

Anesthesiology
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A Correction on Dural Cuffs

To the Editor:—In his recent clinical report¹ on total spinal anesthesia following intercostal nerve block, Gauntlett cites Moore² incorrectly. Instead of stating that dural cuffs extend 8 cm past the intervertebral foramina,¹ Moore² states: “The existence of long dural cuffs which extend six to eight centimeters past the intervertebral foramen seem highly unlikely.” Moore suggests intraneuronal injection, however, may occur in this region.

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Anesthesiology
66:97, 1987

In reply:—I have re-read Dr. Moore's article,¹ and must concede that I misread the statement on the extension of dural cuffs. However, in another paper,² he mentions it again and refers the origins of the theory of dural cuff extension to Drs. Brittingham, Berlin, and Wolff.³

Gallo *et al.*⁴ did mention that dural cuff extension of 2–3 cm may occur. The injection in our patient was made close to the costo-transverse joints, so it is conceivable that injection into a dural cuff did occur.

I did, in fact, discuss in my report the possibility of interneuronal injections, but concluded that, from Moore's evidence,² the spread would have been too slow.

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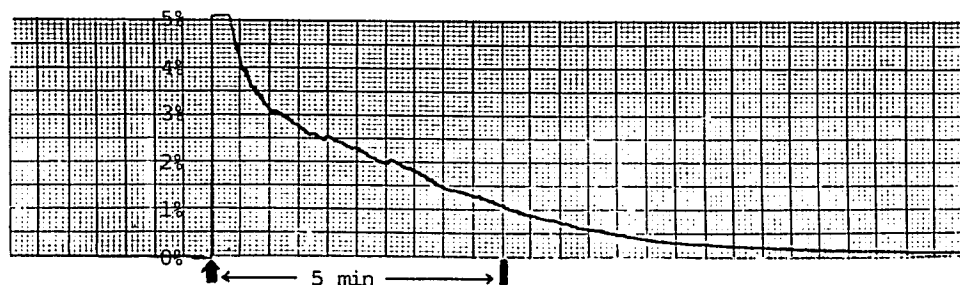
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“Normac” Falsely Recognizes “Fruit Extract” as an Anesthetic Agent

To the Editor:—Recent articles^{1,2} concluded that the Datex “Normac” anesthetic agent monitor, an infrared absorption instrument, is a compact, convenient, and trouble-free instrument for use in the operating room.

We have used the “Normac” in pediatric anesthesia and, indeed, found it to be reliable and convenient. However, it should be used with caution when adding fruit flavor to anesthetic gases for pediatric induction.³ Com-

FIG. 1. In the halothane mode, 0.2 ml of strawberry extract was added to the circuit (at 1). The “Normac” recorded it as a high concentration of halothane.



mercially available bottled fruit extract contains small amounts of ethyl-alcohol as a solvent, and it is known that alcohol vapor affects the accuracy of the readings.²

As seen in figure 1, a falsely high anesthetic reading will be recorded by the "Normac."

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Anesthesiology
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A Simple and Effective Method for Stopping Post-anesthetic Clonus

To The Editor:—During recovery from general anesthesia, patients often exhibit neurological changes that, in pathological states, are associated with lesions of the pyramidal tract.¹ Sustained muscular hypertonicity is reported to occur in 38% of patients, and commonly involves the masseters, pectorals, adductors, and flexors of the upper limbs, and the extensors of the lower limbs.² Clonus is frequently superimposed at the ankle, knee, and elbow.

Many drugs have been advocated to stop or prevent this post-anesthetic clonus. Methphenidate (Ritalin®),³ a psychomotor stimulant with sympathomimetic effects, is effective in 50% of the cases, but can have alarming cardiac side-effects.⁴ Orphenadrine,⁵ magnesium sulfate,³ and calcium chloride³ have also been used, with reported success rates within 5 min, of 57%, 61%, and 28%, respectively.

Clonus results from reflex activity at the level of the spinal cord. When a sudden stretch is put on a group of muscles, these muscles reflexly contract vigorously and, in so doing, stretch their antagonists which, in turn, reflexly contract, stretching the first group, and so forth. This self-perpetuating reflex activity can be very simply terminated by elongating one group of muscles and shortening their antagonists. For example, with lower limb hyperactivity, if steady force is exerted to almost completely flex the knees, the initially increased resistance suddenly melts away. The clonus disappears and does not recur if the leg is kept in the flexed position.

This so-called "clasp-knife" response is a feature of the pyramidal syndrome, and is explained by the stimulation of the Golgi tendon organs, producing excitatory post-synaptic potentials on interneurone cells, which then discharge over a short axonal pathway, releasing an inhibitory transmitter on the agonist motoneurone.⁶

We tried this technique on ten patients (8-18 yr old) with post-anesthetic clonus. Flexion of the knees consistently and immediately stopped the clonus in all patients. Extension of the forearms at the elbows was successful in six patients (60%).

In conclusion, this physiologic maneuver to stop post-anesthetic clonus does not involve any pharmacological intervention and is effective, thereby facilitating post-anesthetic care, and preventing the increase in oxygen consumption associated with muscular activity at a time when the respiration and the cardiac output may be depressed by residual anesthetic action.

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