

Supportive principles in the pharmacological management of the patients with epilepsy

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Manuscript received May 20, 2018; revised manuscript November 29, 2018

Abstract

Background: Pharmacological management of patients with epilepsy is still a very challenging approach for the best outcome of these patients. When considering the appropriate treatment choice for patients it is necessary to take into account several factors that can influence the effectiveness and quality of life. Cancelling or changing treatment suddenly can lead to uncontrolled seizures. After a short period without seizures, many patients are tempted to abandon treatment. Cessation of treatment can be discussed after a seizure-free period for at least two years. Treatment should be discontinued gradually by reducing the dosage and constant supervision of the physician. This paper analyses briefly the general pharmacological and treatment methods in several forms of adult epilepsy.

Conclusions: Management of epilepsy means more than observing the medication prescribed by the specialist. It is also important for the patient to maintain his general health status, monitor the symptoms of epilepsy and response to treatment and take care of his safety. Involvement in the management of one's own affection can help the patient to control his condition and to continue his routine in usual manner. The objective of antiepileptic treatment is to reduce epileptic seizures to zero without intolerable side effects. New treatments should focus not only on reducing the frequency and intensity of seizures but also improving the quality of life of patients.

Key words: patient, epilepsy, therapy and dynamics.

Introduction

The analysis of the specialized literature reveals that many issues regarding differential treatment of epilepsy require subsequent clarification. As far as we are concerned, we have designed and developed therapeutic recommendations, in our opinion, effective, supporting the results of treating epilepsy in its various stages, from premonition to status variants. In this context, the main element in the choice of preparations, besides the trivial clinical signs, was the use of sub-curative monitoring data, including repeated EEG examinations, which fixed the subjective response of patients. Choosing the best possible medicine or an optimal combination of medicines is sometimes difficult. The perfect antiepileptic should be long, non-sedative, well tolerated, very active in various types of convulsive and with non-harmful effects on vital organs and functions. In addition, it must be effective in various forms of active epilepsy and in treating underlying epileptic seizures and capable of restoring the electroencephalogram between seizures to its normal form [5; 9; 10; 18; 23; 24; 27; 31; 38; 40; 41; 43].

It is still debatable whether such a drug will ever be discovered, and especially one that will control all types of epilepsy. The thorough study of pharmacological properties allows us to appreciate which of the existing antiepileptics will meet the current requirements of our patients under study. Due to the fact that patients differ considerably after clinical response to known anticonvulsants and the possibilities of treatment with associated drugs are insufficiently

and superficially researched, testing of more efficient substances including new combinations continues. Due to the modern medication, which benefits from a wide and sufficiently efficient range of specific drugs, a large proportion of the recurrent and the disabling sequelae of the disease can be prevented. The adverse effects of drugs are low, so many of the past patients who have been labelled for life by this suffering can now live a productive life. The actual ability to control this disease effectively prevents more of its severe consequences [12; 13; 15; 22; 29; 46; 50].

General principles of pharmacotherapy of epilepsies

In the treatment of psychiatric disorders of our patients with epilepsy we have taken into account the following principles:

Appropriate selection of the remedy, its dosing, routes of administration and possible side effects. And we took into account the following:

1. The syndrome of psychic state – the gradual expression of the disorders, the relationship between productive and negative alterations and the type of impairment of psychic processes.
2. The dynamic characteristics of the psychic state – the duration of the disturbances, the changes in the presence of paroxysmal manifestations.
3. The somatic and neurological condition of the patient with epilepsy. This parameter is important in the context

of the evidence of side effects of favorable and unfavorable preparations. Somatic mood dictates and the route of administration of drugs: parenteral in gastrointestinal disorders, endonasal or transorbital (by electrophoresis) when parenteral administration is not preferred.

Individual features of the patient with epilepsy (age, weight, response to anticonvulsant therapy and others) are also considered. It is often forgotten that lower doses are indicated for children and older people as the exchange of substances in them is slow and standard dose treatment leads to accumulation of preparations and adverse effects [6; 7; 14; 19].

We recommend the gradual increase of the doses, with the preference of the minimal effective doses of the drugs. All the above-described drugs are initially indicated at minimal doses, then the dose gradually increases until the first positive effects are displayed, the subsequent increase of the doses is made after a certain period of time to stabilize the positive effect.

