

ANXIOLYSIS IN PEDIATRIC MINOR SURGERY

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SUMMARY

The objective of this study is to demonstrate the benefits of sedation with oral midazolam in preschoolers requiring minor surgery, trauma or odontological treatments.

Material and Method: A controlled clinical study was designed, prospective, traverse, random simple of cohorts, with a sample of 200 children from 2 to 5 years old, divided in 2 groups that required treatment for traumatismos, wounds, abscesses or odontological in more than 3 teeth. Patients under treatment with antiepileptics or neuroleptics and patients without anxiety were discarded, as well as those that didn't sign the informed consent. Group I was handled under sedation with 400 mcg/ kg/dose of oral midazolam; Group II was the control group, using several subjection forms. Both they were assisted with usual techniques for each lesion, local anesthesia included. Anxiety was evaluated, sedation levels (latency, effective time and recovery), secondary effects, amnesia and vital signs during the treatment. The statistical evaluation was made with the software program Epi Info 2002.

Results: Mean of age was of 3.5 years with prevalence of male sex (52%); the assisted lesions were: 74 sutures, 36 fracture or luxation reductions, 21 abscesses, 29 traumatic cures and 40 dental treatments. In patients under sedation, the mean were: time of latency 28 min, sedation 65 min and recovery 15 min. The sedation effectiveness was excellent in 93% and 92% of total amnesia. The success in anxiolysis and amnesia was successful with value of Chi2 with $p < 0.00001$ and Fisher exact test $p < 0.0001$.

Group II showed important anxiety with alteration of vital signs and difficult handling in 95% of the cases, while the group I had normality of signs and 2 cases only presented drowsiness for 45 minutes after the time of recovery.

Discussion: Anxiety, anguishes and behavioral stress associated to medical and surgical procedures is frequent in almost all the children, being the preschoolers the most sensitive to have higher levels and loss of control, when not understanding its lesion and the required treatment, what hinders its appropriate attention, even using technical of subjection that for themselves, they are aggressors.

This study shows the benefits of using a technique of sure sedation, with what the therapeutic maneuvers are facilitated with a time average of sedation of 1 hr, minimizing the stress in the control visit consultations, being a simple, effective technique and of low cost.

Key words: Anxiolysis, pediatric sedation, midazolam.

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INTRODUCTION

Anxiety is product of the activation of the limbic system like a mechanism of adaptation to the stress; it is common to all person showing for diverse symptoms, including anguish regulated by the nervous system and liberating diverse substances, included stress hormones like cortisol, adrenaline, etc.^{1,2}

Children at any age suffer anxiety during a visit to doctor or dentist, which is increased if they suffer a lesion or pathology that requires a treatment that consider aggressive and producing physical, psychological and behavioral reactions, frequently uncontrollable that hinder the handling, so much in the room of urgencies like in the clinic and that need use technical of subjection, leaving recorded an unpleasant experience and predispose to anxiety and anguish in subsequent consultations. Preschooler is more vulnerable to suffer anxiety and anguishes when they have a traumatism, lesion or pathology that it produces pain or need invasive treatments since for their characteristics of growth and development, they don't understand the cause of the lesion, pain and the necessary maneuvers for their treatment, frequently responding with uncontrollable behaviors.²

Rarely some medication anxiolytical or hypnotical is used for diminish those dysfunctions, even when the utility of administering benzodiazepines with quick action and elimination has been described (3-6), mainly for the urgency of assisting a lesion, to stop bleeding or to solve in a single session the biggest number of dental pathologies in one patient.

The objective of this study is to analyze the effect and benefit of the anxiolysis with midazolam for via oral in preschooler patient that require aggressive maneuvers and orchestrated to assist them of a traumatic, inflammatory lesion or wide dental treatment, in children with important manifestations of anxiety and it anguishes.

MATERIALS AND METHODS

We designs a controlled clinical study, prospective, traverse, random simple of cohorts approved by the scientific and bioethical committee of the Medical College of Xalapa; with a population sample of 200 children since 2 to 5 years old of both sexes, divided in 2 groups of 100 patients each one that having suffered a traumatic lesion, wound, abscess or with multiple dental pathology, they required smaller or more operative surgery treatment or wide dental treatment; that they presented signs and symptoms of anxiety and it anguishes, assisted in the room of urgencies or clinic, previous signature of informed authorization for the parents or tutors.

