

Dental Treatment Under General Anesthesia With Nasal Intubation in a Patient With Selective Immunoglobulin A Deficiency

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Immunoglobulin A (IgA) deficiency is one of the most common immune disorders characterized by increased susceptibility to infections, especially involving the respiratory tract and mucosal surfaces of the mouth, gingiva, and nasal sinus. Because dental surgery and general anesthesia may pose an increased risk for systemic infections, management of IgA-deficient patients requires caution during dental procedures and intubated general anesthesia. We report a 5-year-old female patient with IgA deficiency who underwent extraction of 18 deciduous teeth under general anesthesia. Antibiotic prophylaxis and antiseptic mouthwash were used perioperatively to reduce bacteremia risks. Nasotracheal intubation was carefully performed after applying topical disinfectants and epinephrine-containing gauze packing into the nasal cavity to minimize trauma. The patient was carefully monitored overnight in the hospital and discharged without any signs or symptoms of infection the next day. Dental anesthesia providers must be aware of the potential implications for safe practice when managing patients with IgA deficiency.

Key Words: Selective IgA deficiency; Nasal intubation; Dental treatment; General anesthesia.

We report the case of a 5-year-old girl (height 111 cm; weight 20 kg; body mass index 16 kg/m²) with selective immunoglobulin A (IgA) deficiency who underwent the extraction of 18 primary teeth under intubated general anesthesia. She was diagnosed with selective IgA deficiency at 4 years of age after repeated episodes of cellulitis. Preoperative blood tests showed low IgA levels and no signs of infection (Table). General anesthesia was induced with sevoflurane 5% along with oxygen/nitrous oxide 50%/50%, 6 L/min. After intravenous cannulation, the sevoflurane was discontinued and oxygen/nitrous oxide gas flow altered 33%/66%, 3 L/min, and general anesthesia was maintained with infusions of propofol 8-10 mg/kg/h and remifentanyl 0.1-

0.2 µg/kg/min. Nasotracheal intubation was carefully performed. After 2 minutes of nasal packing with 0.5% povidone-iodine containing 0.01% epinephrine, a 5.5-mm preformed nasal Ring-Adair-Elwyn tube was inserted without any difficulty using a McGrath video laryngoscope with a size 2 blade. Because the patient was susceptible to bacterial infections, the oral cavity was disinfected with chlorhexidine before intubation and extubation. The following antibiotics were also administered: amoxicillin 900 mg 2 hours before surgery, ampicillin 700 mg immediately before surgery, and amoxicillin 200 mg 3 times a day for 4 days following surgery. The patient's perioperative course was uneventful, and she was discharged 1 day after treatment. No signs or symptoms of infection were observed during hospitalization or throughout the 1-week postdischarge period (Table).

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DISCUSSION

Selective IgA deficiency is a genetic immune system condition in which serum IgA levels are decreased (<7

Table. Perioperative WBC, CRP, and Immunoglobulin Levels*

	3 mo preop	2 wk preop	7 d postop	3 mo postop	Normal values
WBC, No./ μ L	6140	7000	7300	6020	3300-8601
CRP, mg/dL	0.57	NA	0.08	0.06	<0.14
IgG, mg/dL	894	NA	904	865	861-1747
IgA, mg/dL	6	NA	5	4	93-393
IgM, mg/dL	157	NA	149	130	50-269

* WBC = white blood cells; CRP = C-reactive protein; preop = preoperation; postop = postoperation; NA = not analyzed; IgG = immunoglobulin G; IgA = immunoglobulin A; IgM = immunoglobulin M.

mg/dL) but IgG and IgM levels remain normal. It is most common in White individuals (1 in 600) and less prevalent in Japanese individuals (1 in 18,000).¹ However, many cases go undiagnosed, as routine screening for immunodeficiencies is not performed and most IgA-deficient individuals are asymptomatic, except for some who develop recurrent infections, allergies, and autoimmune diseases. Patients with anti-IgA antibodies are at risk for developing anaphylactic shock when they receive blood products containing IgA.

IgA protects against infections of the mucus-secreting membranes lining the mouth, nasal sinus, and respiratory tract. When managing patients with IgA deficiency who are undergoing dental procedures, minimizing the risk of perioperative infections is crucial, as dental procedures can cause bleeding and create openings that may allow bacteria to enter the systemic circulation. No guidelines currently exist regarding preoperative antibiotic prophylaxis for dental procedures in patients with primary immunodeficiency disease. As such, we opted to administer antibiotics following the infective endocarditis guidelines.² Furthermore, we disinfected the oral cavity with chlorhexidine before and after surgery. A meta-analysis reported that the use of chlorhexidine in this manner reduces postextraction bacteremia risks by 12%.³

Nasotracheal intubation could be another avenue for bacteremia, especially if traumatic. To minimize trauma risks, nasal packing with disinfectant-containing epinephrine was used along with an endotracheal tube softened by warm water. No nasal bleeding occurred during the procedure.

Along with remifentanyl, we chose propofol as a maintenance agent because it is known to increase

respiratory mucociliary clearance.⁴ Inhaled anesthetics are reported to have adverse effects in contrast to propofol.

The case of a selective IgA-deficient patient who developed sepsis after dental treatment was previously reported in Japan.⁵ Our case and the previous case were similar in that both patients were nasally intubated and maintained with propofol and remifentanyl. In the sepsis case, the patient underwent surgical extraction of a fully impacted mandibular third molar, whereas in our case all the extractions were simple and involved fully erupted primary teeth. Differences in the surgical techniques utilized, such as small incisions and osteotomies, may have impacted the risk and severity of bacteremia attributed to the surgical procedures.

Although the exact risk of infection and the need for specific prevention strategies in patients with IgA deficiency are not well established, anesthesia providers for dentistry should be aware of the potential implications for safe practice.

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