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Chloral hydrate

**Safety and efficacy of chloral hydrate for conscious sedation of infants in the
pediatric cardiovascular intensive care unit**

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Abstract

In this report we're discussing the use of chloral hydrate for conscious sedation of infant in the pediatric cardiovascular intensive care unit PCICU .Infants with congenital cardiac malformations often have labile cardiovascular function may require sedation in the pediatric cardiovascular intensive care unit (PCICU) for several days to weeks. The infants are subject to irritating stimuli and require an adequate level of sedation while minimizing medication-related complications, respiratory inhibition, cardiovascular depression, and excessive or prolonged neurologic compromise. Chloral hydrate is one of the most commonly used sedatives in the clinical setting despite the availability of other sedatives such as midazolam and pentobarbital. It has the characteristics of ease of administration, high success rate, and transient and low prevalence of adverse reactions. Other traditional sedative agents (such as midazolam, propofol, and ketamine) can have negative effects on the respiratory drive or can have cardiovascular side effects. Based on available reports, these characteristics of chloral hydrate make it potentially useful in the treatment of infants who require sedation in a PCICU.

Introduction

Chloral Hydrate is a synthetic monohydrate of chloral with sedative, hypnotic properties. Chloral hydrate is converted to the active compound trichloroethanol by hepatic alcohol dehydrogenase. The agent interacts with various neurotransmitter-operated ion channels, thereby enhancing gamma-aminobutyric acid(GABA)-A receptor mediated chloride currents and inhibiting amino acid receptor-activated ion currents. In addition, chloral hydrate enhances the agonistic effects of glycine receptors, inhibits AMPA-induced calcium influx in cortical neurons, and facilitates 5-HT 3 receptor-mediated currents in ganglionic neurons. Overall, this results in a depressive effect on the central nervous system. It belongs to a class of drugs known as hypnotic . It has both a fast-acting and long-lasting sedative effect. Chloral hydrate is also frequently used in medical procedures. There are many other uses for this drug for example, to treat alchole withdraw symptoms or to relieve anxiety caused by withdraw from certain drugs such bacbitorates or narcotic medicine.

Objective of the study

The aim of this study is the safety and efficacy of chloral hydrate for conscious sedation of infant in the pediatric cardiovascular intensive care unit PCICU

Method:

The study was conducted on 165 cases, 76 females and 89 males. The patients were aged from 1 to 12 months, weight ranging from 3.5 to 6.5 kg. the criteria including those patients were admitted to PCICU and needed conscious sedation, patients with any medical contraindications for sedation were excluded from the study. Excluded those patients that used other sedative agents prior to the study.

Discussion

- The study showed successful sedation without side effects achieved in 158 (95.8%) of 165 cases, 7 % of the patients showed side effects
- Next was to compare patients with cyanotic heart disease and those without. The success rate was 94.3% vs 96.1% for cyanotic vs acyanotic patients with side effects in only approximately 6% vs 4% of the patients.
- Following this was the subgroup with pulmonary infection (24.8% cases) and the subgroup without pulmonary infection (75.2% cases). Next was to compare the subgroup with ventricular septal defects with pulmonary hypertension (39.4% cases) and the subgroup with ventricular septal defect without pulmonary hypertension (18.2% cases) . In both subgroups, the results showed no significant differences in the success rate of sedation, length of time to achieve sedation, duration of sedation, and length of time to recovery.

Conclusions

In conclusion, oral administration of chloral hydrate, because of its ease of administration, high success rate, and transient and low prevalence of adverse reactions, is a safe and efficacious agent in the conscious sedation of infants with congenital heart disease. There were no significant differences regarding sedative effects in the subgroups (cyanotic vs acyanotic group, with pulmonary infection vs without pulmonary infection group, and with pulmonary hypertension vs without pulmonary hypertension group).

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