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Case Report

Management of exaggerated gag reflex in dental patients using intravenous sedation with dexmedetomidine

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ABSTRACT

Pharmacological sedation is one of the effective ways of prevention of gag reflex development in patients experiencing anxiety and fright before dental treatment. We are reporting a case where we could successfully eliminate exaggerated gag reflex (intravenous [IV] Gagging Severity Index) in a dental patient using IV sedation with dexmedetomidine. IV administration of dexmedetomidine provided elimination of gag reflex at a depth of sedation for the patient with the Richmond Agitation-Sedation Scale score of −2 and −1. The patient received dexmedetomidine 1.0 μg/kg for 10 min and then a continuous infusion of dexmedetomidine 0.4 μg/kg/h. The use of dexmedetomidine for sedation may be an alternative to other pharmacological agents in patients with dental anxiety accompanied by exaggerated gag reflex.

Key Words: Dentistry, dexmedetomidine, gagging, sedation

INTRODUCTION

An exaggerated gag reflex is a problem for effective carrying out any dental manipulations: diagnostic, hygienic, therapeutic, and surgical.[1] The overall prevalence of gagging during dental treatment is up to 8.2%.[2] Pharmacological sedation is one of the effective ways of prevention of gag reflex development during dental treatment. Intravenous (IV) sedation is often believed to be much more predictable than inhalation and oral sedation. Propofol and midazolam are more frequently used as sedatives eliminating gag reflex.[3,4] Recently, dexmedetomidine has been recommended for IV sedation for dental patients.[5] However, the results of studies examining the effect of dexmedetomidine on exaggerated gag reflex have not been presented yet.[4-6] We are reporting a case where we could successfully eliminate exaggerated gag reflex in a dental patient using IV sedation with dexmedetomidine. The patient reviewed the Russian translation of this manuscript and gave written permission for the authors to publish the report.

CASE REPORT

A 48-year-old man applied for the treatment at a dental clinic with complaints of impairment of his masticatory function. He was diagnosed with partial edentulism of maxilla at region 1.4–1.5, 2.4–2.6, of mandible at region 3.6, 4.4–4.6 and offered treatment implant installation. From the medical anamnesis, it became known that he had had a history of exaggerated gag reflex. A normal healthy control (American Society of Anaesthesiologists [ASA] physical status classification

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system: ASA I) weighed 110 kg, his body mass index was 36 kg/m^2. He did not have any local and systemic disorders and anatomic factors that are believed to be important in the etiology of gagging. In such a case, the intensity of patient's gag reflex corresponded to Grade IV on the Gagging Severity Index (GSI).[6] We did determine GSI in our patient just by history. Severe gagging reflex (Grade IV, GSI) makes dental treatment impossible without interventions. The patient experienced anxiety before the forthcoming procedure. In this regard, the patient was offered to undergo dental treatment under regional anaesthesia with IV sedation. The choice of dexmedetomidine for sedation was due to the importance of good patient cooperation.[7] After informed consent, the patient was brought to the operating room. In the operating room, he was set in a semi-reclined position. Monitoring of vitals including electrocardiogram, pulse oximetry, and noninvasive blood pressure was carried out. Intravascular catheter 20G was inserted into the saphenous vein of the left forearm. The patient received dexmedetomidine 100 μg (1.0 μg/kg) in 25 ml of sodium chloride solution 0.9% for 10 min and then a continuous infusion of dexmedetomidine 0.4 μg/kg/h.[8] Local anesthesia was provided with 4% hydrochloric articaine and 1/100,000 adrenaline. The administration of opioids was excluded. According to the Richmond Agitation-Sedation Scale (RASS), the depth of sedation was at score −2 for the 1st h, score −1 thereafter. The infusion of dexmedetomidine was stopped 30 min before completion of the dental treatment. The patient's condition during the intraoperative period was stable. He was able to respond to voice commands or tactile stimulation. The vital signs remained steady during the procedure and were as follows: respiration rate (range) 12–14/min, SpO_2 (range) 95%–99%, heart rate (range) 58–84 bpm, and blood pressure (range) 145/80–110/74 mmHg. Gagging prevention index (GPI) was used to assess the effectiveness of sedation.[6] The GPI score was I with the reflex obtunded and dental procedures carried out successfully. Thirty min after stopping of administration of dexmedetomidine GPI score was II (RASS score 0). This patient had no side effect in the form of hypotension, bradycardia, and respiratory depression and other complications.

DISCUSSION

An exaggerated gag reflex may be an impediment to effective dental care delivery. Patients with a longstanding history of problematic gagging may therefore have poor dental health and require extensive treatment.[9] Techniques of elimination of exaggerated gag reflex depend on etiological factors and specialists' qualifications.[9,10] Pharmacological sedation is indicated for dental patients when exaggerated gag reflex comes with anxiety and fear. Sedative drugs with known anti-gagging effect include midazolam, propofol, and exhilarant gas.[3,4] In recent years, dexmedetomidine has been used in dental practice for sedation of patients.[5,7] The advantage of the use of dexmedetomidine for sedation is maintaining good patient cooperation during dental treatment. This clinical case demonstrates successful elimination of exaggerated gag reflex using IV sedation with dexmedetomidine in a dental patient. In our clinical case, IV administration of dexmedetomidine provided elimination of gag reflex (Grade IV, GSI) at the depth of sedation for the patient with the RASS score of −2 and −1. It enabled to perform high-quality and effective dental care to this patient. We believe that the use of dexmedetomidine for sedation may be an alternative to other pharmacological agents in patients with dental anxiety accompanied by exaggerated gag reflex. In addition to treatment for sedation, the most significant adverse side effects associated with dexmedetomidine are hypotension, bradycardia, and respiratory depression. Dexmedetomidine can be titrated to the desired level of sedation without significant side effects. In our clinical case, the patient had no hypotension, bradycardia, and respiratory depression. Loading infusion of dexmedetomidine 1.0 μg/kg for 10 min and then a continuous infusion with doses ranging from 0.2 to 1 mcg/kg/h provides an effective and safe sedation during dental treatment.[5] The limitation of our study is to estimate the depth of sedation only with the use of the RASS scale. Further prospective studies should be carried out to confirm the effectiveness of dexmedetomidine administration to eliminate gag reflex in dental patient.

CONCLUSION

IV sedation for dental patients experiencing anxiety and fear before dental treatment eliminates exaggerated gag reflex. The use of dexmedetomidine for sedation may be an alternative to other pharmacological agents in patients with dental anxiety accompanied by exaggerated gag reflex.

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Conflicts of interest

The authors of this manuscript declare that they have no conflicts of interest, real or perceived, financial or non-financial in this article.

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