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# **Epilepsy**

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**Submitted By: Ola Emad.  
Supervised By : Dr.Ahmed Methb.**

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## **1.INTRODUCTION**

Epilepsy is a common but serious brain disorder. It is universal, with no age, sex, geographical, social class or racial boundaries. Epilepsy imposes a large economic burden on health care systems of countries. There is also a hidden burden associated with stigma and discrimination against the patient and even his/her family in the community, workplace, school and home. Many patients with epilepsy suffer severe emotional distress, behavioral disorders and extreme social isolation. Thus, the Regional Office for South-East Asia (SEARO) of the World Health Organization (WHO) has decided to give high priority to the control of epilepsy in the community.

## **2. WHAT IS EPILEPSY?**

Epilepsy can be defined as “the occurrence of transient paroxysms of excessive or uncontrolled discharges of neurons, which may be due to a number of different causes leading to epileptic seizures”. The actual presentation or manifestation differs among individuals, depending upon the location of the origin of the epileptic discharges in the brain and their spread. A person should only be diagnosed as having “epilepsy” if there are recurrent manifestations i.e. there should be at least two or more unprovoked similar episodes at least 24 hours apart. Hence, the first episode of a seizure is called a “single seizure” and not epilepsy.

Epilepsy can also be divided into active and inactive epilepsy, with active epilepsy being defined as two or more epileptic seizures in the last five years that are unprovoked by any immediate identified cause.

An epileptic seizure is an event in which an individual is not aware of the surroundings, either completely or partially. Various motor movements, such as shaking of limbs; sensory phenomenon, such as electric shock-like sensation over a specific area; behavioral experiences, such as fear or confusion or autonomic disturbances such as excessive secretion of saliva or bladder/ bowel incontinence could occur in association with this altered sensorium. The epileptic seizure occurs all of a sudden as a “bolt from the blue” and ceases on its own, just as suddenly. Usually it is very brief, lasting from a few seconds to minutes. Only in very rare cases will it be continuous, resulting in “status epileptics”, i.e. a seizure lasting more than 30 minutes or recurrent seizures without the individual regaining consciousness between attacks. However, often patients or their relatives describe a single attack that lasted for hours. This is invariably due to the fact that patients are drowsy or confused soon after cessation of the seizure, a state described as post-ictal phenomenon. This phenomenon may last for a few hours, rarely for more than a day, but the eyewitness often confuses this as part of the attack and reports it as a long duration of seizure.

### **3. PHASES OF A SEIZURE**

Four components of a seizure can be distinguished. Not all seizure types will have all these stages. The presence or absence and the nature of these stages are important for diagnosing the seizure type.

#### **3.1 Prodromal Phase**

This phase begins a few hours or even days before the actual seizure and should not be confused with the aura. Prodromal symptoms include: headache, irritability, insomnia, bad temper, depression or increased activity.

#### **3.2 Aura**

An aura precedes the seizure by seconds or a few minutes. It is the beginning of the seizure and signals the focal onset of the seizure. The symptoms depend on the location of this focus. The feelings of the aura are often vague and indescribable, leading to extreme fear. Strange epigastric sensations, dreamlike experiences, unpleasant smells, etc. may occur. The patient remembers the aura very well, and although he/she will not always be able to recount it, he/she can affirm the presence of it, as it happens before consciousness is lost.

#### **3.3 Seizure (Ictus)**

In most seizures there is a loss of consciousness, and the patient is therefore not able to give any information about the actual ictus. For this we are dependent on witnesses who have seen the actual seizure. The patient has no memory of the seizure.

#### **3.4 Post-ictal Phase**

This phase may be absent, brief or may last several hours, and sometimes even days. There is usually a deep sleep and waking up with headache, tiredness, irritability, vomiting, confusion, muscular aches or ataxia. Transient paralysis of a part of the body, known as Todd's paresis may occur for a few hours or days. Altered speech or aphasia may occur when the dominant hemisphere of the brain has been involved. Altered behavior and emotional outbursts may occur, and if patients are restrained or interfered with, they may become violent.

## **4. CLASSIFICATION OF EPILEPTIC SEIZURES**

Epilepsy can broadly be divided into two categories: idiopathic where there is no known cause, and secondary seizures where there is known cause. Seizures can be either generalized or partial(or focal). In generalized seizures, both halves of the brain are simultaneously affected. In partial seizures, the abnormal electrical discharge starts from a focus in one side of the brain. Later, this may spread to the other side. This spread is called secondary generalization.

