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Epilepsy-Induced Traumatic Dental Injuries- A Review

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Abstract

Epilepsy is a prevalent neurological disorder characterized by recurrent seizures, which can lead to various complications, including traumatic dental injuries (TDIs). This paper reviews the incidence of epilepsy-induced TDIs, exploring the associated risk factors, types of injuries, and preventive measures. Understanding these aspects is crucial for dental practitioners and caregivers to improve patient outcomes and reduce the impact of dental trauma on the quality of life for individuals with epilepsy.

Keywords: Epilepsy, Traumatic Dental Injury, Management, Seizure

Introduction

Epilepsy affects approximately 50 million people worldwide, making it one of the most common neurological disorders. In children and adolescents, seizures can result in a higher incidence of accidents and injuries, particularly in the oral and maxillofacial regions. This paper aims to examine the incidence of traumatic dental injuries related to epilepsy and discuss the implications for dental care and patient management.

Several studies have investigated the rates of accidental injuries in individuals diagnosed with epilepsy. One previous study found that patients with idiopathic, cryptogenic, or remote symptomatic epilepsy faced a moderately higher risk of illnesses and accidents compared to the general population. This risk may be further elevated by factors such as high seizure frequency, absence of a prolonged seizure-free interval, and comorbid conditions like attention deficit disorder or cognitive impairment.[4]

In contrast to individuals without neurological disorders, patients diagnosed with epilepsy face a higher risk of accidental injuries. This increased risk arises because they cannot effectively use their protective reflexes, especially during their first seizure. As a result, they may sustain injuries to the head and neck, orthopedic trauma, soft tissue wounds, burns, or submersion injuries, depending on where the seizure occurs.

Incidence of Traumatic Dental Injuries in Epilepsy

Studies indicate that children with epilepsy are at a significantly higher risk of sustaining TDIs compared to their peers without the condition. The reported incidence rates of dental trauma in patients with epilepsy vary, with some studies suggesting that up to 30% of children with epilepsy experience dental injuries as a result of seizures.

Epilepsy, a prevalent neurological disorder, is characterized by physical responses to sudden excessive electrical discharges in nerve cells, resulting in recurrent epileptic seizures influenced by enduring predisposing factors.

In the Eastern Mediterranean Region, the prevalence of epilepsy among children ranges from 3.2 to 5.5 per 1,000 to 3.6 to 44 per 1,000, making it one of the three most common neurological disorders.

Generalized tonic-clonic seizures have been reported to be associated with minor oral injuries affecting soft tissues and teeth, as well as head injuries like temporomandibular joint subluxation or maxillofacial trauma resulting from falls during seizure episodes. The extent of these injuries often correlates with the severity of the seizures.[5]

Types of Injuries

The types of TDIs commonly observed in epileptic patients include:

1. **Fractures of the Dental Crown:** The most frequently reported injury, often affecting anterior teeth.
2. **Avulsions**: Complete displacement of teeth, typically occurring during a fall or impact.
3. **Luxations**: Displacement of teeth without complete avulsion, which can cause pain and functional issues.
4. **Soft Tissue Injuries**: Trauma to the gingiva and other oral soft tissues, often occurring alongside dental injuries.

Risk Factors

Several factors contribute to the increased risk of TDIs in patients with epilepsy:

- **Loss of Protective Reflexes**: During a seizure, individuals may not be able to protect themselves from falls or impacts.
- **Seizure Type and Frequency**: Patients with generalized tonic-clonic seizures are particularly vulnerable, as these seizures often lead to loss of consciousness and subsequent falls.
- **Medication Side Effects:** Antiepileptic drugs can lead to side effects like gum overgrowth, which may complicate oral health and increase the risk of injury.

Impact on Quality of Life

The consequences of TDIs can significantly affect a patient's quality of life. Injuries may lead to:

- **Functional Issues**: Difficulty in eating, speaking, and maintaining oral hygiene.
- **Aesthetic Concerns**: Affects self-esteem and social interactions, particularly in adolescents.
- **Psychosocial Effects**: Increased anxiety about seizures and dental health can lead to avoidance behaviors and reduced participation in social activities.

Preventive Measures

To mitigate the risk of epilepsy-induced TDIs, several protective measures are recommended:

1. **Mouthguards**: The use of custom-fitted mouthguards during physical activities can reduce the risk of dental trauma.

2. **Education and Training**: Caregivers and patients should be educated about seizure triggers and preventive strategies to minimize injury risks.
3. **Regular Dental Check-ups:** Routine dental visits can help monitor oral health and address any issues early on.

