Pancuronium added to intravenous regional anesthesia: systemic weakness after prolonged tourniquet inflation time

To the Editor:

Neuromuscular blockers (NMBs) may be added to intravenous regional anesthesia (IVRA) to enhance both the motor and sensory blockade.^{1,2} Most reports indicated lack of systemic effects with these agents but we encountered a case of weakness upon tourniquet deflation with the use of pancuronium despite a tourniquet inflation time of 89 min.

A healthy 41-yr-old, 81 kg man presented for repair of a lacerated right extensor pollicis longus tendon and IVRA was performed with 40 lidocaine ml 0.7% plus 2 mg pancuronium. This quantity of pancuronium was inadvertently administered instead of the 1 mg dose typically used at our institution. The block was performed in the standard manner, with exsanguination of the arm and inflation of a double-cuffed tourniquet to 300 mmHg. The tourniquet was deflated after 89 min. Three minutes later the patient experienced diplopia and was unable to lift his head. Intravenous administration of 2.5 mg neostigmine (with 0.5 mg glycopyrrolate) terminated the diplopia and allowed a sustained head lift for > 5 sec.

The apparent systemic release of a substantial quantity of NMB in this case is in contrast to that of local anesthetics, in which one would expect no systemic effects after deflation of a tourniquet which had been inflated for 89 min. The differences probably relate to the lesser extremity tissue binding with NMBs due to their greater ionization and lower lipid solubility. Clinicians who add NMBs to IVRA should be aware of the potential for systemic weakness, even after prolonged tourniquet inflation.

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Subcutaneous tunnelling of interscalene catheters

To the Editor:

I read with interest the interscalene catheter tunnelling technique suggested by Drs. Ekatodromis and Borgeat.¹ I also use an intravenous cannula for catheter tunnelling but my technique keeps the catheter completely subcutaneous until it emerges above the clavicle, unlike the above technique, which appears to involve the emergence of the catheter onto the skin for a few millimetres before it is tunnelled. As Winnie commented: "With the interscalene technique, the catheter is at right angles to the... skin, so that movement of the head or shoulders tends to advance or withdraw the catheter".² I use the following technique.

Before inserting the interscalene catheter, a 2-3 mm skin incision is made. The catheter is then inserted through this incision. An 18G intravenous cannula needle is inserted alongside the catheter and is advanced subcutaneously to a point just above the clavicle. It is then pushed outwards through the skin (Figure 1a). The intravenous cannula is passed backwards over the needle and the two are withdrawn together, allowing the end of the cannula to emerge through the skin incision (Figure 1b). The catheter is then passed through the cannula (Figure 1c), which is removed. The result is a fully tunnelled catheter. The skin incision is closed with a Steristrip™.

On a slightly peevish note: if Dr. Borgeat wishes to quote an earlier publication than his³ that introduces the concept of patient-controlled interscalene analgesia,

FIGURE 1A

FIGURE 1B

FIGURE 1C

he need look no further than mine,⁴ which was published three months before his. Great minds think alike!

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- 1 Ekatodromis G, Borgeat A. Subcutaneous tunneling of the interscalene catheter (Letter). *Can J Anesth* 2000; 47: 716–7.

- 2 Winnie AP. *Plexus Anesthesia Volume I. Perivascular Techniques of Brachial Plexus Block*. Philadelphia: W B Saunders, 1983: 214.
- 3 Borgeat A, Schnappi B, Biasca N, Gerber C. Patient-controlled analgesia after major shoulder surgery. Patient-controlled interscalene analgesia versus patient-controlled analgesia. *Anesthesiology* 1997; 87: 1343–7.
- 4 Lucas MA, Harrop-Griffiths AW. Interscalene patient-controlled analgesia. *Anaesthesia* 1997; 52: 263–4.

REPLY:

We thank Dr. Harrop-Griffiths for the interest shown in our subcutaneous interscalene catheter tunnelling technique and congratulate him for both being a pioneer in the patient-controlled interscalene analgesia technique¹ and for looking for new ways to secure the interscalene catheter.² In our communication³ we omitted to describe the interscalene placement technique used. We do not use the approach described by Winnie⁴ anymore, but use the lateral modified technique, which consists in directing the needle in the plane of the interscalene space – there is no interscalene sheath. The direction of the needle, contrary to Winnie, is caudal and slightly either lateral, or medial, according to the anatomy. With this technique we, therefore, avoid the problem of having the catheter at a right angle. We now have placed more than 250 catheters without one dislocation. The technique discussed by Dr. Harrop-Griffiths has only one disadvantage in that he performs a skin incision with a scalpel blade which can always be associated with scar formation. We apologise for not having mentioned the significant work of Dr. Harrop-Griffiths in this field, but this was because his paper dealt with only one case. But obviously, great minds do indeed think alike!

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- 3 Ekatodramis G, Borgeat A. Subcutaneous tunnelling of the interscalene catheter (Letter). *Can J Anesth* 2000; 47: 716–7.
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