### **4.1 Generalized Seizures**

In generalized seizures, patients suddenly stop what they are doing, the eyes and head turn to one side and the body becomes stiff. This is usually followed by several jerks of the hands and legs, groaning and frothing from the mouth. During the episode, the tongue may be bitten or severe injury can result from a fall or an accident. Sometimes the patient may pass urine or stools. The body relaxes after a few minutes and the patient sleeps for a variable period. The patient is completely unaware of the seizure. Such seizures can also occur in sleep.

Generalized seizures consist of many different seizure types, of which the primary generalized tonic-clonic seizure (GTCS) is the most common.

#### **Tonic-clonic seizure**

In a generalized tonic -clonic seizure the patient loses consciousness, falls down, sometimes with a scream, and develops a generalized stiffness (the tonic phase). Breathing stops, as all the muscles of the trunk are in spasm, and the patient becomes cyanotic, the head is retracted, the arms flexed and the legs extended. After a while, this tonic phase is followed by the clonic phase, when the muscles alternately contract and relax, resulting in clonic movements. During this jerking the patient might bite his tongue, pass urine, or sometimes stool. The clonic phase may last several minutes. When all the jerking stops and the patient regains consciousness, he may feel very tired and have a headache and confusion. He has no memory of what happened, and may find himself on the floor in a strange position. Often he falls into a deep sleep. The frequency of the seizure may vary from one a day to one a month or once a year, or even once every few years. Either the tonic phase or the clonic phase can predominate in the seizure. Generalized tonic-clonic seizures can also occur due to secondary generalization in partial epilepsies.

#### **Clonic seizures**

These seizures are generalized seizures, where the tonic component is not present, only repetitive clonic jerks (clonic jerks are repetitive rhythmic flexing

and stretching of limbs). When the frequency of jerks diminishes the amplitude of the jerks does not diminish.

#### **Tonic seizures**

Tonic seizures are sudden sustained muscle contractions, fixing the limbs in some strained position. There is immediate loss of consciousness. Often there is deviation of eyes and head towards one side, sometimes rotation of the whole body.

#### **Absence seizures**

These are short periods of loss of consciousness lasting only a few seconds (not more than half a minute). They are of sudden onset, there are usually no, or only minimal motor manifestations. There is a blank stare, brief upward rotation of the eyes and an interruption of ongoing activity. The child is unresponsive when spoken to. It is suddenly over, and the child continues what he was doing before the seizure. The child has no memory of these seizures. During such an absence seizure the child does not hear what the teacher is saying, and as they occur very often the child cannot follow the lessons any more. Unless the teacher is aware of this condition, he will scold the child for daydreaming and inattentiveness. Most parents are unaware of these small seizures, and even when they observe them, do not think them important and will not mention them to the doctor. Unless these children also suffer from generalized tonic-clonic seizures they are not brought to a doctor as people are unaware that these absences are epileptic seizures. Absences are easily provoked by hyperventilation. They should not be confused with brief complex partial seizures. Typical absences occur in school-aged children and can occur many times a day.

#### **Myoclonic seizures**

These seizures consist of sudden, brief, shock-like muscle contractions, either occurring in one limb, or more widespread and bilateral. They may be single jerks, or jerks repeated over longer periods. They are often seen in combination with other seizure types occurring in special epileptic syndromes.

#### **Infantile spasms**

Patients have flexor spasms of the head, bending of the knees and flexion with abduction of the arms. They occur in the first year of life, and are very difficult to treat.

## **4.2 Partial Seizures**

Partial seizures are divided into two groups, simple partial seizures where consciousness is maintained, and complex partial seizures where there is an impairment of consciousness.

### **Simple partial seizures**

In simple partial seizures, some patients may experience either motor or sensory phenomena. Such seizures arise from a specific area of the brain, with the patient being fully or partly aware of the event. In motor seizures, the focus is in the primary motor cortex. There are twitching, starting in a distal part of the extremity, or in the face. The twitching may remain localized, or spread up the whole extremity and even become completely generalized to involve the whole body. Sensory seizures have their focus in the post-central gyrus (primary sensory cortex). There might be feelings of tingling, pins and needles, cold or heat, or numbness of a limb. Sometimes there may be strange feelings with visual signs, or hearing or smelling sensations. Autonomic seizures are associated with foci in the temporal lobe. There maybe: a sensation rising from the epigastrium to the throat, palpitations, sweating or flushing. The psychic symptoms may consist of changes in mood, memory, or thought (thinking). There may be distorted perceptions (time, space, or person) or problems with language. Structured hallucinations could occur (music, scenes). These simple partial seizures are usually only recognized as epileptic seizures when they develop into generalized seizures.

