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內文：

Introduction

Epilepsy:

- A chronic neurological disorder characterized by frequently recurrent seizures
- Seizures :
 - ✓ Sign of disease
 - ✓ Manifests as an episodic disturbance of movement, feeling, or consciousness caused by sudden synchrondrous, inappropriate, and excessive electrical discharges that interfere with the normal functioning of the brain
- Most common in children and elderly patients
- Increased incidence in the elderly is associated with brain related trauma such as stroke, brain tumor, Alzheimer's disease, etc.

Etiology:

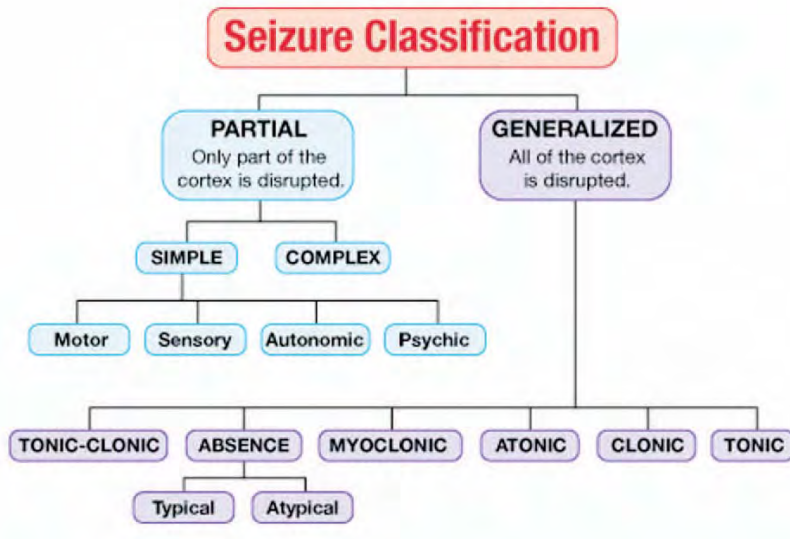
- Primary epilepsy
 - ✓ Seizures with unknown cause
 - ✓ In approximately 70% of all cases
- Secondary epilepsy
 - ✓ Causes can be metabolic ,structural and functional abnormalities
 - ✓ Most common cause is cerebrovascular disease, followed by primary and metastatic brain tumors
 - ✓ Systemic disorders (infections , hypertension, DM, electrolyte imbalances, dehydration, lack of oxygen)
 - ✓ High dose and withdrawal from chronic use of drugs such as heroin, cocaine, barbiturates, amphetamines and alcohol.
 - ✓ Chromosome 12 anomalies

Pathogenesis:

Loss of inhibitory activity or overproduction of excitatory activity of brain electrical activity occurs in abnormal or injured cells
These cells create a storm of abnormal electrical signals, and as the storm progresses, the seizure becomes apparent.

Classification of Seizures:

1. **Partial seizures**
 - A. Simple partial seizures
 - i. With motor signs
 - ii. With somatosensory or special sensory symptoms
 - iii. With autonomic symptoms or signs
 - iv. With psychic symptoms
 - B. Complex partial seizures
 - i. Simple partial onset followed by impairment of consciousness
 - ii. With impairment of consciousness at onset
 - C. Partial seizures evolving to secondarily generalized seizures
 - i. Simple partial seizures evolving to generalized seizures
 - ii. Complex partial seizures evolving to generalized seizures
 - iii. Simple partial seizures evolving to complex partial seizures evolving to generalized seizures
2. **Generalized seizures**
 - A. Absence seizures
 - i. Typical absence
 - ii. Atypical absence
 - B. Myoclonic seizures
 - C. Clonic seizures
 - D. Tonic seizures
 - E. Tonic-clonic seizures
 - F. Atonic seizures
 - G. Unclassified epileptic seizures



Classification of Epilepsies :

