

Pediatric dental sedation

Dear Editor,

This letter discusses the recent studies about pediatric dental sedation regarding nitrous oxide and midazolam *versus* nitrous oxide and promethazine combinations, comparison of three different ketofol proportions and comparison of midazolam and chloral hydrate with midazolam and promethazine combinations.

Nitrous oxide and midazolam *versus* nitrous oxide and promethazine combinations for pediatric dental sedation¹:

This was a randomized, cross-over, clinical trial comparing the safety and efficacy of nitrous oxide/midazolam and nitrous oxide/promethazine for dental treatment in 18 healthy uncooperative children. Combination of nitrous oxide/midazolam was given in one visit, whereas nitrous oxide/promethazine was administered in the other appointment for each patient in a cross-over manner. Oxygen saturation, heart rate and behavior parameters were recorded according to Houpt behavior scales and postoperative patients' anxiety and parents' satisfaction were assessed by visual analog scale score and questionnaire. Physiologic parameters were within normal limit in both groups. Children in the midazolam group showed significantly deeper sedation compared to the other groups. In the initial phase, children sedated with midazolam behaved superiorly in comparison to those given promethazine, but in the final stage there was no difference between the two groups. Therefore, both drug combinations showcased acceptable, efficient, and safe sedation outcomes.

Comparison of three different ketofol proportions in pediatric dental sedation²:

The study was done to compare perioperative side effect profiles, recovery profiles, and satisfaction rates of both parents' and dentists' following three different ratios of ketofol mixtures in pediatric dental sedation. There were three study groups each containing 30 children scheduled for dental treatment: group 1 received ketofol as a 1:1 mixture, group 2 received 1:2 ketofol and group 3 received 1:4 ketofol administered at a constant dose of 100 µg/kg per minute. Additional doses of ketofol solution were administered at 0.5 mg/kg in all the three groups. Depth of sedation, dentists' satisfaction levels and postoperative side effects such as myoclonus, hypersalivation and tachycardia were significantly higher in Group 1. There were no significant differences between groups in terms of perioperative vital signs and side effects. Group 3 showed highest parents' satisfaction and shortest mean duration of recovery, but necessity of additional doses and dentists' dissatisfaction due to the uncontrolled movements of the patients during the treatment were highest in this group. It was found that ketofol mixture at a 1:2 ratio was a more reliable choice than the others. Decreased ketamine doses in ketofol mixture were related with decreased side effect profile, high parents' satisfaction with fast recovery and low dentists' satisfaction.

Comparison of sedative effects of oral midazolam/chloral hydrate and midazolam/promethazine³:

A crossover double-blind clinical trial study conducted for 30 children aged 2–6 years undergoing dental treatment compared the sedative effects of oral midazolam/chloral hydrate and midazolam/promethazine. Group I received oral midazolam (0.4 mg/kg)/chloral hydrate (50 mg/kg) at the first visit and received midazolam (0.4 mg/kg)/promethazine (5 mg/kg) in the second visit. Group II received the premedication in the opposite sequence. It was evident from the study that midazolam/chloral hydrate combination was a better option for patient co-operation for dental treatment.

Future directions: Eventhough comparative studies regarding nitrous oxide and midazolam *versus* nitrous oxide and promethazine combinations, three different ketofol proportions, and midazolam and chloral hydrate *versus* midazolam and promethazine combinations are evident in literature. Further studies regarding crossover double-blind trials with newer sedatives, dexmedetomidine (central α-2 agonist) and sufentanil (opioid analgesic), are advised in pediatric dental sedation.

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