### **Complex partial seizures**

Here the patient has impaired consciousness, but NOT complete loss of consciousness. He is slightly aware of what is going on, but he cannot respond to anything, neither can he change his behaviour during an attack. The seizure usually starts with an aura which can be of many types such as, a strange feeling in the stomach rising up to the throat and head, or a sensation of light, smell, sound or taste or with changes in perception, e.g., of time (time seems to pass too slowly or too fast), of light or sound or space. The surroundings may suddenly seem completely strange and different in scale (things seem larger or smaller than usual), or there is *déjà vu* (a sensation of things having happened before). These feelings can cause the patient a great deal of anxiety. Sometimes the seizure occurs with hallucinations or with psychomotor symptoms such as automatisms e.g., pulling at the clothes, chewing, lip smacking, or repeated aimless movements. These automatisms may become very complex, the patient is able to perform difficult tasks, or travel somewhere, but later not remember having done such a thing. He suddenly regains full consciousness and finds



himself in a completely different place. During such an automatism the patient may become aggressive and violent when restrained. There is slow recovery after a complex partial seizure, with a period of confusion. After the attack, there is complete amnesia regarding the attack. These seizures were previously called 'psychomotor seizures', and as the localization of the abnormal discharge is often in the temporal lobe, the epilepsy is often called 'temporal lobe epilepsy'. However, the focus could also be in the frontal lobe.

During his lifetime, a patient does not necessarily have only one type of seizure. The type may change over the years, depending on the age and maturation of the brain. Moreover, one patient may have a combination of different seizure types.

## **5. DIAGNOSIS OF EPILEPSY**

It is essential that patients with episodes such as described above be accompanied by a witness who can describe the episodes in detail. More often than not, epilepsy can be diagnosed on the basis of reports of patients and eyewitnesses. No laboratory test can replace a clear description provided by the eyewitness. Electroencephalography (EEG), which records electrical activity from the surface of the head can, in some cases, support the diagnosis. When epilepsy is diagnosed, it is necessary to document the type of epilepsy, determine the cause, evaluate the intelligence and social background of the patient. This information is extremely useful for further patient management.

Those who develop epilepsy for the first time require investigations to identify the underlying cause. These investigations include EEG, and imaging tests such as CT scan or MRI of the brain.

## **6. PREVALENCE OF EPILEPSY**

Approximately 50 million people are affected by epilepsy globally. About 40 million or 80% are assumed to live in developing countries. Multiple studies worldwide indicate that the prevalence of epilepsy globally is in the range of 5 to 8 per one thousand population. Methodological issues in addition to definitions and case ascertainment may explain some of the variations of prevalence estimates. The problem will be similar in countries such as Bhutan, DPR Korea, Maldives and Nepal as these countries share similar sociocultural and demographic characteristics. If these figures are applied to any local population, it will be possible to know the approximate number of people requiring help in the given geographical area.

The exact difference in the number of cases and the causes of seizures between urban and rural areas is not clearly known. A recent study in Bangalore, India, reported that the problem is nearly 2 1/2 times higher in rural areas as compared with urban areas.

## **7. NATURAL HISTORY OF EPILEPSY**

With currently available drug treatment and good compliance, an affected person can be seizure-free for life. In nearly 60–70% of such individuals, epilepsy is short-lived and once remission has occurred, a subsequent relapse is not common. Long-term studies have indicated that the relapse rate over a period of time is about 1% per year for persons who have remained seizure-free for more than two years with adequate treatment. The condition remains active in a small proportion of affected individuals. Such individuals have recurrent seizures, a poor prognosis and require lifelong management.

## **8. MORTALITY IN PATIENTS WITH EPILEPSY**

The risk of premature death in people with epilepsy is 2-3 times higher than the general population. The exact cause of the increased risk is not known in most cases i.e. the cause of sudden unexpected death in some patients. However, some deaths are related to the circumstances around a seizure such as a serious accident during a seizure.

