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Intrathecal Morphine and Reactivation of Oral Herpes Simplex

To the Editor:—Good evidence now exists for the association between epidural morphine and reactivation of oral herpes simplex virus (HSV).¹⁻⁴ Intrathecal morphine (ITM) appears to have a similar effect in pediatric patients,⁵ but no reports exist on the reactivation of oral HSV by ITM in other population subsets.

A 26-yr-old woman with a positive family history of malignant hyperthermia presented in early labor requesting analgesia. Using a combined epidural-spinal technique, 1.5 mg preservative-free morphine was injected intrathecally, and a catheter was inserted into the epidural space. Labor progressed uneventfully and painlessly for 6 h, until severe fetal distress developed. Emergency cesarean section was performed after 20 ml 3% chloroprocaine injected through the epidural catheter achieved a satisfactory sensory block. A healthy baby was delivered. Postoperatively, the mother remained pain-free for several hours.

Severe perioral pruritus commenced 3 h postpartum, and the mother could be seen scratching herself almost continuously. Naloxone was offered to treat the pruritus but was refused. Eighteen hours later, severe confluent herpetic blisters and ulceration, confirmed by dermatologists, covered her upper lip and adjacent skin, necessitating isolation from her baby for 4 days.

Although other factors (anxiety, lumbar puncture, surgery, and labor⁶) may have precipitated the herpetic outbreak, it is noteworthy that the lesions were so severe and occurred in exactly the area where pruritus developed. The virus may have been seeded due to the scratching of a small initial blister, producing the confluent outbreak.

Nevertheless, it now seems likely that ITM as well as epidural morphine may reactivate latent HSV infection in parturients. The mechanism remains unclear, but it may be related either to high concentrations of morphine in the substantia gelatinosa of the trigeminal nerve or to mechanical irritation of sensory nerves due to scratching of the face in response to itching.³

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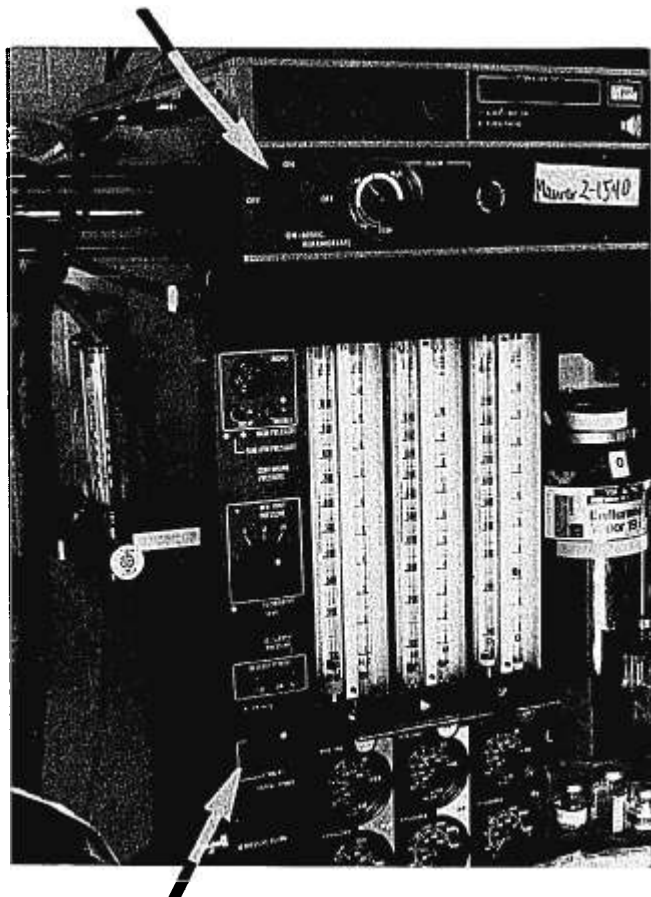
A Disadvantage of Similar Machine Controls

To the Editor:—This is a report of a critical incident that had the potential for causing patient injury. The incident involved a North American Drager model 2A anesthesia machine incorporating an integral oxygen analyzer. Additional monitors consisted of a Marquette model 7010 with pulse oximeter and a Perkin Elmer mass spectrometer servicing twelve operating rooms.

