

# Behavioral and Dental Management of a Pediatric Patient Diagnosed with Autoimmune Encephalitis: A Case Report

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## ABSTRACT

**Background:** This is a case report presenting the behavioral and dental management of a 9-year-old child recently diagnosed with autoimmune encephalitis, seizure disorder, and psychosis and treated with anticonvulsant and antidepressant medications. In this case, seizure semiology was presented as eye blinking during the attack, and the child was usually not conscious. It is absorbed by itself and associated with a post-sleeping attack that lasts for minutes.

**Case description:** Parents presented to the pediatric dental clinic with a chief complaint of decayed teeth that needs to be restored. The child has mixed dentition and is diagnosed with anterior crossbite and single posterior crossbite. The child was cleared by the pediatric neurologist and psychiatrist and had no contraindications to dental treatment under local anesthesia. The child's treatment was completed on the dental chair without any seizure attacks, and the patient's chief complaint was resolved.

**Conclusion:** Pediatric dentists should be educated about dental precautions and consider drug interactions when treating children with autoimmune encephalitis. Various types of non-pharmacological behavior guidance techniques and pharmacological methods of behavior management techniques can aid in the behavioral management of children with psychosis.

**Keywords:** Behavioral modification, Encephalitis, Psychosis, Seizure disorder, Special health needs.

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## BACKGROUND

Acute encephalitis is a debilitating neurological disorder that is caused by brain inflammation and develops as a rapidly progressive encephalopathy (usually in <6 weeks). In high-income countries, the estimated incidence of encephalitis is about 5–10/1,00,000 inhabitants per year.<sup>1</sup> Encephalitis affects patients of all ages and represents a significant burden to patients, families, and society.<sup>2</sup>

In children, autoimmune etiology has been demonstrated with several forms of encephalitis (e.g., anti-N-methyl-D-aspartate (NMDA) receptor encephalitis) or (e.g., Rasmussen's encephalitis, limbic encephalitis, and opsoclonus myoclonus).<sup>3</sup> Studies reported the long-term prognosis of autoimmune encephalitis is 80% with substantial and full recovery.<sup>1,3</sup>

In dental practice, treating children with special health care needs is considered challenging. The American Academy of Pediatric Dentistry defined special health care needs as "any physical, developmental, mental, sensory, behavioral, cognitive, or emotional impairment or limiting condition that requires medical management, health care intervention, and/or use of specialized services or programs."<sup>4</sup>

Both pharmacological and non-pharmacological behavioral management is used to perform oral health care safely and efficiently.<sup>4,5</sup> However, the choice of the ideal behavioral technique by a skilful practitioner must be customized after fully understanding the cognitive, social, and emotional qualities of the child.<sup>5</sup> Therefore, we have presented this case report that highlights the dental and behavioral management of a 9-year-old child who was diagnosed recently with autoimmune encephalitis, seizure disorder, and psychosis.

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## CASE DESCRIPTION

### Medical History

This 9-year-old child was diagnosed with autoimmune encephalitis, seizure disorder, and psychosis. Seizure semiology was described as eye blinking, and the child was usually not conscious during the attack with no response to a stimulus. Seizure is absorbed by itself and associated with a post-sleeping attack which lasts for minutes.

The child was born in 2012 full-term healthy child with no medical problems. In 2015, diagnosed with otitis media effusion, and he was scheduled for adenotonsillectomy. In 2020, after 5 years postsurgery, the mother reported a fever reaching 38.5 degrees requiring antipyretic drugs. He was diagnosed with an ear infection and treated with antibiotics for two days. After a few days, while he was sleeping the mother noticed abnormal movement in form of a generalized tonic clonic seizure lasting for one minute associated with salivation and post-ictal sleepiness. The parent took the child

to the emergency department at King Abdullah bin Abdulaziz University Hospital and he had several attacks which had been managed using Keppra.

Diagnostic investigations involved lumbar puncture under general anesthesia which resulted in negative NMDA. Other diagnostic investigations included magnetic resonance imaging (MRI) which was normal and electroencephalographic which showed normal findings. Finally, a neurologist diagnosed him with autoimmune encephalitis. The child was treated with several medications to control seizures including keppra, tegretol, and topamax. Additionally, he is on escitalopram for the treatment of psychosis. Table 1 shows the oral side effects of the anti-seizures and anti psychosis medications that this child is using.

A consultation with the pediatric neurologist and psychiatrist to check the patient's medical and psychological status and the child was cleared by the pediatric neurologist and psychiatrist. No contraindications for dental treatment under local anesthesia. Therefore, it was concluded that we proceed with dental treatment.

