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## Editorial

### Treatment of Epilepsy: More and more accurate in developed countries and deep gap in developing countries

Epilepsy is a chronic neurological disorder characterized by episodes of recurrent and unprovoked seizures. It is estimated that more than 50 million people worldwide have epilepsy. There are many different treatment options for epilepsy with gap between developed and developing countries.

#### Treatment objective

The main goal of epilepsy treatment epilepsy is to stop or to decrease the number and severity of seizures. Currently, different treatments are available for epileptics patients including pharmacological therapy, diet regimens, and neurosurgery.

#### Epilepsy and healthy lifestyle

Certain triggers make a seizure more likely. These are not the cause of epilepsy, but may trigger a seizure on some occasions. These triggers may include:

- Stress or anxiety.
- Heavy drinking.
- Street drugs.
- Some medicines such as antidepressants, antipsychotic medication.
- Lack of sleep or tiredness.
- Irregular meals which cause a low blood sugar level.
- Flickering lights such as from strobe lighting.
- Menstruation (periods).
- Illnesses which cause fever such as flu or other infections.

It may be worth keeping a seizure diary. This may show a pattern which may identify a possible avoidable trigger. Keeping a healthy lifestyle, a well balanced diet, regular meals, and not getting over-tired may help you to feel better, and may reduce the chance of seizures occurring.

#### Pharmacologic Therapies

Bromide was recognized as the first effective pharmacological treatment for epilepsy when Sir Charles Locock reported its efficacy in 1857. However, it is highly neurotoxic and became obsolete once better tolerated alternatives were found. Modern pharmacotherapy of epilepsy was heralded by the serendipitous discovery of the anticonvulsant properties of Phenobarbital in 1912 by Alfred Hauptmann. Despite the development of successive generations of antiepileptic drugs, phenobarbital is still the most widely prescribed treatment worldwide even its side effects are numerous. Phenytoin, the first non-sedating antiepileptic drug, was introduced in the 1930s as a result of systematic screening of compounds using novel animal seizure models. A number of other antiepileptic drugs became available in the ensuing years, including carbamazepine, ethosuximide, primidone, valproate, and some benzodiazepines. These agents are regarded as "old" or "established" antiepileptic drugs. After a hiatus of nearly 20 years, there has been accelerated development of newer antiepileptic drugs, with the licensing of at least 15 compounds globally since the late

1980s. In chronological order, these were: Vigabatrin, Zonisamide, Oxcarbazepine, Lamotrigine, Felbamate, Gabapentin, Topiramate, Tiagabine, Levetiracetam, Pregabalin, Rufinamide, Stiripentol, Lacosamide, Eslicarbazepine, and Retigabine. The use of generic treatments is an important option that allow greater access to health care and thus to overcome the gap treatment. Despite some controversial aspects with prescription of these drugs and the problems concerning bioequivalence, the introduction of generic formulations of antiepileptic drugs in India and South Africa lead to an economic saving for the public health service. We think, this politics can bridge the gap between developed and developing country in managing epilepsy on the world.

The majority of epileptic patients respond to drug therapy. According to the Epilepsy Education Association, 50% to 80% of all patients can be controlled with the correct choice of therapy. Some patients may respond to monotherapy, whereas others require combination therapy to remain seizure-free. Although these agents will not cure the disorder, they can achieve seizure freedom; restore quality of life, and improve patient's confidence in being able to resume their place in society.

#### Vagus Nerve Stimulator

In 1997, the FDA approved the use of a vagus nerve stimulator for patients with a history of uncontrolled seizures, even with the use of medications. The device is implanted subcutaneously in the upper left side of the chest and is attached to the vagus nerve in the lower neck. The device transports a burst of electrical energy from the vagus nerve to the brain. The stimulator is intended for patients 12 years and older, and the batteries in this device are replaced about every 5 years. It has been shown to reduce seizure activity by 20% to 40% in some individuals.

#### Surgery

Approximately 20% of patients with epilepsy will keep having seizures despite intervention with pharmacologic agents. For patients with uncontrolled seizures despite the efforts of pharmacologic agents, surgery may be considered. The ultimate goal of surgery is to excise the part of the brain that is responsible for provoking the seizures. There are various types of procedures, but the most commonly performed surgery is a temporal lobectomy.

#### Diet

Some patients have successfully responded to a type of diet known as the ketogenic diet. This diet is used in children 10 years and under who have a history of uncontrolled seizures. Essentially, the diet changes the manner in which the patient's body utilizes energy from its nutritional sources. The diet is high in fat and low in carbohydrates, with no sugar allowed. It attempts to change the body's primary energy source from glucose to fat. The diet requires strict compliance to be effective. The meals have specified amounts of fats, carbohydrates, proteins, and liquids and are taken from an approved list of foods. Usually, a vitamin and mineral supplement is recommended. This diet is to be used under direct medical supervision. Children need to be monitored closely while on this diet. It is important to note that this diet does not work for all patients.

#### Treatment results

Approximately 80% of patients diagnosed with epilepsy respond to some form of pharmacologic and/or surgical intervention. The other 20%, however, do not respond to any treatment and continue to have seizure episodes for whom practitioners should go to surgical procedures.

#### The Role of the Pharmacist

Although epilepsy is a common disorder, it is still a very misunderstood condition. Continuous advances in research give more hope to patients. People with epilepsy can have normal and productive lives because of the numerous treatment options that are available. Pharmacists can help to stress the importance of treatment compliance, to watch for side effects and providing the patient with proper counseling.

#### The role of general practitioners

In a context where there are few neurologists, excellent management of patients with epilepsy at a primary care level is imperative. In Morocco, most patients suffering from epilepsy and other chronic illnesses are managed by general practitioners in state provided primary care settings.

GP may be involved to better diagnosis, to manage simple cases, to refer difficult cases to neurologist. Therefore, urgent prioritization, advocacy, collaboration between neurologist and GP are needed to improve the management and quality of care of patients with epilepsy.

#### The role of nurse

Epilepsy Nurses are modern day professionals who play a pivotal role in providing coordinated care and education to patients with complex uncontrolled Epilepsy. Recently, Specialist Epilepsy Nurses have become an integral part of the Epilepsy care team. These Specialist Nurses advise patients on diagnosis and antiepileptic drug changes, identify and document seizure activity, perform appropriate interventions, recognize signs of AED toxicity and share the responsibility of taking care of Epilepsy patients. Evidence from controlled clinical trials suggests that Epilepsy patients cared by a nurse are well informed and have a high degree of satisfaction.

#### Situation in developing countries

In developing world such as Africa an estimated percentage of 80 to 90% of patients with epilepsy do not receive adequate medical treatment. Poor infrastructure, insufficient availability of drugs and scarcity of trained medical personnel are relevant factors for this situation. The majority of people suffering from seizure do not consult MD as first intention. One of the reasons is that the mean ratio is 1 Neurologist for 1/4 million. As for the other health data the exceptions are represented by North Africa and South Africa with a ratio of 1 Neurologist for 300 000/400 000 people. The Republic of South Africa and Maghreb countries are better equipped. But a very important factor of non consultation in Sub-Saharan Africa is because epilepsy is conceived as an 'African' affliction due to supernatural forces, effects of ancestral spirits or bad spirits. It is also thought to be due to witchcraft, poisoning and/or contagious. This socio-cultural environment leads to an important treatment gap.

#### Conclusion

Epilepsy is a treatable medical condition. Urgent prioritization, advocacy, collaboration, and empowerment of healthcare professionals, patients, lay carers, and the general public are needed to improve the management and quality of care of patients with epilepsy.

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