Letter to the Editor

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Anesthesiologists could be the most suitable clinicians to screen for latent diseases in autistic patients requiring dental general anesthesia

Shinichiro Kira[1], Chiharu Arai[2]

[1]Division of Anesthesia, Medical Department, Beppu Developmental Medicine & Rehabilitation Center, Beppu, Oita, Japan
[2]Division of Dentistry, Medical Department, Beppu Developmental Medicine & Rehabilitation Center, Beppu, Oita, Japan

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Dear Editor,

Autism spectrum disorder (ASD) is a neuro-developmental disorder characterized by difficulties in social communication and behavioral and sensory disturbances. Because of these characteristics, patients with ASD often require dental treatment under general anesthesia. This treatment includes procedures like preoperative laboratory tests (PLT) as well as other elective surgeries. Many patients with ASD avoid these procedures, especially those that are needle-related, such as blood draws, because of increased pain sensitivity and needle-related anxiety [1]. In addition, the COVID-19 pandemic has led to lower healthcare utilization, with patients avoiding visits such as health checks, which in turn has led to new medical comorbidities that have not been previously observed in some patients. In the preoperative patient evaluation, we found that some preoperative patients with ASD have long intervals since their last laboratory tests, during which latent diseases (LD) have arisen, or these patients have had abnormal laboratory findings (ALF) for the first time. Herein, we describe representative cases that we have encountered over the past 2 years and discuss the suitability of anesthesiologists in screening for LD or ALF among patients with autism requiring dental general anesthesia. Written informed consent to use the patient data was obtained from the patients' parents.

Table 1 shows the characteristics of preoperative patients with ASD who had LD or ALF but who did not have LD or ALF detected within at least the previous 1 year. Patients with ASD commonly consume an unbalanced diet, which is attributed to a selective eating pattern, limited food repertoire, food neophobia, and sensory issues. The unusual dietary patterns of these patients also contribute to higher rates of overweight and obesity. In six individuals (Patients 1–6), ALF, such as elevated liver enzymes and uremic acid associated with an unbalanced diet, was found. In one patient (Patient 6), the values for aspartate transaminase (AST), alanine transaminase (ALT), and γ-glutamyltransferase (γ-GT) were 52 U/L, 109 U/L, and 86 U/L, respectively. Among them, four individuals (Patients 1–3 and 6) had a body

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Corresponding Author: Shinichiro Kira, Division of Anesthesia, Medical Department, Beppu Developmental Medicine & Rehabilitation Center, 4075-1 Tsurumi, Beppu, Oita 874-0838, Japan
Tel: +81-977-22-4185 Fax: +81-977-26-4171 E-mail: kira@oita-u.ac.jp

Table 1. Characteristics of preoperative patients with Autism spectrum disorder (ASD) and abnormal laboratory findings

Patient number	Age (yr)/gender	Weight (kg)	Height (cm)	BMI (kg/m^2)	Abnormal laboratory findings
1	26/M	97.3	177	31.1	ALT: 43 ↑, TG: 187 ↑, UA: 7.9 ↑
2	21/F	72.0	159	28.5	AST: 50 ↑, ALT: 70 ↑, TG: 200 ↑
3	18/M	98.0	170	33.9	UA: 7.1 ↑
4	25/M	58.0	161	22.4	ALT: 41 ↑, UA: 7.3 ↑
5	21/M	67.8	168	24.0	AST: 75 ↑, UA: 9.3 ↑
6	26/M	83.0	167	29.8	AST: 52 ↑, ALT: 109 ↑, γ-GT: 86 ↑, TG: 256 ↑, UA: 7.9 ↑
7	24/M	73.4	165	27.0	FBS: 257 ↑
8	18/M	86.0	169	30.1	IgA: 74 ↓
9	26/M	69.2	173	23.1	IgG: 640 ↓, IgA: 100 ↓, IgM: 31 ↓
10	17/F	53.0	149	23.9	WBC: 12,900 ↑
11	22/M	62.9	165	23.1	Maximum CK: 3084 ↑
12	20/F	35.0	140	17.9	Fe: 22 ↓

