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In reply:—The comparison of doses between species is always difficult, as pointed out by Dr. Selander. Consider, for example, the anticonvulsant doses of phenytoin. In rats, the range is 135 mg/kg (ip) to 2,200 mg/kg (po).* The extrapolated dose in humans is 20–300 times the normal daily recommended oral dose. Most experimental investigators have used local anesthetic doses that would be too large if extrapolated to the human.[1–3] This problem of dosing is common and does not invalidate the study of mechanisms, but rather only implies an expected species difference. Systemic toxic effects were not observed for the local anesthetic doses reported. In studies of topical or local drug administration, concentration and not dose is the most important pharmacologic variable. Using concentrations within the clinical range, the end-point of this and a subsequent study[4] was an insight into the pathogenic mechanisms of nerve injury. It is important to note that the observed pathologic changes were not due to osmotic, *p*H, or vehicle effects, but rather to the actions of the local anesthetics in a concentration-dependent manner. In order to explore these effects, several control solutions were used, including 0.2% NaCl (as in Nesacaine-CE®) and 0.9% NaCl (physiologic saline).

We agree that the power and value of statistical tests are improved by increasing the number of subjects, but the nature of the statistical tables is to make it progressively more difficult to achieve statistical significance for decreasing degrees of freedom. Thus, the ability statistically to discriminate treatment and control groups with small numbers is an indication of a robust effect. Different tests did have different numbers of subjects, as indicated, but this certainly does not invalidate the statistical results.

As stated, horseradish peroxidase studies had been done only with 2-chloroprocaine. Since that time, additional studies have been completed with procaine as well.[4] The results in both cases indicate an increase in permeability of the perineurial barrier, allowing the entrance of horseradish peroxidase tracer into the endoneurium.

Although not discussed in the article, it is not surprising that the areas of the nerve most closely in contact with the highest concentration of anesthetic will be the most affected. A more remote fascicle is probably less likely to be affected by the much diluted anesthetic concentration once the agent has diffused across the tissue space.

Dr. Selander's pioneering work in this field has set the foundation for subsequent studies, and we thank him for bringing attention to questions which must be asked about the clinical relevance of any animal study.

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* Barnes CD, Eltherington LG: Drug Dosage in Laboratory Animals. A Handbook. Berkeley, University of California Press, 1973.

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Central Venous Cannulation: A New and Efficient Device

To the Editor:—Cannulation of the central venous system by the Seldinger technique[1] has become an increasingly important part of invasive monitoring in anesthesia. We have developed and tested a new piece of equipment that may improve on guide wire techniques currently in use. The new device consists of a thin-walled 18-gauge needle connected to a 5 ml syringe that allows a j-wire to pass through the plunger and into the needle (fig. 1).

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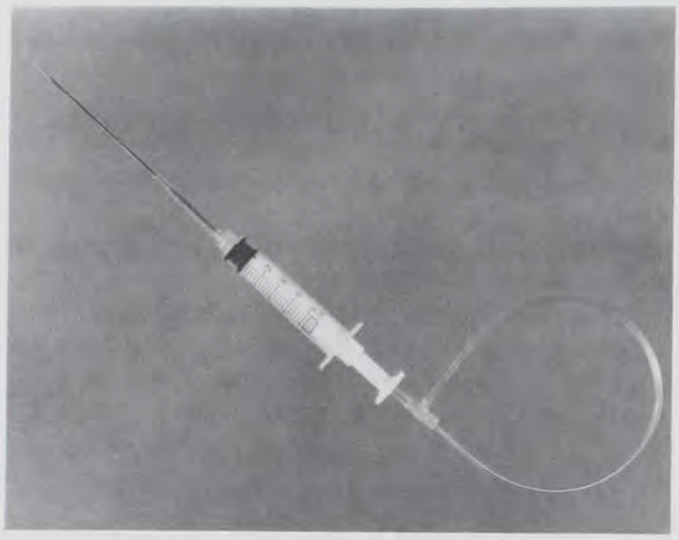

FIG. 1. View of single-unit j-wire insertion device.

Cannulation of the central venous system is accomplished with the standard techniques.[2,3] Once the vein is punctured and blood return established, the j-wire is passed into the vessel without disconnecting the needle from the syringe.

This system offers the possible advantages of reducing the risk of air embolism and improving sterile technique.[4] More importantly, it will reduce the probability of displacing the needle from the vein when disconnecting the syringe from the needle.

This device has been used on 20 patients requiring internal and external jugular cannulation. In our experience, we have not failed to pass the wire once blood return was established. It has proved especially helpful for training inexperienced personnel and for cannulating difficult external jugular vessels.

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A New Use for the Pulse Oximeter

To the Editor:—We would like to report the use of the pulse oximeter to aid cannulation of the femoral artery. A 5-yr-old black male with Down's syndrome and obesity (40 kg) came to the operating room for complete repair of tetralogy of Fallot. After an inhalation induction, bilateral antecubital ivs were started and anesthesia was maintained without difficulty. Acceptable oxygen saturations and stable blood pressures were measured by pulse oximeter (Nellcor® N-100) and the Dinamap™ SX. Attempts to cannulate both radial arteries were unsuccessful because pulses could not be palpated due to excessive adipose tissue. Femoral pulses could not be palpated for the same reason. The right groin was then prepped and draped using sterile technique. The pulse oximeter sensor was placed on the right great toe, and good pulsations were obtained. The groin was then manually probed and a specific area identified where digital occlusion caused the cessation of the distal toe pulsation on the pulse oximeter. A 20-gauge intravenous catheter was inserted into the identified area and the femoral artery cannulated without difficulty. An appropriate femoral artery catheter was then inserted using a modified Seldinger technique.

In conclusion, we found this technique was helpful, and it illustrated an additional use for the pulse oximeter. It is easy to use and may aid in similar cases where palpation of the arterial pulse is not possible.

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