## **9. PRECIPITATING FACTORS, Causes of secondary SEIZURES AND RISK FACTORS**

In some patients there are certain precipitating or triggering factors for epilepsy, for example:

- Loss of sleep: Sleep deprivation is a definite precipitating factor for some, and hence needs to be avoided.
- Flickering lights: In a few patients, flickering bright lights, such as in discotheques may precipitate seizures. If a patient's seizures are precipitated by such lights, these should be avoided. However, not ALL people with epilepsy need to avoid bright, flickering lights.
- Alcohol abuse: Excess consumption of alcohol may lead to seizures. Seizures may also occur when recovering from an episode of excess alcohol consumption.

Patients should carefully identify their own precipitating factors and report them to the treating physician. Once a triggering factor is recognized, it should be avoided.

## **10. EPILEPSY AND HEREDITY**

Some forms of epilepsy, but certainly not all, are hereditary, i.e. inherited due to genetic defects. Seizures are an important manifestation of more than 150 single-gene disorders. In certain parts of India, for example, South India, consanguineous marriages (uncle–niece) are in practice. This type of marriage should not be encouraged in the event of a family history of epilepsy. Genetic counseling may be necessary for such families.

## **11. INFANCY AND EPILEPSY**

Infants below the age of one year may have prolonged seizures, sometimes lasting up to thirty minutes or one hour. Since these seizures may be bizarre and fragmented, it is difficult to make a correct diagnosis. Child specialists need to be knowledgeable about the different types of childhood seizures. The common causes for seizures during infancy are birth injury, metabolic disturbances and brain infections. In addition, there are certain special forms of epileptic syndromes, such as infantile spasms. These need to be diagnosed and properly treated to prevent the development of mental handicaps and intractable epilepsy.

## **12. FEBRILE CONVULSIONS**

Some children less than six years of age are prone to convulsions when they have high fever. These are known as febrile convulsions and the child should not be labelled as having epilepsy. Parents are advised to reduce the fever as early as possible by: (1) tepid sponging whenever the temperature touches 100°F and (2) immediately administering medicines to lower the temperature. Many parents cover their children with a blanket during the fever. It is not unusual to see parents bringing completely covered children to the clinic. This should be avoided, as covering the child with a blanket makes the body warmer and the body temperature to rise further. Apart from this, rectal/oral diazepam should be administered at the onset of fever. Generally, these children do not require anti epileptic drug treatment, since febrile convulsions are a benign condition, disappearing spontaneously after six years of age, by which time the brain is fully mature.

## **13. EPILEPSY IN THE ELDERLY**

As longevity is increasing in most South-East Asian countries it is not uncommon to find epilepsy among the elderly. Special precautions should be observed when treating epilepsy in this age group. Some specific suggestions for the elderly are given below.

### **Some dos and don'ts for the elderly with epilepsy**

- Avoid multiple drug therapy.
- Anti epileptic drugs might cause increased drowsiness, so one needs to be careful, especially when outside the house alone.
- Kidney and liver damage are not uncommon and hence proper dosage of the medications needs to be calculated.
- The elderly are prone to dehydration and electrolyte imbalance, particularly in tropical countries, which may affect anti-epileptic drugs.
- More often than not, elderly people are on other medications. Hence, drug interactions need to be considered before the proper anti-epileptic drug can be chosen.

## **14. MANAGEMENT OF EPILEPSY**

People with epilepsy want to live seizure-free lives and be free from the fear of future attacks. It is usually the fear of attacks which interferes with the day-to-day activities of affected people.

The first effective anti epileptic drug, phenobarbital, was discovered in 1912. This drug continues to be the mainstay of medical management of epilepsy in SEAR Member Countries. Several other drugs have entered the market in the last ten years and are advocated to be far superior to phenobarbital, but evidence-based reviews do not verify this.

The comprehensive management of epilepsy includes many aspects, such as:

- Essential information to be provided to patients and their families.
- Information about first-aid during a seizure which even the family can provide.
- Information for physicians treating epilepsy.
- Management of status epileptics as a medical emergency.
- Ensuring compliance with treatment.
- Modes of treatment other than medicines.

