Dental management of a child with Congenital Rubella Syndrome

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Abstract

Although Congenital Rubella Syndrome (CRS) can be prevented by vaccination, when it arises, it is still considered a challenge due to the complexity of its sequelae. This syndrome presents severe disorders, such as: ophthalmic and hearing, as well as cognitive and developmental problems. Consequently, there may be little concern about maintaining oral health, and the physical and intellectual limitations are greater obstacles to dental treatment. This paper presents the use of conscious sedation with nitrous oxide/oxygen as an alternative approach to dental treatment of a patient with CRS.

Key words: Congenital Rubella Syndrome, oral health, children, conscious sedation

Introduction

Congenital Rubella Syndrome (CRS) was first described in 1940, and although it is possible to prevent it by vaccination, it still constitutes a worldwide problem due to the complexity of its sequelae in affected individuals (Frey, 2006). During pregnancy, the infection is acquired by contact with the togavirus family of micro-organisms, and is transmitted to the foetus, thus paralysing the developmental system it affects. The damage can be motor or sensory and is associated with ophthalmic, hearing and cardiac disorders, as well as cognitive and psychomotor problems. CRS has a low incidence and it is expected that CRS will be reduced to 1/100,000 live births (Chakravarti and Jain, 2006).

The consequences of CRS lead to patients being classified as special patients, in whom dental problems are aggravated, not only due to the children’s health problems, but also as a result of the guardians’ failure to provide dental care and oral disease prevention. The guardians consider oral health to be secondary in comparison with the systemic problems with which these children usually present (Sanger and Casamassimo, 1983). Moreover, the physical and intellectual limitations are also obstacles to dental treatment, which frequently require the child to be physically restrained or sedated (Castro et al., 2001).

The purpose of this article is to discuss the case of a patient with CRS where conscious sedation with nitrous oxide was used as an alternative approach to providing dental treatment.

Case Report

The patient, an 11-year-old boy, was brought to a pediatric dentistry clinic of a public university in Rio de Janeiro, Brazil, by his mother, for dental treatment. The mother gave written consent for the treatment and case study.

Medical and dental history

In his medical history, the child’s mother stated that the main complaint was his bad breath associated with bleeding gums, and the difficulty in performing oral hygiene, because of his impossible behaviour. The child had Congenital Rubella Syndrome with several systemic manifestations: severe hearing and visual disorders, congenital cardiopathy (VSD), lung stenosis, low cognitive and psychomotor development and involuntary movements typical of the autism spectrum disorder (Piven, 1997) and aggressive behaviour. The patient also had cerebral palsy, and made use of an anti-convulsant drug, diphenylhydantoin (Dilantin\textsuperscript{8}) and neurological medication (Neuleptil\textsuperscript{8}). The child had had a general anaesthetic for dental treatment, one year before.

On physical and extra-oral examination, the patient presented with oral and perioral muscle hypertonicity, and, on intraoral examination, it was found that all his permanent teeth were covered by thick calculus on all tooth surfaces (Figure 1). This was associated with gingival hyperplasia in the premolar and molar regions, and tongue thrusting.
Treatment
During the first dental visit, the mother was offered guidance with regard to diet and home dental care, including a prescription of chlorhexidine 0.12% gel for tooth brushing, twice a day. A medical evaluation was requested, in relation to cardiac risk with regard to antibiotic prophylaxis before invasive dental treatment, and the use of nitrous oxide for conscious sedation.

The physician agreed with conscious sedation for dental treatment, since general anaesthesia had already been performed one year before in a public hospital, for dental treatment of the patient. Unfortunately, the patient presented gross sub and supra-gingival calculus a few months after the intervention, and general anaesthesia could not be repeated due to the cost of this kind of procedure. Antibiotic prophylaxis was prescribed one hour before the dental procedure but only for the first consultation, for removal of gross sub-gingival calculus. The neurological and anti-convulsant medication was suspended on the day of the procedure to avoid concomitant interaction with nitrous oxide.

