

Medical nutritional therapy of Epilepsy

Dr. siham khairy

- Introduction :
- *Adequate diet, never lead to nutritional deficiencies*
- *This is often the case*
- *Although it is now also clear that the benefits of good nutrition have been shown to help prevent degenerative diseases.*
- *All chronic diseases are accompanied by nutritional deficiencies and imbalances.*
- *It is also quite clear that biochemical intervention with dietary modifications are useful at reducing the frequency and intensity of seizures, if not eliminating many entirely.*
- *Anticonvulsants eg, tegrtol >increased appetite and hyper insulinemia.*

What is epilepsy?

- **Epilepsy is a medical condition produce seizures affecting a variety of mental and physical functions.**
- **When a person has 2 or more unprovoked seizures,= having epilepsy.**
- **1 to 10 adults have a seizure sometime during their life.**
- **It last from a few seconds to a few minutes.**

How epilepsy happened?

- **When a brief, strong surge of electrical activity affects part or all of the brain.**
- **It can has many symptoms from convulsions and loss of consciousness to some that are not always recognized as seizures :blank staring, lip smacking, or jerking movements of arms or legs.**
- **According to sites affected and how much.**



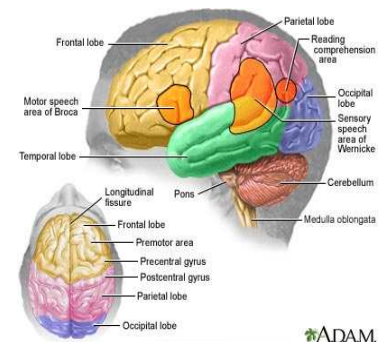
Prevalence of epilepsy:

- 3 million people in USA.
- 200,000 new cases diagnosed each year.
- 1 to 10 adults have a seizure sometimes during their life.



Types of epilepsy

- Named according to area affected or symptoms., hundreds of types.
- Originates at any age .
- Absence epilepsy.
- Temporal lobe epilepsy.
- Frontal lobe “.
- Occipital lobe
- Parital lobe epilepsy



Absence epilepsy

- Runs in families, stop at puberty.
- Does not affect brain function.
- Begins and ends in few seconds

temporal lobe epilepsy

- The most frequent.
- Aura.
- Affect learning and memory.
- Treat as early as diagnosed.



Frontal lobe epilepsy

- Sudden ; no aura.
- Affect higher thought processes (speech or language}
- Biggest lobe.

Occipital lobe epilepsy

- Begin with visual hallucinations, rapid blinking,.....etc



Parital lobe epilepsy

- *Tend to spread to other areas.*
- *Position between frontal and temporal lobes*

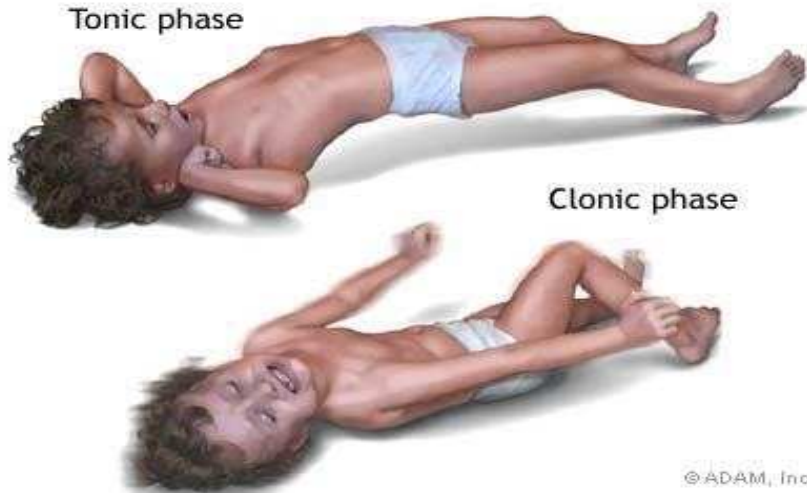


Types of seizures

- **Partial seizures** .(60% of cases ;partial frontal lobe)+aura (déjà vu,smell or hearing hallucinations).
- **Generalized seizures.**
 - 1-absence(petit mal):
30 seconds.
50-100 seizures/day

Generalized seizures (cont.)