The group I (problem), was treated with low sedation with 400 mcg/kg of oral midazolam in a single dose in corn honey like excipient, without spending of 5 ml total, administered 30 minutes before assisting the lesion or dental pathology in a traditional way the employment of local anesthetics.

The group II (control) it was assisted in a traditional way, with local and technical anesthetics of subjection. They were discarded from the study, patients in treatment with sedative, hypnotic or antiepileptic medications, with cardiopathies, nephropathies, immunodepression, with debilitating or chronic pathologies and with history of recent hepatitis, the patients whose parents didn't sign the informed authorization, those that didn't accept the anxiolytic procedure when for random order it corresponded him the group I and those that didn't show signs of anxiety before making the treatment of their lesion.

The anxiety was analyzed manifested by fear, cry, sweat, resistance to the handling, tachycardia, tachypnea and weigh elevation of systolic arterial tension.

In the group I was also evaluated, time

of latency of the medication, time and level of effective sedation, time of recovery, amnesia and attributable secondary effects to midazolam.

In both groups scan breathing, heart frequencies and arterial tension, being made basal measurement and every 15 minutes up to 30 minutes after having finished the treatment and finally the presence of anxiety and anguish in the control consultation.

To evaluate anxiety reduction, Lawrence's scale was used whose 4 levels qualify as excellent when the patient cooperates without fear, good when patient presents light anxiety but cooperates by means of persuasion without presenting resistance, partial when presents cry and slightly combative and bad if the patient is frankly combative, with intense movements, cry, profuse sweat and requires subjection.

The amnesia was qualified as excellent when the patient didn't remember anything of procedures, partial when remembered moments or isolated details of the procedure and bad when remembers most or all details of procedure.

The statistical analysis was carried out with descriptive methods, measures of central tendency using the statistical package Epi Info 2002.

RESULTS

The masculine sex prevailed with 56% of patient; the average of age was 3.5 years. The lesions and assisted pathologies were 80% medical and 20% odontological (table 1). In the group I, average of latency time was 28 minutes, average time of effective sedation 65 minutes and average for time of recovery was 15 minutes. The anxiolysis levels were, according to Lawrence's scale, excellent in 93% and good in 7%. Amnesia was good in 92 % and to partial in 8%.

The vital signs in the basal measurement

of both groups, showed in general heart frequency up of 15 beats/min, the breathing frequency more than 10 per minute and systolic pressure more than 10 mm Hg, taking like reference the standard values for the age, being regularized in the group I, to normal values during sedation effect, during the recovery and until their discharge, while in the group II the figures stayed high from the basal measurement until having finished the procedure and discharge of urgencies or clinic, besides maintaining in 95% of the patients, cry, restlessness, profuse sweat and corporal resistance that it hindered the handling in spite of subjection with net, sheet and auxiliary personnel. In the control consultation, to move away suture points, cure of abscesses, valuation of x-rays or dental revision, the group I didn't show data of anxiety in 93 patients, in contrast 95 children's of the group II, that presented data of moderate to severe anxiety, manifested by uncontrollable cry, corporal resistance, sweat, fear and diverse manifestations of aggressiveness.

The anxiolysis was successful with $p < 0.0001$ in chi2 and the handling easiness during the treatment and control consultation was effective in group I compared with the group II with $p < 0.00001$ in chi2 and exact test of Fisher. Only 2 patients of the group I, presented light drowsiness for less than 45 minutes post sedation. No case presented drowsiness, dysfunctions of the dream, night terrors neither another similar manifestation when discharge to their home.

DISCUSSION

Anxiety and behavioral stress associated to medical-surgical procedures, they are present in most of the children that can require an ambulatory smaller surgery treatment at least to suffer some accidental or inflammatory lesion along their childhood, in principle for the same lesion, pain, bleeding and the ignorance of the necessary maneuvers for their treatment in the room of

urgencies or in the clinic. In same forms, children can present signs and symptoms of anxiety and anguish in the first experiences with the odontopediatrician.