### Dental History and Examination

This is the first dental visit for the child. Intraorally, there was a gingival recession related to the lower anterior incisor (Fig. 1). Hard-tissue intraoral examination showed mixed dentition with multiple occlusal and proximal caries, rotated #16, anterior crossbite in #11,31, #21,41, and posterior crossbite #16,46 (Fig. 1). The child is classified as high caries risk category according to the caries-risk assessment (CAT).<sup>6</sup> His behavior is positive toward dental treatment.

### Dental Considerations and Treatment

Based on the psychiatric consultation, the child has delirium secondary to his medical condition, so specific dental considerations were used including short visits, appointment time near to the child's medication time, the child needs to take his medication before the dental treatment, and delay dental treatment if the child does not sleep well or sick. Anxiety management includes visual distractions (cartoon videos), using Tell-Show-Do, short breaks time during treatment, and using simple instructions with repetition during dental treatment.<sup>7</sup>

The parent signed the consent form that described the dental procedures and the treatment plan. In December 2020, dental treatment started and was completed in July 2021. The behavior of this child was positive (+) using Frankl classification<sup>8</sup> and potentially cooperative behavior (tense-cooperative behavior) using Wright classification.<sup>9</sup> Behavior management techniques used with this child are the Tell-Show-Do technique, positive reinforcement, and rewarding approaches and distractions.<sup>7</sup> Figure 2 shows the intraoral photos after 6 months of follow-up. The patient's treatment is completed without any attacks during the dental treatment and the patient's chief complaint was resolved.

### DISCUSSION

Evidence suggests that dental pain and sleep disturbances can be one of the triggers of seizures<sup>10</sup> which highlights the importance of dental treatment and management of caries teeth. Treatment of special health needs children should be done by pediatric dentists as they effectively provide dental care to children, behavioral

**Table 1:** The oral side effects of the anti-seizures and psychosis medications

Medications		Oral side effects	The dose prescribed for the child
Anticonvulsant	Keppra	Infection, gingivitis	58 mg/kg/day
	Tegretol	dry mouth (xerostomia), delayed healing	200 mg BID
	Topamax	bad taste in your mouth, sores in your mouth	3.2 mg/kg/day
Antidepressant	Escitalopram	dry mouth (xerostomia)	½ tablet/day



**Fig. 1:** Preoperative intraoral photos



Fig. 2: Intraoral photos after 6 months follow-up

management techniques, pain management, and treatment modalities.<sup>11</sup>

The pediatric dentist needs to consider drug interaction when prescribing medications to children on anticonvulsant drugs as some antibiotics such as clarithromycin can increase the plasma concentration of carbamazepine and cause toxicity.<sup>12</sup> Additionally, using nonsteroidal anti-inflammatory drugs with escitalopram may cause patients to bruise or bleed easily.<sup>13</sup>

A pediatric dentist needs to be well-trained about the actions that should be taken if the child has an epileptic seizure during dental treatment.<sup>14</sup> Moreover, pediatric dentists need to be aware of the triggering factors that can initiate seizures in dental visit attacks such as stress, infection, and sleep disturbance.<sup>14</sup> First, the use of non-pharmacological behavioral management techniques such as the Tell-Show-Do technique, positive reinforcement, distraction, and rewarding approaches are recommended to encourage the child to accept the treatment and maintain cooperation.<sup>5</sup>

Pharmacological behavioral management techniques such as sedation can be used to reduce stress and anxiety in children diagnosed with neurological disorders after medical consultation. First, the use of nitrous oxide is preferable in children with special health care needs because being relatively safe.<sup>15</sup> Nitrous oxide does not increase the risk of precipitating a seizure but should be administered in children with caution to prevent hypoxia, as hypoxia may trigger the onset of a seizure.<sup>15</sup>

Second, midazolam sedation is considered also effective in children with neurological disorders. A study investigated the

effectiveness of midazolam in 45 children with neurological disorders and showed that its effective in 89% of this sample for dental procedures.<sup>16</sup> Finally, treatment with deeper sedation using general anesthesia is considered a useful modality for the treatment of patients with special needs.<sup>17</sup>

In short words, behavioral management of children diagnosed with seizure disorder and psychosis should be based on non-pharmacological behavior methods and the use of pharmacological methods of behavior management techniques only in uncooperative children with a complex treatment plan.

## CONCLUSION

The information presented in this case report may aid a deeper understanding of the non-pharmacological management of pediatric dental patients and the ability to the treatment of special health care need patients on the dental chair. This is necessary to promote continuing education and up-to-date information regarding the medical conditions that can face pediatric dentists in the clinic. Providing appropriate training to pediatric dentists on the management of seizures during dental treatment, dental considerations, and drug interactions of neurological disorders in children.

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