

CLINICAL EXPERIENCE WITH SUBANESTHETIC KETAMINE

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This study evaluates the usefulness of i.m. ketamine, in subanesthetic doses, in providing adequate analgesia and early return to normal function in burn patients. Forty such patients received 150 such administrations of ketamine prior to debridement or dressing change. Selection of patients was limited to those who had previously demonstrated poor tolerance to the operative manipulation after i.m. narcotic administration. Fourteen patients had only 1 exposure; the remainder received between 2 and 13 administrations. The optimal dose of ketamine was found to be 1.5 mg. per kg. i.m., 15 per cent of the usual anesthetic dose. Because of the rapid onset of action, the drug was injected after the patient was suitably positioned for debridement in the Hubbard tank. When the duration of analgesia decreased or was deemed inadequate, dosage for subsequent administrations was increased by 25 to 50 per cent.

Each exposure was evaluated for: (1) onset of action; (2) duration of analgesia; (3) time to reestablishment of complete orientation and normal sensorium; and (4) time to acceptance of food. The characteristics used to evaluate the analgesic state included presence and degree of vocalization by the patient, withdrawal from painful stimuli, and involuntary movements. The results were divided into 2 groups: data from the first 2 exposures, and data from subsequent exposures; they were compared statistically.

Despite any deficiencies in the characteristics of the analgesic state, total amnesia for the operative procedure was obtained in all exposures. Although higher doses were given in the multiple exposure series to achieve the same duration of analgesia, there was a significant reduction in the time required for reestablishment of orientation in the multiple exposure group. No difference was noted in the time to acceptance of food. Screaming or vocalization unrelated to stimulation occurred in 34 per cent of the first 2 exposure groups and in 49 per cent with multiple exposures. Involuntary movements were absent in 95 per cent of the first 2 exposures and in 100 per cent of the patients in the multiple exposure group. Consistent withdrawal from painful stimuli requiring supplementation did not occur after the analgesic state was induced.

Although atropine was not used, excessive salivation was never a problem. Bleeding during debridement was not considered excessive. Neither nausea nor vomiting occurred.

Complications were seen in only 2 patients. One developed an upper airway obstruction, which responded to manipulation of the mandible. The other demonstrated unpleasant emergence reactions. No patient, including the latter mentioned, refused ketamine for subsequent dressing changes or debridement.

Ketamine has proved valuable in the management of burn patients because of its ability to stimulate the cardiovascular and respiratory systems in patients who are

difficult to monitor and in whom airway manipulation may be awkward. However, involuntary or random movements may preclude safe and effective surgical procedures.

The authors concluded that i.m. administration of subanesthetic doses of ketamine provided useful and reliable analgesia for debridement and dressing changes in the burn patient. Onset of action was rapid and predictable, and was clearly heralded by nystagmus, psychic relaxation, and the appearance of a blank effect. Although total amnesia and intense analgesia were produced by subanesthetic doses, the most striking characteristic of the analgesic state was that approximately 50 per cent of the patients were relaxed, drowsy, and yet could carry on a coherent conversation. The occurrence of occasional airway obstruction and emergence delirium requires administration by trained personnel. No patient had unpleasant memories of his experience, and a significant improvement in patient attitude toward debridement and dressing change was apparent in this study.

Comment: Ketamine has long been advocated for burn dressings and debridement. Unfortunately, in a full anesthetic dose of 10 mg. per kg. i.m., full recovery may take up to 4 hours. This delay is a distinct disadvantage when multiple administrations are required, thus disrupting essential nutrition.

Slogoff et al. have surmounted this problem by using subanesthetic doses, which apparently produced adequate analgesia and rapid recovery, and which were totally acceptable to patients. This is welcome news for all concerned with the care of patients with thermal burns.

Only one patient developed unpleasant emergence reactions. Could this good result be explained by the sex distribution of the patients, only 7.5 per cent being female? The age distribution, 3 to 55 years, might be misleading if a high proportion were children, because they are relatively immune to postoperative sequelae.

I am also concerned at the grouping of screaming and vocalization as a single characteristic of the analgesic state. The latter is a common response, but surely screaming is quite unacceptable, even though the patients have no recall.

If these doubts could be removed, perhaps this reviewer would be more enthusiastic.

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