### **14.1 Essential Information to be Provided to Patients and Their Families Advice to care-givers about care for patients**

- Although seizures look frightening, they are not directly dangerous to the patients who, often, will have no recollection of the episode.
- Seizures are generally self-limiting, i.e. they stop spontaneously.
- Every adult in the family should be aware of the first-aid measures which can be administered by them.
- Injury to the patient should be prevented.
- There should be no attempt to force open the patient's mouth if clenched. This may break the teeth.
- Until the patient has regained full consciousness, they should not be forced to drink anything.
- There is no need for an extra dose of antiepileptic drugs.
- The care-giver needs to stay with the patient and provide reassurance once the patient regains consciousness.
- If the seizure persists for more than 10 minutes or if it recurs, medical assistance should be sought.

## **Advice to patients about their lifestyle**

If seizures are well controlled, patients are encouraged to lead as normal a life as possible, conducting activities of daily living, working and recreation. However, certain precautions must be taken.

- **Driving:** Driving a motor vehicle is an essential part of living and working in urban areas. Each country has its own law about people with epilepsy and driving. Even if the patient is within the law and has a valid driving licence, routine precautions, such as not driving when sleepy or avoiding driving for an extended period should be taken.
- **Working with heavy machines:** Although people with epilepsy are encouraged to work, working with heavy and dangerous machines should be avoided.
- **Daily activities:** Simple precautions should be taken while engaging in daily activities and doing chores around the house, such as cooking. These activities should be avoided when the patient is tired, has not had adequate sleep or when an aura occurs.
- **Rural areas:** Although life is simpler in rural areas compared to urban areas, there are other hazards, such as falling into a well, into an open fire or getting limbs cut while working with machines such as harvesters, threshers and tractors used in agriculture. Patients and families should take adequate precautions.

## **14.2 Information About First-aid During a Seizure Which Even the Family can Provide.**

The first step in the management of any seizure is to stop it through specific first-aid measures.

### **Generalized tonic-clonic seizure**

During this type of seizure, the patient may fall down and experience jerking of the limbs. Hence, first-aid measures should ensure that the patient is safe. Usually everyone around is in panic, wanting to help. Make sure nobody interferes with the patient. The following measures should be taken:

- Help the person into a lying position, preferably on the floor.
- Make the person lie down on the side, so that any secretions from the mouth can flow out freely.
- Loosen tight clothing, remove glasses.
- Clear the surrounding area of any objects that may harm the patient.
- Do not force anything into the patient's mouth. E.g. spoon, or your own finger.
- Do not hold the patient, as the seizures cannot be stopped by restraint.

Once the seizure stops, keep the patient lying on one side to allow saliva to drain out from the mouth. Do not offer any food or drink until the patient is fully alert.

### **Complex partial seizure**

Care-givers and health personnel should be aware of the manifestations of this type of seizure

- Such a patient should not be restrained or agitated.
- The patient should be moved to a safe place.
- The patient should not be forced to eat or drink anything till fully alert.
- Be with the patient till the seizure ends.

## **14.3 Treatment of Epilepsy**

### **One-drug treatment**

About 75-80% of people with epilepsy can be managed easily with one drug. This is called mono therapy, and it prevents interaction between drugs, ensures good compliance and is also cost- effective. However, the remaining 20–25% of patients may require multiple drugs. Each type of epilepsy has a drug that usually proves to be most effective. The best drug for the specific type of epilepsy should be started in a low dose, once or twice daily, depending upon the nature of the drug. Dose escalation should always be under medical guidance and needs to be undertaken slowly during follow-up, until either the seizures are controlled or undesirable side-effects appear.

### **Selection of Anti epileptic Drugs (AEDs)**

The pharmacological treatment of epilepsy has been extensively studied primarily in high- income countries. Many controlled clinical trials have tested the efficacy of the older AEDs (such as phenobarbital and phenytoin) and newer AEDs (such as carbamazepine and valproic acid) in controlling seizure frequency and their safety when prescribed in mono therapy or in combination.

### **Serum anti epileptic drug estimation**

The dose of medicine required by each patient depends largely on the clinical response and is, therefore, based on success in controlling seizures or the appearance of side-effects. Only a few major hospitals in SEAR Member Countries offer a facility for serum anti epileptic drug estimation, but it is not necessary to refer all patients there. Serum anti epileptic drug levels need to be estimated only in certain conditions:

- To monitor compliance in patients with uncontrolled/refractory seizures;
- In patients with kidney or liver disorders;
- To assess anti epileptic drug dosage in pregnant women with epilepsy;
- In patients participating in controlled trials of anti-epileptic drug safety;
- When the patient is on polytherapy and drug interaction is suspected.