Abbreviations and reference values for Japanese adults. ASD, autistic spectrum disorder; BMI, body mass index; WBC, white blood cell (men 3,900-9,800 /μL, women 3,500-9100 /μL); AST, Aspartate transaminase (10-40 U/L); ALT, alanine transaminase (5-40 U/L); γ-GT, γ-glutamyltransferase (men <70 U/L, women <30 U/L); TG, triglyceride (50-149 mg/dL); UA, uremic acid (men 3.7-7.0 mg/dL, women 2.5-7.0 mg/dL); FBS, fasting blood sugar (70-109 mg/dL); Fe (men 54-200 μg/dL, women 48-154 μg/dL); Ig, immunoglobulin; IgG (870-1,700 mg/dL); IgA (110-410 mg/dL); IgM (men 33-190 mg/dL, women 46-260 mg/dL); CK, creatine kinase (men 62-287 U/L, women 45-163 U/L).

mass index (BMI) above 25 kg/m2. In adult patients with ASD, overweight and obesity are significantly associated with a higher risk of type 2 diabetes mellitus (DM) [2]. Patient 7 was suspected to have DM and presented with a preoperative fasting blood sugar (FBS) level of 257 mg/dL. The patient's FBS level on the day of surgery was 158 mg/dL, and he was referred to a specialist after an uneventful perioperative period.

Epilepsy is considered a comorbidity of autism, and 10–30% of children with ASD have epilepsy [3]. At our institution, preoperative serum immunoglobulin (Ig) levels are typically measured to prevent perioperative infections in patients with suspected Ig deficiency, including those with epilepsy receiving long-term anticonvulsant therapy (LTACT). This preoperative test was included after an IgA-deficient patient experienced post-discharge sepsis following dental treatment under general anesthesia. In the current study, we observed low serum IgA levels after LTACT in Patients 8 and 9. Three other patients (Patients 10–12) had leukocytosis (no chronic inflammatory illnesses), elevated creatine kinase levels, and iron deficiency. Medical comorbidities are more common in patients with ASD than in the general population [3]. Gastrointestinal disorders are one of the most common comorbidities and occur in 46–84% of children with ASD [3]. Allergic disorders are also significantly more common in patients with ASD across all age groups [3]. However, our patients presented with no apparent symptoms of these disorders; thus, the LD and ALF observed in our patients might have been missed unless PLT had been performed, which could lead to poorer patient health in the future.

Seo et al. [4] conducted a large study involving patients who underwent office-based oral and maxillofacial surgeries under local anesthesia. These authors reported that even in patients with no past medical history, undetected diseases such as acute leukemia and thrombocytopenia were found. They also concluded that PLT for these surgeries could detect underlying medical conditions that are difficult to identify from patient history alone and could prevent unexpected sequelae [4]. Kennedy et al. [5] reported that health checks are likely to influence survival if conducted before a person is diagnosed with a chronic condition, especially in people with autism. There are several reasons why anesthesiologists could be optimal clinicians for detecting such hidden diseases in patients with ASD. First, anesthesiologists are usually familiar with the preoperative patient data and are more likely to notice any abnormalities. Second, anesthesiologists usually work with other doctors in multiple medical departments and refer patients requiring further examination to an appropriate specialist. Finally, anesthesiologists are familiar with analgesia and sedation techniques. The

American Society of Anesthesiologists Committee and the American Dental Association have established guidelines on mild-to-moderate sedation in outpatient settings, and minimal sedation techniques have been adapted to help patients with intellectual and developmental disabilities and/or needle-related anxiety during routine care procedures in hospital settings [1]. We firmly believe that anesthesiologists can contribute to medical examinations and health checks in patients with ASD using analgesia and sedation techniques.

In conclusion, anesthesiologists, including dental anesthesiologists, play an important role in improving the health of patients with autism who require general dental anesthesia. These clinicians could be the most suitable candidates for screening LD or ALF in patients with ASD, leading to improved health and quality of life.

AUTHOR ORCIDs

Shinichiro Kira: https://orcid.org/0000-0002-1196-947X
Chiharu Arai: https://orcid.org/0009-0005-0393-7346

AUTHOR CONTRIBUTIONS

Shinichiro Kira: Conceptualization, Data curation, Writing - original draft, Writing - review & editing
Chiharu Arai: Data curation, Writing - review & editing

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