In all of our cases brachial plexus block was obtained easily; in none of them did we search for paraesthesia nor was it described by the patient.

This technique provides a constant and absolute identification of the perivascular space and avoids the search for unpleasant paraesthesia.

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GAS CHROMATOGRAPHIC MEASUREMENT OF HALOTHANE

Sir,—MacDonald and Mackenzie (1976) reported an a linear relationship between peak height and halothane concentration when measuring halothane (0.2-4.0%) with a gas chromatograph equipped with a flame ionization detector. A linearity persisted when the sample loop size was reduced from 2 ml to 0.1 ml, and a linear response was obtained only when the flame ionization detector was replaced with a katharometer. We wish to report that use of a low deadspace value with a 20-μlitre gas sampling loop (No. 2015, Carle Instruments, Inc., 1141 E. Ash Avenue, Fullerton, CA 92631) also provides a linear response without requiring replacement of the detector.

Halothane standards were prepared by delivering microlitre quantities of liquid halothane into a glass gas sampling flask (Nahrwold, 1976). The volume of liquid halothane added for each concentration was calculated using the following formula:

$$V_{\text{anesth}} = \frac{P}{760} \cdot \frac{273}{T} \cdot \frac{V}{22.4} \cdot \frac{MW}{SG} \cdot 0.01C$$

where $V_{\text{anesth}}$ = ml of liquid halothane to be added, $P$ = atmospheric pressure (mmHg), $T$ = temperature (degrees absolute), $V$ = gas sampling flask volume (litre), $MW$ = molecular weight of halothane, $SG$ = specific gravity of halothane and $C$ = desired halothane vapour concentration (per cent of a standard atmosphere). Standards were analysed in triplicate using a Gow-Mac model 750 gas chromatograph with a flame ionization detector (Gow-Mac Instrument Co., 100 Kings Road, Madison, N.J. 07940). The stainless steel column was 1.83 m x 0.3 cm and packed with 80-100 mesh 20% SE30 on chromabsorb W. Gas flows were 30 ml/min helium, 450 ml/min air and 30 ml/min hydrogen. Column and detector temperatures were 90 °C and 150 °C, respectively.

Figure 1 shows calibration curves constructed by plotting peak height as a function of halothane concentration, using either the 2-ml sample loop supplied with the chromatograph or the 20-μlitre loop. Regression analysis demonstrated that the data for the 2-ml loop were best represented by a parabola. However, inspection of the data suggested a linear relationship at lower concentrations, followed by a plateau. Because of the considerable sensitivity of the flame ionization detector, it has been suggested that the plateau represents saturation of the detector with halothane molecules (Cohen, Parzen and Bailey, 1963). In contrast, a linear relationship between peak height and halothane concentration was obtained when the 20-μlitre sample loop was used. Analysis of variance yielded a standard error of the intercept of 1.54. This value did not differ significantly from zero ($t = -1.96, P > 0.10$), suggesting that peak height was proportional to halothane concentration over the range of values studied. We conclude that the addition of a micro sample loop to a gas chromatograph equipped with a flame ionization detector makes the instrument useful for measurement of halothane concentrations in the clinical range.

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