Title: INTRANASAL KETAMINE AS INDUCTION ADJUNCT IN CHILDREN: PRELIMINARY REPORT

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Introduction. Ketamine has been administered by intravenous, intramuscular, intrathecal and rectal routes.[1] A preliminary report of ketamine (Kt) administration by the intranasal route as an adjunct to inhalation induction is herein presented.

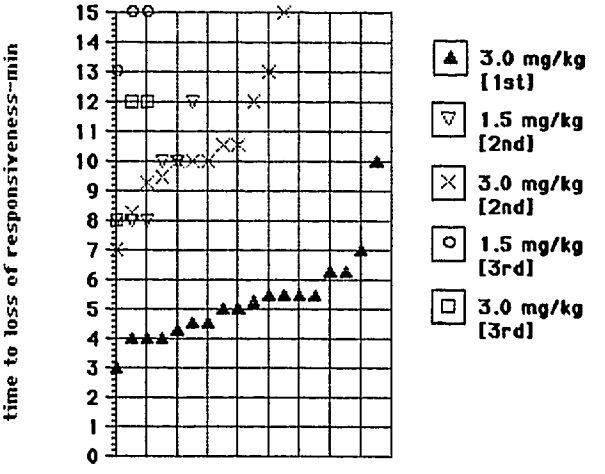
Methods. Forty-two pediatric outpatients (ages 2 to 9 years) comprised the study group. After obtaining informed consent, without premedication, the patients were given up to three applications of (100 mg/ml solution) via one nostril. The initial dose given was 3 mg/kg, the second and third doses, if required, were either 1.5 mg/kg or 3.0 mg/kg. The onset of nystagmus, analgesia, disorientation, inability to follow commands and loss of conciousness were noted. Thereafter, mask inhalation induction was carried out and anesthesia was maintained with O_2-N_2O and halothane. The time of recovery from anesthesia and eventual discharge to home were compared to a similar group of patients that were anesthetized using conventional induction methods. A comparison was also made of the occurrance, during anesthesia, of the patients' reluctance, crying and excitement.

Results. Figure 1 displays the time to onset of loss of responsiveness in minutes for the following dosages:

3.0 mg/kg initial dose
3.0 mg/kg initial + 1.5 mg/kg 2nd dose
3.0 mg/kg initial + 3.0 mg/kg 2nd dose
3.0 mg/kg initial + 1.5 mg/kg 2nd + 1.5 mg/kg 3rd
3.0 mg/kg initial + 3.0 mg/kg 2nd + 3.0 mg/kg 3rd

Each sign represents an individual patient. A delay in the loss of responsiveness resulted in administration of a second and even a third dosage. However, in about 35% of the patients, one dose sufficed. Anesthesia induction was facilitated with the nasal administration of Kt in all patients. Of the 42 ketamine patients, 41 had subsequently smooth inhalation induction of anesthesia as compared to 22 out of 42 in the group of patients induced via mask inhalation without premedication ($p=\angle 0.05$). The average recovery time, as gauged by the lapse from the end of anesthesia to when a PAR score of 10[2] was attained, was 18 ± 3.6 mins for the control group and 27 ± 7.8 mins for the ketamine treated group (N.S.). The mean time from the end of anesthesia to discharge from the outpatient facility was 118 ± 13.5 mins and 133 ± 22 mins, respectively.

Figure 1. Ketamine dose relating to loss of responsiveness



Discussion. Excitement during mask-inhalation induction continues to be an undesirable feature of pediatric anesthesia. In this study, anesthesia induction was facilitated in all pediatric patients with the administration of Kt nasally. Many of the applications were given by the patients' parents with the anesthesiologist present in the preanesthetic holding area. Children are used to receiving such interventions and in general accepted it well. This resulted in the appearance of nystagmus and loss of reponsiveness within three to nine minutes, allowing thereafter for a smooth inhalation induction in nearly all the subjects. The lack of significant delay of recovery from anesthesia and subsequent discharge home, as compared to a control group, makes Kt a valuable adjunct to anesthetic induction of children. Other possible applications are for minor diagnostic and operative procedures, initiation of venoclysis, awake intubations of the trachea, burn dressings, etc. These preliminary observations warrant further investigation in the nasal application of ketamine.

References.

1. White PF, Way WL, Trevor AJ: Ketamine—Its pharmacology and therapeutic uses. Anesthesiology 56: 119-136, 1982.
2. Aldrete JA, Kroulik D: A postanesthetic recovery score. Anesth Analg 49:924-934, 1970.