The preschooler age is the most susceptible when not understanding the mechanism and the same lesion, the procedures for its attention in hands of strange and fear to pain; besides that in general, the interaction in the treatment is triple, being on one hand the medical personnel, for other the child's parents that don't hide its anxiety influencing behaviors, besides the same child.

The signs and symptoms of the anxiety can be very varied and of diverse dimensions, including apprehension, restlessness, muscular tension, sickness, dizzy, thoracic and abdominal pain, mouth dryness, diaphoresis, breathlessness sensation, tachypnea, tachycardia, increase of arterial tension, nausea, vesical tension, uncontrollable defensive movements, among other, what hinders the treatment of a child injured with several of these physio-psychological and behavioral manifestations that force to hold it with diverse methods, all aggressive ones and rarely is used a technique or medication for anxiety, first for the urgency of assisting the lesion or to save time of treatment, for ignorance of the pharmacology of benzodiazepines and its employment in children and finally for the demand of the parents, for the prompt attention of its son's lesion^{2,7-9}

The midazolam is a benzodiazepine of short action that is absorbed quickly by oral via or in mucosal tissue, being used for some time as sedative, anxiolysis, hypnotic and pre anaesthetic medication in adults. Plus recently in children by parenteral via, being the odontologists the pioneers in using it as anxiolytic by intranasal via, reporting uneasiness, ardor, nausea and irritation of mucosal one, without standardizing an appropriate and effective dose¹⁰⁻¹⁶

The midazolam absorption by oral via

is quick and effective, although to be used the parenteral presentation, the pungent flavor takes place it nauseates and vomit, for what has mixed with several vehicles, being the corn honey the one that better it is tolerated and it covers the flavor without modifying its effectiveness. We obtained an standardized dose adapted by this road in children, at 300 - 400 mcg/kg/dose, with levels of sedation appropriate and wide margin of security^{17,18}

To classify the levels of anxiety in the preschooler, either in the clinic or in the room of urgencies, it is very difficult, because although multitude of tests and approaches exist for children, as the DSM IV, Hamilton Anxiety Rating Scale, Scale of Taylor, of Cattell, Endler, Spielberger, CMAS, STAIC, Chips and other, most evaluates children bigger than 8 years based on items and questionnaires (19-21); there are not applicable in preschooler with anxious symptoms and that it requires treatment of urgency, being necessary to evaluate it clinically.

In a same way, there are diverse scales to evaluate anxiolysis, being that of Lawrence, the most practical and applicable in children treated with benzodiazepines¹⁷⁻²²

The present study shows clinical and statistically, the advantages of sedation in children that require to be assisted of a lesion; although it is necessary to expect the time of latency, the achieved anxiolysis avoids to use technical of traumatic subjection, facilitating the cooperation aware of the boy and avoiding the fear in the later revisions, thanks to the effect amnesiac that produces the midazolam.

The current commercial cost of each ampoule is ten dollars approximately, equivalent to the cost of some types of sutures or cure material. For the above-mentioned, we consider that these technique is advisable to assist children preschooler that having suffered a lesion or that they require wide dental attention and that they present important data of anxiety and it anguishes

providing levels of appropriate anxiolysis, with wide margin of security to the recommended doses, without important secondary effects, applicable accessible cost in the medical and dental clinic or in the hospital rooms of urgency, minimizing contagion of stress between child and parents, besides being able to be useful in other procedures that cause stress and trauma as they would be catheterism, tomography or magnetic resonance studies, among others.

it has been recommended that we sweeten the pain of the children²³, and we add: and let us remove them the anguish and anxiety.

Table 1

TREATMENT	Cases	Group I	Group II	%
Sutures	74	37	37	37
Luxation or fractures	36	18	18	18
Debridation of abscesses	21	11	10	10.5
Traumatic cures	29	14	15	14.5
Crowns, resins, amalgams and dental extractions	40	20	20	20
TOTAL	200	100	100	100

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