## **Adverse effects of medication**

A few patients experience adverse effects when anti epileptic drugs are administered. These are of four types:

- Acute dose-related effects
- Chronic toxic effects
- Idiosyncratic or allergic reactions
- Teratogenic effects (affecting the unborn child)

## **Special needs of patients with epilepsy and other systemic disorders**

Since people with epilepsy can also suffer from other diseases such as asthma, hypertension, diabetes, renal and liver disorders, it is essential that patients inform their treating physicians of their illness, so that those drugs which interact with anti-epileptic drugs can be avoided. As Crete in kidney and liver disorders interfere with the excretion of some anti epileptic drugs, the doses of these anti-epileptic drugs need to be adjusted and some drugs completely avoided.

## **Why does treatment fail?**

Despite the best of efforts, some patients fail to respond to medication and continue to suffer from seizures. This is referred to as chronic epilepsy, difficult-to-treat epilepsy or refractory epilepsy. The following factors may be responsible:

- Poor drug compliance
- Inadequate dosage, i.e. not enough drug levels in the blood
- Patient cannot afford the medication
- Non-availability of drugs
- Inappropriate medication
- Wrong diagnosis
- Seizures secondary to an underlying cause

## **15. STATUS" EPILEPTICS**

Status epileptics is a serious medical emergency. If a seizure is allowed to continue for a long duration, there is a great risk of permanent brain damage. It is not uncommon to find patients with seizures lasting for more than 24–48 hours in the emergency wards of hospitals in SEAR Member Countries. There are several reasons for this: ignorance among the general public, who usually practice locally available methods such as native medicines or tattooing, etc. before reaching the hospital; lack of proper hospital facilities and distant location of major hospitals and poor modes of transport in rural areas.

The most common causes of status epilepticus in developing countries are poor drug compliance and abrupt drug withdrawal. The latter could be caused by the non-availability of drugs, poverty or ignorance among patients or their caregivers. Other causes could be: (a) brain infections such as viral encephalitis, which is still common in SEAR Member Countries. (b) clotting of blood in veins of the brain due to restricting fluids to women just after delivery of a baby as practiced among some rural populations.

It is essential that local physicians, pediatricians or family physicians be educated about the principles of management of status epilepticus. This expertise should be available at least in all district hospitals, so that delay in the proper institution of drug treatment can be prevented. More often than not, guidelines provided by the International League Against Epilepsy cannot be practiced in these countries as patients reach hospitals very late. In SEAR Member Countries, future community programs for epilepsy should emphasize the management of status epilepticus.

### **15.1 Management of Status Epilepticus**

While making arrangements to set up an i.v. line, a few questions must be asked of the accompanying persons (a detailed history can be taken later).

#### 1. Questions

- Is the patient known to suffer from epilepsy?
- Did he/she take anticonvulsants?
- Did he/she discontinue the intake?
- If so, when? – Is the patient known to use alcohol or other drugs? Did he/she discontinue to use this recently?
- Have any symptoms been noticed that might indicate a disorder apt to cause convulsions?
- When was the last meal taken?
- Were any traditional medicines, especially herbs, taken recently?

The answers to the last three questions above could indicate a hypoglycemic state.

#### 2. Diagnostic procedures

- If there is no laboratory, a blood glucose determination can be done with dextrostix.
- If there is a laboratory, blood to be taken for more investigations (blood glucose, calcium, electrolytes and urea).
- Lumbar puncture should be done when fever is present or the patient's immune system function is poor. (e.g. with HIV/AIDS)
- Other detailed investigations can be done after the seizures are under control.



### 3. Treatment

- start i.v. line with normal saline (5% glucose should NOT be used as IV phenytoin can precipitate in glucose)
- start monitoring pulse, respiration and blood pressure. Prevent aspiration, maintain clear airway. If possible intubate the patient.
- a schematic approach to management of the patient is given on the next page.

### 4. Other therapy

- Depends on the results of investigations (for instance, if meningitis, start i.v. antibiotics).

### 5. Further diagnostic procedures

- A status epilepticus might be the first sign of a brain tumor. Depending on facilities, an EEG, or CT /MRI scan should be done. If needed, the patient should be referred to a specialist.