Management

Many patients with epilepsy may feel particularly anxious, so taking the time to build rapport with them is essential. It's helpful to ask the parent how long it has been since the last seizure and what circumstances typically trigger it, as this information can help assess the likelihood of a seizure occurring during the dental appointment. Generally, if the child is well-controlled and has a positive relationship with the dentist, the risk of a seizure during treatment is low.

If a patient with grand mal seizures comes in for dental care, it's important for the surgical assistant to be familiar with the appropriate procedures in case a seizure occurs. The patient should be positioned to prevent falls, ideally on a clear surface. They should be turned onto their side with their head positioned to prevent saliva aspiration. To prevent tongue biting, an instrument may need to be placed between their teeth before full muscle spasm occurs, but care must be taken to avoid damaging the teeth or soft tissues.

In the dental office, a suitable instrument for this purpose is a plastic mixer for alginate, as it is durable yet flexible and unlikely to cause trauma. If the patient does not recover from the seizure quickly, and the parent can provide insight into their usual seizure pattern, oxygen should be administered if the patient appears severely cyanotic, and arrangements should be made for immediate hospital transfer. Once the patient comes out of the seizure, they may experience a headache and confusion, so further treatment should be postponed except for minor adjustments needed to complete the interrupted procedure.

Local anesthesia is generally preferred for treating patients, especially those with epilepsy. If general anesthesia is necessary, it should only be administered by a highly experienced anesthetist who deems the patient suitable. It's important to remind parents that the normal drug dose must be taken prior to the appointment and should not be skipped. According to Kennedy et al., local anesthetics used at therapeutic doses do not interact with standard antiepileptic medications. However, in the event of a significant overdose of local anesthetic, serious clinical symptoms, such as generalized tonic-clonic seizures, may occur. While local anesthesia has been found to be safe during dental procedures, it is advisable to avoid general anesthesia whenever possible for epileptic patients, as the risk of temporary brain anoxia during general anesthesia could potentially trigger seizures.

Light can trigger epileptic seizures, so eye protection should be used, and the operating light must be directed into the mouth rather than flashing into the patient's eyes. Most patients with epilepsy or seizure disorders are usually aware of their likelihood of having a seizure during an appointment. For those whose condition is well-managed with medication, dental procedures can be relatively straightforward. However, patients whose seizures do not respond to anticonvulsants may need to consult a neurologist before their dental visit, and they might require additional anticonvulsant or sedative medications.

Conclusion

The incidence of epilepsy-induced traumatic dental injuries is significant, particularly among children and adolescents. Understanding the types of injuries and their impact on quality of life is essential for healthcare

providers. Implementing preventive measures, such as the use of mouthguards and providing educational resources, can help reduce the risk of TDIs and improve overall patient outcomes. Further research is needed to develop comprehensive management strategies that address the unique dental needs of individuals with epilepsy.

References

1. Annegers, J. F., et al. (1998). "The incidence of traumatic dental injuries in children with epilepsy." Epilepsia, 39(6), 674-679.
2. Nowak, A. J., et al. (2008). "Oral health in children with epilepsy: A review." Pediatric Dentistry, 30(3), 228-234.
3. Hodge, M. M., et al. (2015). "The role of protective mouthguards in preventing dental injuries in children with epilepsy."*Journal of the American Dental Association, 146(1), 48-55.
4. Wirrell EC. Epilepsy-related injuries. Epilepsia 2006; 47 Suppl 1: 79–86.
5. Aldenkamp A, Arends J. The relative influence of epileptic EEG discharges, short nonconvulsive seizures, and type of epilepsy on cognitive function. Epilepsia 2004; 45: 54–63.
6. Malamed SF (1997) Handbook of Local Anesthesia, 4th Edition, Mosby, St Louis, 121
7. Tan, H., Gurbuz, T., Dagsuyu, IM (2004) Gingival enlargement in children treated with antiepileptics. J Child Neurol 19: 958-963. [Crossref]
8. Angelopoulos AP (1975) Diphenylhydantoin gingival hyperplasia. A clinicopathological review. Incidence, clinical features and histopathology. Dent J 41: 103-106.
9. D. Buck, G. A. Baker, A. Jacoby, D. F. Smith, D. W. Chadwick (1997) Patients' Experiences of Injury as a Result of Epilepsy. Epilepsia 38: 439-444.
10. Jacobsen PL, Eden O (2008) Epilepsy and the dental management of the epileptic patient. J Contemp Dent Pract 9: 54-62