subsequent papers.

In the third paper,[3] slopes and intercepts of the dose–response curves for mivacurium during the three types of anaesthesia were uniquely compared using a *t* test for multiple comparisons described by Winer and noted as reference number eight in this paper. This analysis is not found in either of the other two papers.

We were in error in failing to acknowledge that data from 45 patients were common to all three papers and that data from an additional 45 patients (anaesthetized with isoflurane) were common to two papers.[1,3] We should have asked permission from the Canadian Journal of Anaesthesia to use these data for comparisons in our other manuscripts. Copies of the other manuscripts should have been included for each Journal's review at the time of original submission and they should subsequently have been properly cross-referenced. We apologize for this error.

Finally, we have thought carefully about the sequence of events which occurred here and have tried hard to understand our actions and our *intent*. We had no *intent* to deceive. This was a large project, with 171 patients studied. The three manuscripts were all prepared and submitted at about the same time (February 21 to March 7, 1989) and we failed to ask for permission or properly cross-reference them. The data are true and correct responses to mivacurium during three types of anaesthesia.

*The first 45 patients from the nitrous oxide-narcotic group were used as a comparison group in the other two papers. The last 45 patients in the paper[1] in the Canadian Journal of Anaesthesia were given doses which exceeded the ED_{95}.

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2 *From RP, Pearson KS, Choi WW, Abou-Donia M, Sokoll MD.* Neuromuscular and cardiovascular effects of mivacurium chloride (BW1090U) during nitrous oxide-fentanyl-thiopentone and nitrous oxide-halothane anaesthesia. Br J Anaesth 1990; 64: 193–8.
3 *Pearson KP, From RP, Choi WW, Abou-Donia M, Sokoll MD.* Neuromuscular and cardiovascular effects of mivacurium chloride (BW1090U) during nitrous oxide-narcotic, nitrous oxide-halothane and nitrous oxide-isoflurane anesthesia in surgical patients. Middle East J Anesthesiol 1990; 10: 469–77.

The cervical spine: additional considerations regarding atlanto-axial subluxation

To the Editor:
We applaud Drs. Crosby and Lui for their recent review of cervical spine considerations for the anaesthetist.[1] We would like to add a few additional points regarding atlanto-axial subluxation with which all anaesthetists should be familiar.

TABLE Risk groups for atlanto-axial subluxation

Pathological states
Ankylosing spondylitis*
Enteropathic arthritis
Infections (especially pharyngeal)
Postoperative (especially ENT)
Psoriatic arthritis
Reiter's syndrome
Rheumatoid arthritis (adult and juvenile)*
Systemic lupus erythematosus
trauma (especially in young children)*
Tumour*
Congenital conditions
Congenital scoliosis*
Disproportionate dwarfism (but not achondroplasia)*
Down syndrome*
Mucopolysaccharidoses*
Neurofibromatosis
Osteogenesis imperfecta
Scott syndrome*
Vertebral anomalies (cervical)*

All of these groups are at risk for atlanto-axial subluxation. Risk arises from ligamentous laxity, odontoid hypoplasia, loss of mobility elsewhere in the cervical spine, degeneration or abnormality of bony supports, or from a combination of these factors.
*Group where routine preoperative radiographic screening appears warranted.

Grisel described non-traumatic atlanto-axial subluxation associated with pharyngeal disease in 1930.[2] This entity commonly presents with torticollis or neck pain, sometimes with neurological symptoms, and has been reported after a long list of surgical procedures including mastoidectomy, tonsillectomy, and adenoidectomy.[3] Any patient with an inflammatory process in the pharyngeal area (tumours as well as infection[5]) is at risk for atlanto-axial subluxation.

Extra caution needs to be urged in accepting the *x*-ray diagnosis of a stable cervical spine in paediatric trauma. Fracture of the odontoid is more common in children than in adults, and radiographic interpretation is more difficult.[6,7] Paediatric victims of serious trauma should be assumed to have an unstable spine even after being "cleared" and caution is advised before airway manipulation and in patient positioning.

We agree with Crosby and Lui's recommendation to obtain cervical spine *x*-rays as part of the preoperative evaluation of patients at high risk for cervical spine instability. We would include not only patients with Down's Syndrome or rheumatoid arthritis, but also other patient groups at high risk for atlanto-axial subluxation (see Table). The cervical spine series must include odontoid, extension, and *non-forced* flexion views, and should be reviewed by a radiologist informed of the diagnosis and of the concerns.

Evaluation and management of the patient at risk for cervical spine instability is a critical consideration for the anaesthetist. This is not limited to the trauma patient. Upper respiratory pathology, surgery in the pharyngeal area, and a host of congenital and acquired conditions are risk factors for cervical instability. Knowledge of who is at risk and the taking of appropriate precautions are important aspects of safe anaesthetic practice.

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6 *Diekema DS, Allen DB.* Odontoid fracture in child occupying a child restraint seat. Pediatrics 1988; 82: 117–9.
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But what do nonparametric data mean?

To the Editor:
There have been many publications on the need for higher standards of statistical excellence in anaesthesia and medical journals.[1–3] I have noted an error in the statistical methods of two publications in the September issue of the Canadian Journal of Anaesthesia.[4,5] Those authors stated