Complex treatment – it is necessary to prescribe uni-moment of anticonvulsant remedies from different classes and groups in combination with non-medication methods. Polipharmacologic treatment has certain priorities in comparison with monotherapy because it addresses different links of the pathological process. It is important to avoid the multidimensional effects of many drugs, the doubling of the mechanisms of action and the predilection of some and the same psychological processes.

Continuous therapy. The treatment of productive disorders is done until their complete jugulation (sometimes with the purpose of preventing relapse and longer), of the deficient ones by alternating the cures, with gradual modifications [28; 30; 34; 39; 42].

Principles of medication of psychosomatic syndromes in epilepsy

Criteria for the effectiveness of psychotropic remedies administered in epilepsy are those of improving the knowledge and behavioral processes. More differentiated treatment is based on syndrome of mental disorders.

1. Deficient disorder (transient dementia, mental-mental diminution, etc.) The treatment is continuously practiced, alternating the belts. It is rational to indicate the preparations of different subgroups. The following criteria are taken into consideration when drawing up the treatment scheme:

- a) Main mechanism of action: nootrop, general metabolism, cerebrovascular or actoprotector;
- b) Predominant action on mediating processes: GABA (piracetam, fenibut, gamma-aminobutyric acid); cholinergic (gliatiline); dopaminergic (nakom); and combined (meclofenoxate, glycine, glutamic acid);
- c) With predominant action on the function of the encephalic structures: the cerebral and subcortical (nakom), on the left hemisphere (gliatiline); on the right hemisphere (cortexil);
- d) With action on psychomotor activity: major stimu-

lation (piracetam, nakom vinpocetine), mean enhancement (aminalone, gamma-aminobutyric acid, cerebrolizine, nicergoline, tanakan), diminishment (fenibut, glycine, cinarizine);

e) Route of administration: parenteral, internal, endonasal, transorbital (by electrophoresis), mixed. Duration of treatment: from 7 days to 4 months (nakom, fenibut). On the basis of this therapy it is also possible to indicate prophylactic doses of anticonvulsants.

2. For different types of excitation (chaotic, twilight, delusional, manic, psychopathic, etc.) the support treatment are the sedative neuroleptics. Major tranquilizers, barbiturates and other anticonvulsants, may also be indicated sedative antidepressants.

3. Hallucinatory delusions. More rational are antipsychotic neuroleptics. In the case of neuroleptic syndrome with caution are added corrective remedies. That adjuvant preparations use daytime tranquilizers, in depressive or anxious states are used antidepressants.

4. Emotional productive disruptions. In the states of excitation are indicated predominantly sedative neuroleptics and tranquilizers, antidepressants – in depression, tranquilizers and antiepileptics – in dysphoria, in anxiety states – neuroleptics and tranquilizers.

5. Productive districts nearby. Psychoparticular depressions are typically treated with “inor” euroleptics, preferably “behavioral correctors” or low doses of risperidone and tranquilizers; in neurotic manifestations (asthenia, obsessions, hysteria, hypochondria) are used tranquilizers and low doses of antidepressants [1; 2; 3; 4; 8; 11; 25; 26].

Complex epilepsy medication programs

Over the past decades has been made a remarkable progress in assisting epilepsies. In most cases, however, treatment of epilepsy is symptomatic since it is known that only the treatment can prevent recurrences that often result from the action of noxes chronic epileptogenes when it becomes necessary to correct some metabolic disorders in the brain lesions. Etiological is also the specific anti-infectious treatment in the case of epileptic-generating neuroinfections. The antiepileptic treatment performed in newly examined patients aims to control crises and ensure a social life that is close to normal. This treatment was based on the use of last-minute anticonvulsants (carbamazepine, sodium valproate, phenobarbital, diazepam, apaurine, phenytoin), which in most cases have more or less pronounced side effects. They were adapted by us to the form of epilepsy, evolutionary gravity and individual tolerance. The general principles of treatment of epilepsy were in selecting the optimal preparation depending on the type of epileptic seizures, selecting the optimal dose, usually minimal, which allows plenary control of epileptic seizures. The treatment prescribed by us must be lengthy and uninterrupted. However, the optimal duration of specific treatment is purely individual for each patient with epilepsy, as opposed to the complete cessation of crises, which ranged from 6 months

to 5 years. Sometimes, depending on the type of epileptic seizures, the medication was indicated lifelong. Interruption of treatment was performed gradually for 3-8 months with clinical and electroencephalographic monitoring. We have also been very careful in avoiding the factors that trigger epileptic and cautious seizures in observing the optimal life regime [17; 20; 21; 32; 33; 44].

