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Research Article

Complications of IV sedation for dental treatment in individuals with intellectual disability

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KEYWORDS

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IV sedation;
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Abstract Few studies have looked at the incidence of complications performed with IV sedation for dental treatment. The purposes of this study were to (1) delineate the nature and frequency of postdental treatment complications associated with dental treatment under IV sedation in individuals with intellectual disability, and (2) correlate morbidity reports with patient's gender, age, and duration of dental procedures.

Materials and methods: 28 Patients with intellectual disability, 13 females and 15 males, aged 3–36 years. IV Propofol was given 1 mg/kg IV Propofol bolus Incremental top ups of 0.25 mg/kg Propofol as required. If the patients were dental treated, then postcomplications while recovering in hospital were evaluated. Statistical comparisons of patient complications, gender, age, and duration of dental treatment were made.

Results: There were no reported serious adverse effects. Minor posttreatment complications occurred in 7 (25%), agitation in 28.6%, sleepiness in 28.6%, drowsiness in 14.3%, and pain in 14.3%, followed by dental bleeding in 14.3%. Gender of the patients was found to be significantly related to post-operative complications, while age and duration of dental treatment showed no significant relationship.

Conclusion: IV sedation with Propofol for patients with intellectual disability for dental treatment appears to be with minor complications.

1. Introduction

Persons with intellectual disability have difficulty in cooperating, so they need special support in order to receive dental treatment, as many of them are referred for IV sedation [1]. There are many drugs for IV sedation as Propofol. Propofol alone or in combination with other sedatives/analgesics has become popular for procedural sedation. Most published guidelines do not include considerations for people with special needs. There is a need for increased research and documentation of combined treatment modalities, and these combined approaches need to be incorporated into guidelines for patient care for people with special needs [2].

The important goals of sedation/anesthesia for outpatient surgery are low incidence of postoperative side effects permitting a rapid and safe discharge [3].

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Many complications had been observed after dental treatment. Few studies have looked at the incidence of complications performed with IV sedation for dental treatment. So the design is made to determine these complications and their correlation to gender, age and duration of dental treatment for the individuals with intellectual disability undergoing dental treatment.

The purposes of this study were to (1) delineate the nature and frequency of postdental treatment complications associated with dental treatment under IV sedation in individuals with intellectual disability, and (2) correlate morbidity reports with patient's gender, age, and duration of dental procedures.

2. Materials and methods

28 Patients with intellectual disability, 13 females and 15 males, aged 3–36 years, with a weight of range 10–80 kg, healthy classified as ASA 1 or 11, were mainly referred from the faculty of dentistry in Damascus University, Syria.

The patients were selected for IV sedation because they were highly resistive during the initial examination. So each patient previously exhibited combative behavior sufficient negative to dental treatment using routine behavior management techniques. The research Ethics Committee of Damascus University, Syria, approved the study. Informed consent was obtained for the drug regimen. The parent was instructed to keep the patient NPO for 8 h before the appointment, except for a glass of water 4 h before the appointment. The parent also was instructed to place a diaper on the patient. No premedication was used.

The intellectual disability patients were treated at setting room at maxillo-facial hospital at Faculty of dentistry, Damascus University, Syria. The IV sedation was provided by an anesthetist at the hospital. A certified registered nurse anesthetist administered the drug and monitored the patient.

In this study, Propofol was given according to a previously published guideline 1 mg/kg IV Propofol bolus Incremental top ups of 0.25 mg/kg Propofol as required.

The protocol allowed for each patient to receive an additional intravenous bolus of Propofol. Sedation level was adjusted to achieve scores of 5 on the Ramsay Sedation Scale (Table 1).

All patients were treated by pediatric dentist residents under direct supervision of pediatric dentist consultant. The dental treatment started 5 min after Propofol administration, when the patients were sufficiently sedated. No local anesthesia had been performed. Sedation and treatment were satisfactorily completed in all cases in one visit, and all patients involved in this study were received the expected dental care. The most frequent treatment was, extraction 82%, followed by ART fillings 11%. The least applied dental treatments were sealants 7%, requiring no saline irrigation. The treatment ended between 9:30 AM and 1:00 PM. The duration of the treatment was 5–60 min.

Table 1 Ramsay scale for the assessment of the level of sedation.

Level of activity	Points
Patient anxious agitated or restless	1
Patient cooperative, commentated and tranquil	2
Patient responding only to verbal commands	3
Patient with brisk response to light glabella tap or loud auditory stimulus	4
Patient with sluggish response to light glabella tap or loud auditory stimulus	5
Patient with no response to light glabella tap or loud auditory stimulus	6

Vital signs consisting of blood pressure, respiratory rate, heart rate and hemoglobin oxygen saturation via pulse oximetry were obtained. Resuscitation equipment was available if required and a medical team followed each treatment session. Preparing for discharge started in the recovery area. The medical practitioner did not leave the recovery area until the discharge criteria were met.

All patients involved in this study were observed in the recovery room before the patient was ready to leave hospital and postoperative complaints were recorded.

The presence or absence of posttreatment complications including respiratory depression, cardiopulmonary complications, Bradycardia, emesis was evaluated. Also minor complications including, nausea, vomiting, sleepiness, pain, bleeding, Agitation, and headache, and others such as coughing, were evaluated by one pediatric dentist.

Discharge from recovery room was within 60 min. Patients were discharged from the hospital after complete recovery, which was defined as the presence of vital variables within reference limits, full wakefulness, and the ability to drink or eat. The decision as to whether the patient was ready for discharge was made by the resident in charge of the sedation.

2.1. Statistical analysis

The study included descriptive and analytical data. Complications while recovering in hospital were evaluated. The obtained results were analyzed statistically using SSPS Version 13 statistical software. Statistical comparisons of patient complications, gender, age and duration of dental treatment were made by unpaired Student's t-test. All differences were considered significant at $p < 0.05$.

3. Results

No serious adverse effects occurred. There were no deaths and no reported incidents of aspiration or emesis associated with procedural Propofol sedation. None of the patients had required mechanical ventilation.

Adverse events showed that 7 patients (25%) had less serious posttreatment complications (Table 2).

The most common minor complaints reported were: Agitation in 2 patients (28.6%), sleepiness in 2 patients (28.6%), drowsiness in 1 patient (14.3%), and pain in 1 patient (14.3%), followed by dental bleeding in 1 patient (14.3%) (Table 3).

In this present study, statistical comparisons of patient complications and gender were made by unpaired Student's *t*-test. A positive significant correlation was found between the presence of the complications and gender of the patient (p value $= 3.877$, $p = 0.049 < 0.05$). This increase was greater in males than in females (Table 4).