Figure 1 shows the vertical spacing of the controls, specifically the main on-off switch, and the on-off switch for the ventilator. On closer examination, one sees that these switches are exactly the same shape and size. They turn in the same direction and are actuated by a quarter turn. It is important to note that the on-off switch not only turns off the flow of all gases, but more importantly, turns off all audible airway pressure alarms and the oxygen analyzer.

The case in question was an uneventful cholecystectomy using a standard inhalational technique with isoflurane, 70% nitrous oxide and pancuronium. After administering reversal of neuromuscular blockade, the anesthesia trainee was intently observing the surgical field and reached behind himself (without looking), presumably to turn off the ventilator, and made the error of turning off the main on-off switch. The mode select valve was thrown from "auto" to "bag"; the pop-off valve was closed; and when the bag was squeezed the chest was observed to rise and fall with prompt refilling of the bag. The capnograph showed a normal waveform and end-tidal carbon dioxide. It was believed that there was adequate ventilation and oxygenation. In fact, because there was no gas flow, there ensued a rapid decrease in the fractional inspired oxygen concentration (F_IO₂) due to consumption

VENTILATOR SWITCH



ON-OFF SWITCH

FIG. 1. Drager model 2A anesthesia machine controls.

of oxygen by the patient. Since the integral oxygen analyzer was attached to the main switch of the Drager machine, no audible alarm sounded indicating a low $F_{I_{O_2}}$. There was no loss of oxygen supply to the machine; therefore, the oxygen-pressure loss alarm did not sound. The circle system was intact, with hand ventilation continuing, and thus the capnograph appeared normal. The error was noticed when it was observed that the flow meters registered zero flow.

The Perkin Elmer mass spectrometer eventually would have alarmed when the $F_{I_{O_2}}$ decreased to less than 0.19, but depending on the number of active operating rooms, this might have taken 3–4 min. The digital display for the pulse oximeter on the Marquette monitor certainly would have flashed when the saturation decreased to less than 90%. But with our current software, the audible alarms on the pulse oximeter must be activated manually. This now has been changed, since redundant alarm systems are essential for maximum safety.

Certainly, the best way to avoid a serious problem is to ensure that the anesthetist is a well trained and vigilant. There really will never be a substitute for this essential element of patient safety.

However, equipment manufacturers need to keep in mind the benefits of designing critical controls and switches so that they do not turn in the same manner or have the same "feel." In fact, the newer Drager model 2B has incorporated changes to avoid the above-mentioned problem. In addition, serious consideration should be given to the current trend of packaging all monitors into one integrated system, if that entire system (including alarms) is controlled by one power supply switch.

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Spinal Anesthesia in Infants: Could a L5–S1 Approach Be Safer?

To the Editor:—Recently Wright *et al.*¹ described four cases of high spinal anesthesia in former premature infants. The authors highlighted factors related to the extension of the block, *i.e.*, baricity, position, total dose, volume of cerebrospinal fluid, volume of the anesthetic solution, and the rate of injection. However, we believe that in neonates the level at which dural puncture is performed plays a crucial role in governing the height of the spinal block. In all the infants, lumbar puncture was performed in the L3–L4 interspace.

Wright *et al.*¹ stated that because the spinal cord and canal in infants are much shorter than in adults, small differences in the extent to which the solution ascends with injection could make a significant difference in the height of the block. We agree and suggest that a low approach, such as below the intercrystal line (which in neonates is mainly L5–S1²), may reduce the possibility of high spinal blockade.

In addition, lumbar puncture at L3–L4 increases the risk of damaging the spinal cord, which is said to extend further caudad in small children.

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