Antiepileptic treatment divides into:

- Emergency (juggling of crises);
- Long-term treatment (crisis prevention);
- Etiological treatment.

The medical treatment of epilepsies should represent as far as possible a monotherapy. The drug selection is based on the type of epilepsy. In generalized seizures and partial seizures that have been reported in our patients, we examined the use of new carbamazepine, sodium valproate, phenobarbital. At patients with petit mal absence, the elective drug we administered was sodium valproate. In the category of patients with epileptic encephalopathy in the treatment we have prescribed sodium valproate and corticoids that have given good results. Some treatment failures, marked by the repeating crises, originally focused on the idea of whether it was correctly applied. In this regard, it is useful to determine the serum concentration of the drug. If the serum level of the drug is satisfactory, but the crises are repeated, the change in treatment by administering or associating the second antiepileptic should be called into question. Continuing treatment is essential, and the sudden abolition of specific medication increases the risk of the crisis. The basic principle that we recommend following our examinations of patients with epilepsy over several years for the treatment of epileptic seizures is one of the highest urgency, which has two essential components, namely:

- Anticonvulsants for stopping epileptic seizure as soon as possible.
- Secondary measures, but of vital importance: Maintenance in resuscitation and intensive care units. In the case of the 259 patients with epilepsy, we found that (58.7%) received stable care, (41.3%) were outpatients. They were hospitalized repeatedly – (19%) of patients. When using an anticonvulsant in maximum therapeutic doses with the occurrence of adverse events, it is reasonable to reduce the dose slightly and to associate other anticonvulsants with the summary of the effects of the preparations. Thus, their potential became known in various combinations, therefore in their prescription requires a thorough dynamic control of the functional status of the kidneys, liver and peripheral blood.

The basic principle of the therapy is complex treatment, based on a strict evidence of the structural features of paroxysms and the clinical evolution of the disorder in both in onset and in different stages. The analysis of the therapeutic measures has demonstrated that the most effective in benign sleep epilepsy are those with minimal hypnotic effect and with tropism predilection for subcortical formations (finlepsin, diphenin, chloracon, hexamedine, sodium tetraborate, elenium).

In patients with epilepsy, whose seizures throughout the full illness are produced in sleep with the hours of peak during the first half of the night; the drug is usually given half an hour before bedtime.

Thus, it has fallen definitively the need to administer in three divided doses of anti-epileptic drugs in patients with epilepsy, even more so that the effect was obtained with a single dose. Therefore, the medication possesses the etiopathogenetic character and is composed according to indications:

- Anticonvulsant;
- Antiphlogistic;
- Dehydration treatment;
- Desensitizing product;
- Fortifying;
- Neuroleptic;
- Nootropic;
- Resorptive;
- Roborant.

The application of treatment of the patient with epilepsy is carried out in three steps:

- 1) Preferential drug choice;
- 2) Obtaining therapeutic remission, strengthening, prevention of worsening and patient behavior without seizures for a period of 3-5 years;
- 3) The suspension of treatment according to the lack of clinical manifestations and EEG of epilepsy [18; 26; 49].

Treatment in ambulatory conditions

Controlling seizures caused by epilepsy requires the daily schedule of treatment recommended by the psychiatrist.

Antiepileptic drugs should be administered according to the prescription without any deviation from it. Disregarding the treatment scheme is one of the main reasons for the inefficiency of control over the seizures.

Antiepileptic drugs are effective only when the level of concentration of drugs in serum is kept constant. The doctor is in view of this fact, recommending a specific scheme for each drug (a specific dosage, a certain scheme of administration, etc.). Not administering a dose compromises the whole treatment. The same rule applies and in the case of patients with epilepsy who follow a cetogenic diet (the complete exclusion of fats and protein) recommended by the physician to improve the control of the drug-resistant epilepsy. Cetogenic diet can be difficult to follow it, but it is mandatory to respect it.

