

Dental concerns and management of children with Epilepsy: An overview

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Abstract

Modern medicine defines epilepsy as a chronic neurologic disorder characterized by frequently recurrent seizures. A seizure is a sign of a disease, which manifests as an episodic disturbance of movement, feeling, or consciousness caused by sudden synchronous, inappropriate and excessive electrical discharges that interfere with the normal functioning of the brain site of location of seizures the disease occurs independent of race, age and gender]. However, epilepsy has been occur more frequently in men than in women. Oral manifestations are soft tissue lacerations of tongue or buccal mucosa, avulsion, luxation and fractures of teeth and jaws are more common and also subluxation of the temporo mandibular joint. due to drug therapy gingival hyperplasia, recurrent aphthous like ulceration and anomalous dental development like small teeth and delayed eruption. reduce stress on the patients with psychobehavioral preparations, sedation etc. Diazepam is the drug of choice because it has anticonvulsant properties. The use of conscious sedation and general anesthesia is not contraindicated in patients' epilepsy. In some situations nitrous oxide or intravenous sedation may be necessary to safely and effectively provide dental care. Avoid IV local anesthetics. Appointments should be short, importance of tooth brushing procedures and regular review, if appliances are indicated for tooth movement and tooth replacement, fixed type are preferred. This article discuss about etiology, clinical features and dental management of children with epilepsy.

Introduction

The word "epilepsy" is derived from the Greek word take or to seize. Between 400 BC and 260 AD Hippocrates. Epilepsy is not a disease in itself but is a symptom of an underlying brain disorder [1,2]. It occurs in 0.5 to 1 per cent of the population and about 5 per cent of them have mental subnormality [3]. Its prevalence in developing countries like India being 5.59 per 1000 people and that in developed countries, being 5-7 per 1000 people [4]. More than 1.5 million Americans have active epilepsy [5]. It is present in about half of all spastics and a quarter of athetoids. Seizures are more common in children than adults but included in this are those children who have convulsions with a sudden rise in temperature associated with a febrile condition which are most common between the ages of 18 months and 3 years [6,7].

Classification [8,9]

1. There are two types of epilepsy:

The **organic variety** in which physical brain damage can be shown and in these there may be some genetic factor such as phenylketonuria; and

The **idiopathic variety** in which there is usually a functional brain abnormality demonstrable.

2. Based on the involvement of the Area there are two types.

Localised : Where it affects only a part of the body.

Generalised: where the multiple areas are involved

3. International Classification of the Epilepsies represented in Table 1.

Clinical features

The seizure which occurs is due to a sudden discharge in the grey matter like an electric shock. It is of varying degrees depending on where and how much of the brain is involved in the discharge. Grand mal is a major seizure which may be preceded by a warning of either visual or motor type, or with irritability or headache shortly before the attack. At the onset there is a sudden tonic spasm over the whole body with loss of consciousness. There is facial pallor, dilated pupils, with the eyeballs usually rolled upwards and the head thrown back. The body is stiffened and rigid. The tongue may be bitten when the jaw muscles contract. The pallor of the face quickly changes to cyanosis and within half a minute of the onset the clonic phase follows. The patient eventually wakes with a headache and is in a state of mental confusion. Petitmal is a lesser form of seizure where there is only momentary loss of consciousness, though there may be other minor effects. It lasts for less than half a minute and may be referred to as a 'dizzy spell' or the patient may be unaware that it has occurred. It is rarely associated with mental subnormality. Occasionally, types of seizure occur other than grand and petit mal which show a variety of behaviour patterns and are classified as psychomotor, focal and infantile myoclonic (Tables 2 and 3) [12-14].

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Table 1. showing classification of Epilepsy

1.	localization related (focal,partial) Idiopathic Benign childhood epilepsy with centrotemporal spikes Childhood epilepsy with occipital paroxysms Primary reading epilepsy Symptomatic Temporal lobe epilepsy Frontal lobe epilepsy Parietal lobe epilepsy occipital lobe epilepsy and childhood
2.	Generalised Idiopathic Epilepsy with myoclonic atstatic seizures Benign neonatal familial Childhood absence epilepsy Juvenile absence epilepsy Generalised tonic-clonicepilepsy Symptomatic Nonspecific etiology Early myoclonic encephalopathy Early infantile encephalopathy Specific syndrome etiology Congenital malformations Inborn error of metabolism
3.	Cryptogenic West syndrome Lennox-kleffner syndrome Myoclonic absence seizure Epilepsy with myoclonic atstatic seizures
4.	Undermined origin Neonatal seizures Landau-Kleffner syndrome Seizures during sleep with continuous spike wave
5.	Special design Reflex originated epilepsy Isolation Situation related

Table 2. Syndromes associated with Epilepsy [10,11]

1.	Dravet syndrome
2.	West syndrome
3.	Lennox-Gastaut syndrome
4.	Landau-Kleffner syndrome

Table 3. showing oral manifestations

1.	Self-injury due to seizures and surroundings
2.	Traumatic injuries such as avulsion, luxation Dentoalveolar fractures
3.	Dentoalveolar fractures
4.	Facial fractures
5.	Erythematous gingivae
6.	Gingival hyperplasia due to antiepileptic drug
7.	Secondary infection on the fibrous overgrowth
8.	Gingival hyperplasia induced malocclusion
9.	Malodor and poor oral hygiene
10.	Cervical lymphadenopathy

Treatment of these convulsive conditions is by the use of drugs to suppress the episodes. These are most frequently Epanutin (Dilantin) or one of the barbiturates with Mysoline, though others are also used. Occasionally, a ketogenic diet also may be followed. A very positive attempt is being made to fit these patients into normal community living and to try to educate the public to accept them [15].