During subsequent visits, supra-gingival calculus was removed, always under conscious sedation (Figures 2-5). On the last visit, dental polishing was performed without nitrous oxide. No carious lesions were found, but gingival hyperplasia around the posterior teeth was still present (Figure 6). The mother was then invited to participate in a programme to receive professional guidance with regard to the best methods of home dental care (Figures 7 and 8). Further visits were scheduled every 7 days for biofilm control and home care reinforcement. Based on the family’s cooperation in maintaining the child’s oral hygiene adequately (Figure 9), dental visits were scheduled twice a month.
Discussion

In the present report, the unsatisfactory oral condition presented by the patient with CRS was a consequence of the over-riding needs of his complex systemic complications. A meticulous medical and dental history was fundamental in determining how to manage the case, based on the patient’s habits, which influenced his oral health status. The difficulties in performing dental treatment and the oral problems coupled with medical and behavioural complications, led to the delay in his parents seeking early professional guidance, as well as the treatment of established dental disease.

The patient in the present report had the typical characteristics found in cerebral palsy patients, such as, abnormal reflex patterns and lack of coordination of oral, facial and pharyngeal musculature. (Sanger and Casamassimo, 1983), These factors were considered to be the main cause of the patient’s mastication and swallowing deficiencies, which were directly related to biofilm and calculus formation observed on all tooth surfaces.
Moreover, the use of anti-convulsive drugs led to gingival hyperplasia in the posterior regions (Fox, 1974), which also facilitated biofilm accumulation. The mother was only able to clean anterior incisor teeth, where the biofilm was soft. The patient’s aggressive behaviour made his mother’s attempt to perform dental hygiene even more difficult, thus causing progressive calculus accumulations.

The dietary problems, excessive salivary production and frequent gasps for breath resulted from the hyperactive reflex of the oral musculature found in this patient. Sandler et al., (1974) proposed that the tongue thrust is caused by a primitive swallowing reflex and neuromuscular deficiencies, which require a soft/liquid diet that favours biofilm accumulation. In the present case, the perioral muscular force and the tongue thrust made supragingival cleaning difficult, even with conscious sedation.

After the calculus was completely removed, mild gingivitis was still present, although no caries was found. An important aetiological factor for both caries and periodontal disease is biofilm accumulation (Axelsson, 1981). In the present case, the patient’s dietary habits were not sucrose-based, which certainly protected tooth surfaces from acidogenic actions (Cancro and Fischman, 1995). The first choice for biofilm control is mechanical action, coupled with chemical cleaning, only when the former is shown to be inadequate (Maurer et al., 1996). In the present case, tooth brushing together with chlorhexidine gel twice a day proved to be an efficient method for maintaining the patient’s oral health. Good results were observed within two weeks, with satisfactory biofilm control and healthy gingivae. Chlorhexidine may cause tooth staining after continuous use but the benefits for this patient outweighed the possible disadvantage of tooth staining (Abreu et al., 2002; Pannuti et al., 2003).

Although the dental treatment described could be considered routine, the patient’s aversive behaviour led to the need for nitrous oxide conscious sedation, which is considered an effective approach to anxiety and behaviour management (American Academy of Pediatric Dentistry, 1997). The factors that guided the patient’s level of sedation were: open hands, lack of leg movements and a slight smile (Paterson and Tahmassebi, 2003). After the third dental visit, all the calculus had been removed and dental polishing was performed without the need for conscious sedation. The mother’s participation in this visit was important to provide guidance and motivation for the patient’s home dental care.

Conclusion

The dental treatment of a child with Congenital Rubella Syndrome was adequately performed under conscious sedation with nitrous oxide. It is very important for parents to receive guidance on mechanical and chemical home care, in order to establish a healthy oral condition that can be easily maintained, coupled with periodic professional supervision.

References


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