- **2-tonic :**
muscle stiffness,no twiches,loss of consciousness 10 seconds.
- **3-clonic:**
rare,muscle jerk on both sides of the body with no stiffness.
- **4-atonic :**
loss of muscle tone ,drop attack for 10 seconds.
- **5-tonic-clonic{Grand-mal}**
start tonic for 30 seconds,then clonic.
+aura ;last for 2-3 minutes.
there may be loss of bladder and bowel control
followed by sleep like state ,confusion and feel very tired.



Treatment of epilepsy

▪ **goal of ttt. Of epilepsy:**

1-to prevent further seizures.

2-avoid side effects.

3-make it possible for people to lead active lives.

Factors influencing the decision to treat

- wait second or third event).
- Previous seizures.
- Neurological impairment.
- Age.



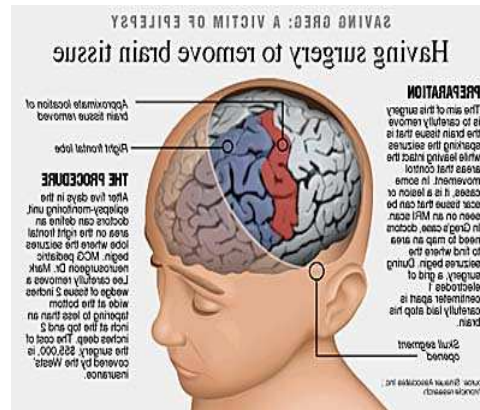
Factors influencing decision not to treat:

- Single seizures.
 - No history.
 - Neurologically normal.
 - Young age.
 - Side effects.

- *Febrile convulsions not a cause to antiepileptic drugs.*

The decision to treat epilepsy

- When diagnosis has made, the next step is to select the best form of ttt.
- If the fits caused by an underlying *correctable brain condition*. as trauma, haematoma, metabolic disorders, developmental disorders.
- If repeated fits -- → medication as *antiepileptic*.
- *Other methods* may be tried {if medicine is not successful enough to stop fits}.



Common antiepileptic drugs

COMMON NAMES	BRAND NAMES
Adrenocorticotropic Hormone [ATCH]	
Carbamazepine	Tegretol, Teril
Clobazam	Frisium
Clonazepam	Rivotril
Diazepam	Ducene, Valium
Ethosuximide	Zarontin
Gabapentin	Neurontin
Lamotrigine	Lamictal
Levetiracetam	Keppra
Oxcarbazepine	Trileptal
Phenobarbitone	Phenobarbitone
Phenytoin	Dilantin
Primidone	Mysoline
Sodium valproate	Epilim Valpro
Sulthiame	Ospolot
Tiagabine	Gabitril
Topiramate	Topamax
Vigabatrin	Sabril

Antiepileptic drugs side effects:

- *Hyperinsulinaemia & increase appetite ,weight gain.*
- *Deplete folic acid level ,which in turn increase seizures.*
- *Affect levels of vit. B2,B6,C ,D,E and biotin,also increase seizures.*

Role of supplements in epilepsy treatment:

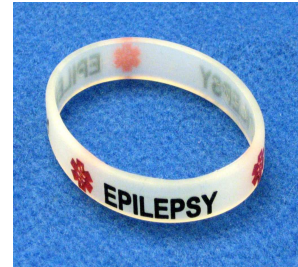
- B6,folic acid,vit.E,selenium control seizures.
- Vitamin E decrease frequency of fits in 60% of children;400IU/day for 3 monthes.(Toronto university) it helps to protect the brain cell wall.it act on free radicals in some forms of epilepsy as post traumatic.
- In animals ,fits can be induced by chemicals produce free radicals.

Role of supplements(cont.)