<p>1. Localization related (focal, partial)</p> <p>A. Idiopathic</p> <ol style="list-style-type: none"> i. Benign childhood epilepsy with centrotemporal spikes ii. Childhood epilepsy with occipital paroxysms iii. Primary reading epilepsy <p>B. Symptomatic</p> <ol style="list-style-type: none"> i. Temporal lobe epilepsy ii. Frontal lobe epilepsy iii. Parietal lobe epilepsy iv. Occipital lobe epilepsy v. Chronic progressive epilepsia partialis continua of childhood <p>C. Cryptogenic defined by</p> <ol style="list-style-type: none"> i. Seizure type ii. Clinical features iii. Etiology iv. Anatomic localization <p>2. Generalized</p> <p>A. Idiopathic</p> <ol style="list-style-type: none"> i. Benign neonatal familial convulsions ii. Benign neonatal convulsions iii. Benign myoclonic epilepsy in infancy iv. Childhood absence epilepsy v. Juvenile myoclonic epilepsy vi. Epilepsies with grand mal vii. Seizures on awakening viii. Other generalized idiopathic epilepsies <p>B. Cryptogenic or symptomatic</p> <ol style="list-style-type: none"> i. West syndrome ii. Lennox-Gastaut syndrome iii. Epilepsy with myoclonic-astatic seizures iv. Epilepsy with myoclonic absences <p>C. Symptomatic</p> <ol style="list-style-type: none"> i. Nonspecific etiology ii. Early myoclonic encephalopathy iii. Early infantile epileptic encephalopathy with suppression bursts iv. Other symptomatic generalized epilepsies <p>3. Undetermined epilepsies</p> <p>A. Generalized and focal features</p> <ol style="list-style-type: none"> i. Neonatal seizures ii. Severe myoclonic epilepsy in infancy iii. Epilepsy with continuous spike wave during slow-wave sleep iv. Acquired epileptic aphasia <p>4. Special syndromes</p> <p>A. Situation-related seizures</p> <ol style="list-style-type: none"> i. Febrile convulsions ii. Isolated seizures or isolated status epilepticus iii. Seizures occurring only when there is an acute or toxic event due to factors such as alcohol, drugs, eclampsia, nonketotic hyperglycemia

Diagnosing Epilepsy

3 steps :

1. **Health history taking**
 - Memory of the event
 - Family history
 - Past medical history
2. **Neurological examination**
3. **Laboratory testing**
 - EEG, CT, MRI, PET, neurosonography, lumbar puncture

Other Medical Conditions Resembling Epilepsy

Most common conditions confused with epilepsy are listed below:

	TRUE EPILEPTIC SEIZURE	PSEUDO-SEIZURE	PANIC ATTACK	SYNCOPE
Precipitant	Commonly not obvious	Obvious emotional precipitant	Occur suddenly, without any apparent reason	Emotional precipitant or sudden pain
Duration	1-3 minutes	Longer than 10-15 minutes	Less than a minute	A few seconds
Movements	Generalized tonic-clonic movements starting with fast small amplitude movements to slower larger movements. Briefer rigidity	Nonsynchronous out of phase movements (may be jerky, side-to-side head movements, pelvic thrusting, limping). Opisthotonic posturing or rigidity for prolonged periods	Diffuse trembling and a sense of inability to move, accompanied by intense anxiety and fear of imminent death	Generalized jerks or irregular shaking movements. The muscle tone is flaccid
Vocalization at onset	Monotonous epileptic cry	Weeping, crying, or screaming	Panting	Uncommon
Amnesia	Yes	No	No	Sometimes
Injury	Common. Especially head, oral structures and neck	Uncommon. Self protection before falling	Uncommon. Falling seldom occurs	Uncommon. Self protection before falling

Management

Pharmacotherapy :

- About 80% of patients are controlled with medication (antiepileptic drugs, AEDs)
- Choice of AEDs was limited (e.g. phenytoin, phenobarbital, primidone, carbamazepine, valproate)
- AEDs are selected based on
 - ✓ Type of seizure
 - ✓ Age of the patient
 - ✓ Side effects
 - ✓ Cost of the medication
 - ✓ Adherence to the use of AED
- Monotherapy followed by polytherapy
- Side effects :
 - ✓ Drowsiness
 - ✓ Dizziness
 - ✓ Ataxia
 - ✓ GI upset
 - ✓ Dry mouth
 - ✓ Soreness of tongue and mouth
 - ✓ Gingival hyperplasia
 - ✓ Swelling of face, lips or tongue
 - ✓ osteoporosis

Nonpharmacological Therapies:

Vagus nerve stimulation (VNS):

1. 主要針對某些無法利用AEDs來控制seizures的病人的另一種治療方式，利用 **Neurocybernetic Prosthesis (NCP)** 的裝置來改善腦部不正常放電的情形。
2. 是一種小型類似pacemaker的electric pulse generating device，利用手術的方式將之放置到左側胸壁或是左胸大肌(left pectoralis muscle)的皮下來治療。
→多數放置在左邊的原因是因為若**放置在右邊容易產生心臟方面的併發症**
3. 這個NCP利用設定好的程式去產生能量去刺激大腦，也就是當病人快要發生seizure時會促使它進行放電的動作去改變本來要發作的大腦
4. 由於是**刺激Vagus nerve的原理**，因此本來迷走神經管理的行為就成了負作用

，包括咳嗽，聲音嘶啞，喉嚨痛，喉嚨或是chin的的麻痺，甚至在某些情況下造成吞嚥困難

Surgery:

1. 手術也是另一個非藥物治療的選擇之一，當seizure已經嚴重影響到病人的生活且藥物無法控制時，就會考慮是否要以手術來治療。
2. 年紀多數適用在12~50歲之間的病患，研究指出約有**75%的病患在術後第一年完全沒有出現過seizure的症狀**，Focal resection、Corpus collosotomy、Hemispherectomy、Multiple subpial transaction是目前提出可接受的四種手術方式。

Ketogenic Diet (KD):

1. 研究指出這種飲食改變方式可改善症狀到約50%以上，並且針對10歲以下無法承受AEDs副作用的病患特別適合。
2. 這個高脂高碳水化合物的飲食方式主要是以改變身體的新陳代謝模式的原理來治療seizure，**從代謝葡萄糖改為代謝ketone類**。
3. 副作用: Dehydration、Gastrointestinal disturbances、Hypertriglyceridemia、hypercholesterolemia、Hypoproteinemia。

Dental Management of the Epileptic Patient:

1. 牙科治療必須要注意的地方:包括完整history taking、medication p't taking、定期回診檢查口腔、燈光勿照射到眼睛、牙齦腫大的處理等等。

1. Take complete health history.
2. List medications patient is taking. Look them up so you know their effects, side effects, potential for drug interaction, and any specific oral effects.
3. Schedule proper frequency of oral hygiene and provide good oral hygiene instruction to ensure healthy periodontal tissue and teeth.
4. Insure proper dental lighting (no light directly in eyes).
5. Insure medications have been taken properly relative to dental appointments to minimize risk of seizure.
6. Perform proper periodontal and surgical treatment of gingival hyperplasia to minimize damage to teeth and supporting structures and to maintain proper aesthetics.
7. Treatment plan and design restorations to minimize risk of damaging or displacing dental restorations or prostheses during an epileptic seizure.
8. Patients should be made aware of local and national resources for information and support relative to their disease. They should contact the Epilepsy Foundation at 1-800-EFA-1000 or to visit their website at www.epilepsyfoundation.org.

2. 牙科治療上的處理原則基本上和一般沒有特別不同，但是當病人需要補綴物的製作時，就必須要特別以**Cast gold fixed**或是**Implant**來做優先考量，因為考量到發病的可能性以及日後拆除率的降低，上述兩種是較佳的選擇。
3. 再來是當一個seizure的病人來診時，要事先詢問的問題如下:一些病人最近的身體狀況以及發病情形的頻繁度還有發病的因素都是要注意的重點。

Background information questions:

1. How long have you had epilepsy?
2. What type of seizures do you have?
3. How frequently do your seizures occur?
4. What type of medication, if any, do you take to control the seizures?
5. How do your seizures begin?
6. Is there a warning at the beginning of the seizure?
7. Can you talk and respond appropriately during a seizure?
8. Do you get confused or tired after a seizure?
9. When was your last (or most recent) seizure?

Questions to be asked on the day of the appointment:

1. Have you taken your seizure medication today and have you taken it correctly over the past few days?
2. Have you taken any medications or drugs today including over-the-counter drugs, alcohol, or illegal drugs?
3. Are you tired or do you feel unusually stressed today?
4. Have you had any recent illness or seizures?

4. 當一個seizure患者在牙科門診中發病時，我們處理時的注意事項：
基本的處理原則為”讓這個發病自行停止”因為在發病中我們無法做任何治療的動作，只能儘可能去減少任何會造成病患傷害的機會。

1. If it can be safely done, quickly remove all foreign material from the patient's mouth.
2. The chair should be placed in a supine position.
3. If possible, turn the patient to their side in order to minimize aspiration of foreign bodies or secretions.
4. Use passive restraint only to prevent injury that may occur by the patient hitting nearby objects or to prevent them from falling out of the chair.

5. 最後是當患者出現以下狀況時，需要請求其他醫療上的支援:

1. A seizure that continues for more than five minutes without the patient gaining consciousness between attacks (status epilepticus), (call 911).
2. Breathing difficulties after a seizure (call 911).
3. Persistent confusion or unconsciousness for more than five minutes (call 911).
4. Injuries sustained during a seizure (call 911).
5. A first seizure (call 911).

題號	題目
1	下列哪種藥物會引起牙齦過度生長 (86國考) (A) Phenytoin、cyclosporin、penicillin (B) Phenytoin、cyclosporin、nifedipine (C) Nifedipine、tetracycline、phenytoin (D) Tetracycline、penicillin、erythromycin
答案(C)	出處：Oral % Maxillofacial Pathology 2 nd edition P146 Anticonvulsants (Phenytoin)、Calcium channel blockers (nifedipine) 、Cyclosporine、Erythromycine、Oral contraceptives
題號	題目
2	Tegretol為治療顛癇的藥物 有不少副作用，以下何者不是? (A) 口乾 (B) 胃不適 (C) Glossitis (D) 耳鳴
答案(D)	出處：