## **16. PROMOTING COMPLIANCE WITH TREATMENT**

### **16.1 Follow-up Evaluation**

Follow-up is an essential step in the management of epilepsy. The patient has to maintain a “seizure diary” where every seizure is recorded and reported to the treating physician periodically. The interval between follow-up varies, depending upon the frequency of seizures. The treating physician should evaluate the clinical response of the patient with respect to the dose of the drug being administered and any side-effects noted during follow-up visits. It is essential to note the effect of seizures on the patient’s day-to-day activities.

### **16.2 Need for Regular Use of Anti epileptic Drugs**

AEDs must be taken daily as prescribed. Missing a dose or taking twice the dose are both undesirable. If the patient is unable to take the initiative to take the medicine daily, the family should help to ensure that the drugs are taken as prescribed.

Patients should be aware of “withdrawal seizures”, i.e. an abrupt discontinuation of AEDs may cause an increasing number of seizures.

Patients also need to be informed about the necessity of good compliance, keeping an adequate stock of drugs with them and storing the daily quota in a small container so that no dose is missed. Certain AEDs interact with commonly-used drugs such as some anti-asthmatic drugs, like theophylline or antibiotics such as erythromycin.

### 16.3 Compliance with Prescribed Treatment

The patient's adherence to any prescribed treatment will increase if the following points are considered. In the particular case of treatment with AEDs (before starting the treatment and during its entire duration) the patient has to be informed especially in a clear and understandable way to bear in mind the following:

- (1) the patient needs to accept his clinical condition (in this case, seizures) and not view it as a problem;
- (2) the patient should be convinced that the proposed treatment has a reasonable probability of improving his clinical condition (i.e., decreasing the magnitude of the problem);
- (3) that disappearance of seizures does not mean that treatment is no longer necessary;
- (4) some of the side-effects have to be tolerated;
- (5) the goal of the treatment is the reduction of seizures to a minimum possible not necessarily "guaranteed". For some patients this could represent no more seizures, but for others only less seizures;
- (6) the treatment may not have immediate effect; it can take upto one-two weeks before the drug reaches a protective blood level;
- (7) the prescribed dose should not be altered by the patient and his/her family, regardless of the degree of seizure control. Only the physician can modify the prescribed dose;
- (8) abrupt interruption of drug intake should be avoided at all costs as this may precipitate continuous seizures (status epilepticus). Provisions should be made for timely procurement of the drug.

The language, the terms and the contextual meaning must be those which the patient can understand. It is also important to enquire about the reasons for noncompliance and to deal appropriately with those reasons. The following procedures have successfully proven to help in promoting

compliance with treatment:

- (1) The treatment procedures are easy to follow;
- (2) Use of family reminders;
- (3) Linking drug intake to specific daily activities; and
- (4) Increased home visits by health worker with repeated reemphasis of:
  - the necessity for continuous long-term treatment, and
  - possible side-effects.

## **17. OTHER MODES OF TREATMENT**

### **17.1 Diet**

There are no special dietary restrictions for epilepsy. The belief among some rural populations that consuming “cold” items of food such as ice cream or fruits such as banana will cause seizures is a misconception.

Special diets such as the high fat diet known as “ketogenic diet” has been of some help in children with intractable epilepsy. However, this is costly and extremely difficult to follow. Also, the patient may not like this diet.

### **17.2 Surgery for Epilepsy**

In recent years selected center’s in developed countries and some centres in developing countries have been performing surgery on patients with refractory epilepsy. About 50% of patients with refractory epilepsy have medial temporal pathology on MRI. Some of these patients are potential candidates for epilepsy surgery. Resources needed for evaluation of such patients for surgery include: good outpatient EEG, good structural MRI, neuropsychological evaluation, the ability to conduct the Wada test (intracarotid injection of amobarbital to determine dominant hemisphere for speech) and a skilled neurosurgeon.

Surgery can be done if an EEG shows discharges ipsilateral to evidence of medial temporal sclerosis or other medial temporal pathology on MRI, and if the neuropsychological evaluation and Wade test are concurrent. About 50% of patients who undergo surgery will be totally seizure-free and another 25% have only 1-2 seizures per year after surgery, but they have to keep taking anti-epileptic drugs.

### **17.3 Psychotherapy**

Psychotherapy cannot cure epilepsy. However, some patients who experience seizures whenever they are tense or emotionally upset can be helped, such as a child who has seizures at the beginning of the school year. Psychotherapy can help such patients to understand the problem, to have a positive attitude and to control stress. Often, parents of children with epilepsy are extremely worried and require psychotherapy themselves.

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