Oral condition

The only special feature is in those patients who are being treated by Epanutin. In these, there may be hyperplastic gingivitis of a fibrous nature and it may be so severe as to cover most of the crowns of the teeth, or cause delayed eruption. It is particularly associated with a poor state of oral hygiene. It is well illustrated in many textbooks of oral pathology [16].

Dental treatment

Many of these patients are particularly apprehensive and time taken in getting to know them is well spent. It is useful to ask the parent how long it has been since the last seizure and what type of occasion brings it on. From this one can judge the likelihood of such an episode occurring in the dental surgery [17]. Usually, the child is under quite good control and is most unlikely to have one during treatment, especially if there is a good relationship between the child and the dentist. If a patient suffering from grandmal attends for dental treatment, it is as well that the surgery assistant should know the procedures should a seizure occur. The patient is immediately put in a place from which he cannot fall, and a clear space on the floor is the easiest. He should be placed on his side with his head in a position to prevent aspiration of saliva into the lungs. An instrument may need to be pushed between his teeth before full spasm of the jaw muscles has occurred to prevent tongue biting but damage to teeth and to soft tissues must be avoided. In the dental surgery the most suitable instrument that is easily available is the plastic mixer for alginate which is tough but resilient and will not cause trauma. If the patient does not come out of his seizure quite quickly, and the parent will give advice on the normal pattern, then he should be given oxygen if severely cyanosed and arrangements made to have him taken to hospital immediately. When he comes out of his seizure normally he will have a headache and be mentally confused, so that further treatment should be postponed apart from minor adjustments necessary to tidy up the operation which was interrupted [18-20].

Conservation can be carried out normally A rubber dam must be used in light of the risk of seizure during restorative treatment, composite materials are beneficial for incisor teeth restoration. Metal temporary crowns or implant-supported-bridges are more practical than amalgam or porcelain restorations because of the risk of damage during seizures [13].

Local anaesthesia can be used. In the case of general anaesthesia, however, only a very experienced anaesthetist should give the anaesthetic providing he considers the patient suitable. The parent should be reminded that the normal drug dose must be given prior to the appointment and not to omit it [19]. Kennedy *et al.* reported that, in dental practices, local anesthetics administered in therapeutic dosages do not interact with standard antiepileptic drugs. In the case of a critical overdose of local anesthetic, however, clinical conditions such as generalized tonic-clonic convulsions may be observed. Although it has been reported that local anesthetic administration during dental treatment is safe. Local anesthesia should be preferred to general anesthesia as far as possible during the treatment of epileptic patients. This is because the brain may suffer from temporary anoxia during general anesthesia, which may initiate epileptic seizures [20].

The periodontal condition may need special attention in those patients on Epanutin. Scrupulous scaling and cleaning should be done regularly and the patient and his parent taught proper tooth brushing

[21]. If the hyper plastic gingivitis is severe, there may be the need for gingival surgery but the condition tends to recur. If it causes a great problem, and it may do so especially in those who are mentally normal and are upset by the appearance, then it would be reasonable to discuss it with the physician to see if the Epanutin can be changed to an alternative therapy [22].

Light can be a trigger in inducing an epileptic seizure. Therefore, be used as eye protection and the operating light must be controlled into the mouth and not flashed into the patient's eyes.

Most patients with epilepsy or a seizure disorder can either or know whether they are likely to have a seizure during the office. If patients are adequately controlled with their medication, relatively simple and straight forward.

Patients whose seizure activity does not respond to anticonvulsants may have to have a consultation with a neurologist prior to a dental appointment. Such additional anticonvulsant or sedative medication [21].

Some of the epileptic patients may hide their disorder for fear of being coalesced dental treatment or they consider epilepsy as an awkward disease. In this case the subject matter requested on the health history regarding medications the patient takes should vigilant the dentist to a possible seizure disorder represented in Tables 4, 5 and 6.

Table 4. Showing the points to consider for the treatment [23]

Take complete health history
List medications patient is taking
Look them up so you know their drug interaction. and any specific oral effects. Schedule proper frequency of oral hygiene and provide good oral healthy periodontal tissue and team
Insure proper dental lighting (no light directly in eyes)
Insure mediations have been taken property relative to dental appointments to minimizerisk of seizure
Perform proper periodontal and surgical treatment of gingiva! Hyperplasia to minimize damage to teeth and supporting structures and to maintain proper aesthetics.
treatment plan and design restorations to minimize risk of damaging or displacing dental restorations or prothesis during an epileptic seizure
Parents should be made aware of loca! and national resources for information and support relative to their disease. They should contact the Epilepsy Foundation a! t-800-EFA-1000 or visit their website at www.epilepsyfoundation.org

Table 5. Steps to minimize risk of injury during Epileptic seizures [24]

The chair should be placed in a supine position
If patient has a turn the patient to their left side in order to minimize aspiration foreign bodies or secretions
Use passive restraint only to prevent injury that may occur by the patient hits nearby objects or to prevent them from falling out of the chair
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Table 6. Characteristics of the seizures that need emergency and medical help depicted [25]

A seizure that continues more than 5 minutes without the patient gaining consciouness between attacks (status epilepticus)
Breathing difficulties after a seizure
Persistent confusion or unconsciousness for more than 5 minutes.
Injuries sustained during a seizure

Conclusion

Dentists with a thorough knowledge of seizure disorders and the medications used to treat them can provide necessary dental and oral health care to these patients. A good health history to fully understand the patient's disease and the medications they are taking is essential.

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