A Comparison of the Efficacy and Recovery of Two Oral Sedation Regimens: Chloral Hydrate in Combination with Hydroxyzine vs. Oral Midazolam in Combination with Hydroxyzine for Conscious Sedation

Choi, H, Tannen, R, Chu, P, Rosenberg, D  
St. Barnabas Hospital, Bronx, NY

RESULTS & DISCUSSION

Of the 16 pediatric patients, 50% (8) were girls and 50% (8) were boys. Group A received the chloral hydrate combination first and Group B received the oral midazolam combination first. 37.5% of the participating patients were randomized into Group A and 62.5% were randomized into Group B. There were no statistically significant differences in behavior during the pre-op, operative, and post-op stages between the two gender groups, groups A and B, and the ages of the patient. T-test repeated measure analysis variance showed statistically significant differences in behavior during rubber dam placement. The oral midazolam combination sedation group showed less negative behavior than the chloral hydrate combination group. Interestingly, both sedation combinations demonstrated significantly worse behavior at the second sedation visit. (fig. 4)

The Modified Vancouver Sedative Recovery Scales showed a statistically significant advantage of the midazolam group over the chloral hydrate group for recovery status and time on the first patient visit, however, there was no statistically significant difference for either group at the second patient visit. Overall, patients sedated with the oral midazolam combination were awake after sedation and more quickly to discharge than those sedated with chloral hydrate.

MATERIALS AND METHODS

CRITERIA

• Age: 24 mos- 60 mos  
• ASA I or II  
• Signed Informed Consent  
• NPO > 8 Hours  
• No known drug allergies  
• Non-compromised airway  
• History of poor behavior on initial visit and requiring at least two restorative visits

DRUGS & REGIMENS

Midazolam (Versed) – Sedative hypnotic. Regularly used by anesthesiologists as a premedication for general anesthesia.

Chloral Hydrate (Nocodex) – Sedative hypnotic. The most frequently used oral sedative agent in pediatric dentistry.

Hydroxyzine (Vistaril) – Long-acting antihistamine, with anxiolytic effects. Has been shown to be an excellent adjunct to other short acting oral sedative agents.

Dosages are based on subject’s weight and in accordance with the Physician’s Desk Reference.

Regimen A: Midazolam 0.50 mg/kg (max. dose 15mg) + Hydroxyzine 2 mg/kg (max. dose 50mg)

Regimen B: Chloral Hydrate 35 mg/kg (max. dose 1gm) + Hydroxyzine 1 mg/kg (max. dose 50mg)

Subjects were administered regimens randomly via coin flip. (Heads = Regimen A first restorative visit, Regimen B second restorative visit.)

Latency period 20 min for oral midazolam combination and 40 min for chloral hydrate combination before dental treatment

DENTAL TREATMENT PROCEDURE

• Patients were placed in a passive immobilization device (papoose) and engaged only when the patient moved their arms and legs in a manner that could harm the operators or the patient.

• A blood pressure cuff, pulse oximeter and precordial stethoscope were placed on the patient.

• All children received 100% O2 for 5 min. through a nasal hood and then N2O was gradually titrated to a 50% mixture at a rate of 3L/min

• All planned restorative procedures were performed utilizing local anesthesia and a rubber dam

• At the end of the restorative procedures the patient was given

• Each procedure was recorded digitally on video.

• The patient’s behavior was scored utilizing the Ohio State Behavioral Rating Scale (OSBR 3).

• The patient’s behavior was scored utilizing the Modified Vancouver Sedative Recovery Scale.

• Figures 1, 3, 5, 6, 7: OSBR Scale (Preoperative)  
• Figure 2: Modified Vancouver Sedative Recovery Scale  
• Figure 3: Chloral Hydroxyzine Oral Sedation Scale (OHROS)

REFERENCES

1. Alessandra Rodriguez, Luciane Ribeiro, Paulo Sergio Sucasas  
2. Joseph, Shapira, DMD, Ari Kupietzky, DMD, MSc, Avisag Kadari, MD, Anna B. Fukes, CD, Gideon Holan DMD  
4. Ohio State University Behavior Rating Scale  
5. Nathan JE.  
6. Moore PA.  
7. Duncan WK, Ball SD, Perkins TM.  
8. Tannen, R, Chu, P, Rosenberg, D.  
9. Tannen, R, Chu, P, Rosenberg, D.  
10. Nathan JE.  
11. Ohio State University Behavior Rating Scale  

A majority of pediatric dentists utilize chloral hydrate for oral sedation in their practices. There are a number of well-documented downsides to the use of chloral hydrate. Midazolam has been shown to be an effective and safe alternative for oral sedation in the pediatric dentistry population. Hydroxyzine has been proven to be an excellent adjunct to each of these medications. The results of this study correlate with previous studies in that oral midazolam, in combination with hydroxyzine, is more effective, expedient and predictable than chloral hydrate in combination with hydroxyzine for oral conscious sedation.