In addition to medical treatment, the physician recommends identifying and avoiding situations, conditions which determine the occurrence of seizures, such as [16; 17; 25; 28; 47]:

- Drinking alcoholic beverages;
- Drinking beverages or foods that contain caffeine;
- Drug use;
- Emotional stress;
- Excessive sun exposure;
- Lack of adequate sleep;

- Prolonged use of computers;
- Reducing the number of daily meals;
- Watching TV for several hours.

Epilepsy medication

The drugs used to prevent seizures are called *antiepileptics*. The goal consists in finding effective anti-epileptic medication which may lead to the least adverse effects. The efficiency of antiepileptics in the prevention of seizures is 60–70%. Although many people suffer the side effects of these drugs, this is the best way to prevent convulsions. The benefits usually outweigh the shortcomings of these medicines.

There are many types of anti-epileptic drugs (also called anticonvulsants), but not all of them treat the same type of seizures. The first step in the choice of anticonvulsants is the correct diagnosis of the type of epilepsy and seizures that the patient with epilepsy produces. It may take more time to find the best combination of drugs, by adjusting the doses, by testing multiple drugs. The goal is to prevent seizures with adverse effects as low as possible.

Once it has been found the most effective treatment, it is very important for the patient to follow the physician's recommendations. Monotherapy (single drug use) is strongly recommended as the treatment of first intention.

Monotherapy causes fewer side effects and does not have the risk of interacting with other drugs. Also, the chances of forgetting or mistaking the time of drug administration are much lower in the monotherapy compared to a multi-drug treatment.

When monotherapy is ineffective, adding a second medication can improve seizure control. Also, in the case of patients with multiple types of seizures, it needs more than a single drug [2; 3; 4; 17; 28; 45].

Interaction with other drugs. Most antiepileptic remedies do not induce side effects, but there are exceptions. Therefore, always carefully read the information in the leaflet. Some medications, for example those based on medicinal plants are not accompanied by adequate information. In such situations, consult with your doctor.

Timetable schedule. Since the effect of most antiepileptic drugs is of short duration, they must be administered daily at the same time, according to doctor's recommendations. Administration of medicines before or after meals does not affect the efficiency.

It is very important that the antiepileptic drug to be taken regularly to maintain its blood concentration at a relatively constant level. If for any reasons you have not taken the drug according to the prescriptions, consult with your doctor. However, there is no standard solution for such situations because other factors are involved, such as the type of anti-epileptic drug, the dosage and any other drug that you take that may affect the disease or the treatment that it is followed.

Pregnancy and breast-feeding. If you are planning to have a baby, consult with your doctor to ensure that your health allows this, that the disease is under control and that your future baby will be born healthy. Ideally, you should

consult with a medical specialist and with a gynecologist to discuss antiepileptic treatment during pregnancy.

Epilepsy is not a contraindication to breast-feeding. Although the drug delivery mechanisms are not fully developed in the newborn, and anti-epileptics received through milk may be stored in the body, it may be breast-fed if closely monitored and treated in the long term.

Cessation of antiepileptic medication. Since anti-epileptic drugs control only the excessive electrical activity of the brain and do not cure it, the treatment should be followed for an indefinite term. The sudden cessation of the treatment or changing it can result in uncontrolled seizures. After a short period without seizures, many patients are tempted to abandon the treatment. Practice has shown that the cessation of treatment can be discussed after a seizure-free period of at least two years. Treatment will cease gradually, by constant dose reduction and mandatory under the supervision of the attending physician [19; 24; 25; 27; 31; 37; 49].

Tips for minimizing the occurrence of seizures among epileptics [4; 9; 13; 15; 36]:

- Know your triggers and try to avoid them
- Avoid drugs and alcohol
- Have a regular sleep schedule
- Eat a healthy diet
- Minimize factors in your life that cause stress
- Find a competent physician and follow his instructions
- Do not ever feel weird if you call your doctor to ask questions about your health.
- Take your anti-seizure medication as prescribed.
- Do not skip your anti-seizure medication and do not stop taking it abruptly.
- If the doctor is too busy, the nurse will help you.
- Ask your doctor before taking any other medicines.
- If you have an allergy, do not start taking antihistamines before getting your doctor's approval, especially if you have not taken antihistamines before.
- Educate yourself. Read everything you can about seizures and treatment.

