Evaluation of a novel sedative analgesic drug (Dexmedetomidine) used in conscious sedation of pediatric dental patient

Thesis

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Dedication

To

My Family

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Introduction

The field of pediatric dentistry beholds the greatest challenge among the various other branches of dentistry in providing dental care without inflicting any adverse psychological impact upon the child. Children are the future dental patients, and therefore the dental care they receive should promote positive dental experiences, which in turn will promote positive dental attitudes in the adult ***(Tickle et al., 2002).***

The issue of dental fear and anxiety has been studied extensively, and presents a significant problem to patients and dentists alike. A sizeable proportion of the populations are anxious about dental treatment, and it is recognized that this can act as a barrier to oral health. Therefore, it is of great importance that the dental health professional is able to identify children who are dentally anxious ***(Holmes and Girdler, 2005).***

Uncooperative behavior in the dental setting is most typically attributed to behavioral manifestations of anxiety .While there is no doubt that anxiety plays a major role in the dental behavior of many children, there may be other causes for the uncooperative behavior observed in the dental setting. Children who exhibit high levels of uncooperative behavior as being strong-willed (as well as independent, persistent and confident). These children are likely to be noncompliant, stubborn, argumentative and defiant. Such uncooperative behavior has been rated by dentists as being the major problem in the dental chair. Major consequences of such strong-willed uncooperative behavior may include a delay or termination of treatment before completion, or a decrease in the quality of care provided ***(Forehand and Long, 1999).***

One of the most important features of effective anxiety control and behavior management is effective communication. Hence, if a child has communication or learning difficulties, he or she may be more likely to exhibit anxiety related behavior ***(Stephen and Jinous, 2003).***

Mostly, conventional behavior management technique is successful in helping the child to accept dental treatment; however, there are few children who do not respond to this approach. The American Academy of Pediatric Dentistry (AAPD) has recommended a number of behavior management methods. These procedures vary in invasiveness. The AAPD guidelines list the following behavior management techniques: tell show-do (TSD), positive reinforcement, voice control, nonverbal communication, distraction, desensitization, modeling, parental presence/absence and hand-over-mouth ***(American Academy of Pediatric Dentistry, 2002).***

Today modern pediatric dentistry describes so many techniques to manage the behavior of the child dental patient. The use of a range of drugs as adjuvant to behavioral psychology should enable the dentist to handle not all but most of unmanageable children ***(Duggal, 2003).***

Among drugs used in conscious sedation we can mention midazolam and propofol. Midazolam is a benzodiazepine derivative as well as propofol is a short acting intravenous sedative agent used for the induction of general anesthesia for adults and children, maintenance of general anesthesia, and sedation in medical contexts ***(McKenzie et al., 2004, Miner and Burton, 2007 and Cheng et al., 2008).***

Recently, Dexmedetomidine is a potent highly selective α_2-adrenoreceptor agonist which has been widely used in the intensive care unit (ICU) for sedation and postoperative analgesia ***(Bhana, et al., 2000, Shelly, 2001 and Nelson, et al., 2003).***

The aim of this study is to evaluate the effect of a novel sedative-analgesic drug which is dexmedetomidine during conscious sedation in pediatric dental clinic as well as comparing the effectiveness, safety, and recovery time for combined use of propofol and midazolam versus dexmedetomidine during conscious sedation for children.