- Calcium and magnesium deficiency predispose to seizures.
- But;no evidence that if increase levels can control epilepsy

Other methods of treatment

- Special diet ;the ketogenic diet.
- Vagus nerve stimulation(VNS).
- Complementary therapy.
- VNS:electrical energy directed into the brain via vagus nerve,comes from the battery,surgically implanted under chest skin (size of a silver coin).



Complementary treatment:

- May be used if undulated or faliture of other methods not instead of them.
- Some report ;feel better, less seizures,less side effects.
- Turmic fight against cognitive
- impairment & antistress.



Ketogenic Diet

- *80 years.*
- *Idea:force the body to use fat for energy instead of glucose.*
- *Started in hospital:*
- *Child has no food for 24 hours >uses all the stored glucose.*
- *With no more glucose to provide E ,the child's body begins to burn stored fat.*
- *Ketogenic diet keeps this process going*

Ketogenic diet (cont.)

- Strict ,medically supervised diet.

- Produce keton state (ketosis lead to decrease seizure activity).
- It is not a {natural therapy} to be used as usual clinical trials.
- Stress of not getting any food during that time.
- *Keeping low caloric intake, and 80% fat.*
- *The primary food is fat products*

- *The rest comes from CHO and proteins.*
- *Each meal have about 4 times as much fat as protein and carbohydrates.*

What does it look like?

- 3-4 meals/day.
- Small,very oily.
- Enough energy requirements for normal growth.
- Water not less than 120-150 ml/hr.
- Vitamins and minerals supplements required .

Who is the diet for?

- poorly controlled fits,specially children with *mixed myoclonic and uncontrolled absence* with best response.
- *Sever cases* not suitable for surgery.

Starting the diet:

- *4-5 days hospital admission.*
- *24 hrs CHO free fluids,water with saccharin allowed.*
- *Medications continue as normal.*
- *Close contact to the dietitian.*
- *Baseline blood tests and x-ray.*
- *Blood sugar /6 hrs.*
- *Blood and urine ketons/6 hrs.*
- *Weight monitor.*
- Trial period of at least 10-12 weeks needed to assess if beneficial or not.
- If a significant reduction in seizures;diet maintained for 18 months to 2 years (medicine may be reduced at this period)

- *Stop it if;* 1-no significant improve.
 2-diet not tolerated.
 3-too difficult to manage.

Mechanism:

- *It prevents seizures; for unknown reasons,*
- *It helps two out of three uncontrolled cases.*
- *It prevents seizures completely in one out of three.*

Does it works ?

- A study on 30 children on ketogenic diet revealed:
- 36% had a significant improve with more than 50% reduction in seizures(16% became completely free).
- 28% had a small improve with less than 50% reduction.
- 36% had no response.

Meal planning:

- *The dietitian has to calculate the exact amount of each food needed according to each child,age,weight.*
- *Any tiny mistake in weighting and measuring foods,any sugar containing products ;break the diet effects and cause a seizure.*
- *Small amounts of vegetables,fruits and protiens.with lots of fats.*
- *As cream,butter,eggs,or mayonnaise.*
- *No sugar.*

7 years old child daily menu:

- *Breakfast:Scrambled egg and apple sauce meal*
- *45 grams whole raw egg,15 grams butter,3 grams nuts,30 grams raw granny smith apple,13 grams fresh olive oil,10 grams regular butter ,5 grams thickened Farmers' Union cream .*
- *Lunch:Creamy bacon meal ,20 grams raw green capsicum ,20 gram straw celery,20 grams raw brown onion-64 grams35% ideal dairy cream -27 grams lean middle bacon,22 grams Sundew margarine .*

- *Dinner: Chicken and vegetable stir-fry 30 grams, peeled raw carrot 30 grams raw green capsicum-30 grams raw broccoli-14 grams raw brown onion-23 grams lean raw chicken breast-42 grams olive oil, 5 grams commercial soy sauce*

Side effects of ketogenic diet

- Dehydration*
- Constipation*
- Kidney and gall stones.*
- Adulthood:*
- Pancreatitis*
- Menstrual irregularities*
- Lower bone density*
- Visual problems.*

<http://special-needs.org>