Tips for increasing safety around the house, and how to feel more confident about going out:

- If you suffer from seizures, wear a seizure-alert bracelet (doctors will see it and know what type of treatment to administer)
- Carry your medical information in your wallet.
- Use plastic glasses and plates instead of glass and porcelain.
- Put a "usy" sign on the bathroom door, because if you have a crisis the door is not locked and the people can get to you quickly.
- If your child is suffering from seizures, place an interphone in his / her room.
- If child suffers from epilepsy and sleeps overnight at a friend's house, ask your child to always sleep in a low bed, and never use a top bunk.
- Use tightly fitted sheets
- Sleep without a pillow, or use firm pillows.

- Put emergency telephone numbers and first aid instructions on the refrigerator.
- Beware of tobacco, avoiding the risk of a fire.
- Install smoke alarms.
- Minimize sharp edges and corners
- Carpet the floors with thick under-padding
- Put barriers in front of hot stoves or fireplaces
- Swim with a friend.
- Never swim alone.
- Keep the water level in the tub as low as possible, to avoid drowning in the event of a seizure.
- Do not drive until permitted by law and your physician
- Knowledge is power.
- The more you learn about epilepsy, the more you can deal with your illness.

Responding to seizures. First aid during seizures

An epileptic seizure or seizure attack can be scary. A convulsive crisis temporarily interferes with muscle control, movement, speech, vision, or consciousness. It can cause violent shaking of a person's entire body for a few seconds or minutes, accompanied by loss of consciousness [7; 12].

Convulsions can be mild or severe and affect patients differently. Even if people feel helpless when they are around a patient who has convulsions and is difficult to look at, there are many things they can do to help [8; 14; 35]

If you see someone having a seizure, you can do the following:

- Keep yourself and others calm;
- Protect the person from injuries;
- Protect from falls if possible;
- Move furniture or other objects that could harm the person during the crisis;
- Do not insert anything, including fingers, into the patient's mouth

The person responding and performing first aid can be bitten, to minimize the risk, you can do the following [9; 11; 19]:

- Turn the patient to one side, with the mouth down (if it can be moved).
 - Do not try to keep the patient lying down.
- After a seizure:
- Examine whether the person has suffered injuries.
 - Turn the patient to one side during convulsions, do this after the crisis has ended and the individual is more relaxed.
 - Clean the mouth and remove vomit, if the patient has dyspnea (difficulty breathing).
 - Choose a safe area where the patient can be seated to rest.
 - Do not let the person eat or drink until completely aware.
 - Survey the patient until he/she is aware and familiar with the surroundings.

Precious information can be provided to the treating physician about the person experiencing a seizure disorder. Remember and inform the doctor about these features:

- Way of movement of the patient's body

- Duration of seizures
 - Behavior of the patient before the attack
 - Patient's behavior immediately after convulsions
 - If the individual has suffered a lesion during the seizure
- Convulsions do not always require urgent medical attention. However, call emergency services immediately if one or more of these are true:
- The seizure happens in water;
 - The person has never experienced a seizure before;
 - The person who has experienced a seizure has breathlessness (apnea) for more than 30 seconds;
 - The seizure is longer than 5 minutes (the patient may have a life-threatening condition);
 - In case of prolonged convulsions, called epileptic status (more than one seizure occurs within one hour);
 - The person who has had a seizure disorder does not normally react within one hour after seizures (abolished reflexes, diminished attention or the patient is not completely awake; confusion, nausea or vomiting, dizziness; inability to walk or sit down; fever).
 - Seizures occur after the patient complains of sudden headache; following signs of vascular accident such as speech disorder (dyslexia) or speech impairment; visual disturbances; inability to move different body segments to one side (apraxia) [22; 29; 30; 34; 45; 48].
 - The person has other health conditions like diabetes or heart disease.
 - The person is pregnant.

Conclusions

Management of epilepsy means more than observing the medication prescribed by the specialist. It is also important for the patient to maintain his general health status, monitor the symptoms of epilepsy and response to treatment and take care of his safety. Involvement in the management of one's own affection can help the patient to control his condition and to continue his routine in usual manner. The objective of antiepileptic treatment is to reduce epileptic seizures to zero without intolerable side effects. New treatments should focus not only on reducing the frequency and intensity of seizures but also improving the quality of life of patients.

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