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LATEST ARTICLES

Surgical Treatment for mesial Temporal Lobe Epilepsy Associated with Hippocampal Sclerosis. Our Experience.

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Abstract

Introduction; Epilepsy is one of the most common neurological chronic disorders, with an estimated prevalence of 0. 5 – 1%. Partial focal epilepsy (PE) is one of the most common types of epilepsies that originates from a relatively limited number of neurons, whose malfunction generates epileptic attacks. Partial focal epilepsies make up 60% of the whole spectrum of epilepsies. Recent studies show that 25% of patient who suffer from PE show a resistance against medication. The duration of symptoms on the one hand and AED treatment on the other hand cause the cognitive dysfunctions in the patients suffering from epileptic seizures, especially children, to suffer progressive damage. Patients suffering from epilepsy have a cost that at the moment is difficult to calculate accurately, but it is still very high. Mesial Temporal lobe seizures are the most common form of partial epileptic seizures originating in the temporal lobe, and they are frequently resistant to anti-epileptic drug treatment.

Materials and Methods, At Neurosurgical Department, University Hospital "Mother Theresa", since 2013 there is a team consisting of different medical specialists, for the study and selection of candidates, who can benefit from surgery. At the same time, since many years now in neurological department there is already a successful tradition in the medicament treatment of epilepsy.

The team of medical doctors in our Department, which makes the treatment of these diseases by means of surgery, is made up of: neuro-epileptologist, radiologists, neurologists, psychologists and neurosurgeons.

During the period, from 2013 until the year 2021, 35 patients have undergone an operation. All the patients were considered, based on protocols, as pharmacoresistant.

Conclusions; The post-surgical results were 80% of the patient's seizure free and without need to use any antiepileptic treatment, meaning Engel 1. 15% of the patients were seizure free but with the need of antiepileptic treatment and meaning Engel 2 and 5% of patients were not able to be cured by achieving only a modification of the semiology of the crisis and frequency, meaning Engel 3.

Anterior temporal lobectomy in majority of the cases is the best surgical treatment of drug-resistant HS-TLE and long-term seizure free patients in this group have been reported about 70% (62-83%).

Keywords; Epilepsy, Partial focal epilepsy, antiepileptic treatment, surgery

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Introduction

Epilepsy is one of the most common neurological chronic disorders, with an estimated prevalence of 0. 5 – 1%. [1]

Partial focal epilepsy (PE) is one of the most common types of epilepsies that originates from a relatively limited number of neurons, whose malfunction generates epileptic attacks. Partial focal epilepsies make up 60% of the whole spectrum of epilepsies [2].

In Italy, a country which is part of the EU, it is estimated that more than 500.000 people, nearly 1% of the Italian population, suffer from epilepsy. Nearly 350.000

people suffer from PE. By means of very advanced studies in clinical-electrophysiological-imagery, in 2/3 of these patients the presence of an anatomic lesion is identified, which is also seen as a cause of these epileptic crisis.

Recent studies show that 25% of patient who suffer from PE show a resistance against medication, which means that even when anti-epileptic drugs (AED) are administered, epileptic crisis cannot be eliminated.

Thus, based on the above-mentioned results, in Italy about 70.000 to 80.000 people who suffer from PE show a resistance against medications. It can therefore be assumed that in Italy at least a few thousand people could benefit from a surgical treatment, potentially curative [3]. This surgery, depending on where the epileptic origin is located, can result in 80%-90% of the patients to be seizures free without treatment with AED. This is achieved after very thorough research conducted by a multidisciplinary team.

Based on the facts mentioned above and correlating it with our reality regarding a population of 3 million people in Albania and more than 2,5 million people in Kosovo, it is thought that a considerable number of patients suffer from focal pharmaco-resistant epilepsy.

Patients suffering from epilepsy have a cost that at the moment is difficult to calculate accurately, but it is still very high. They undergo numerous and repeated visits and examinations and receive medication at an ever-higher cost.

The costs of epilepsy especially those that begin during childhood are particularly high: seizures have a negative impact in the formative ability of the child, both in education and in professional preparation in relation to the child's future employment. Also, continued assistance from parents affects their income. For its part, the state subsidizes the treatment and often provides economic assistance [4].

Commonly this type of epilepsy proves to be resistant against medication at a very young age.

The duration of symptoms on the one hand and AED treatment on the other hand cause the cognitive dysfunctions in the patients suffering from epileptic seizures, especially children, to suffer progressive damage. For this reason, it is recommended to determine as soon as possible if the epilepsy is pharmaco-resistant and then to find the epileptogenic area if it is focal epilepsy. The International League Against Epilepsy (ILAE) states that epilepsy is considered pharmaco-resistant when, from the use selected according to a guideline, of two attempts with antiepileptic drugs, either as monotherapy or in combination, it fails to maintain a seizure-free state [5]. For this reason, there are specialized centers for patients suffering from pharmacoresistant epilepsy where studies are conducted assessing the possibility of benefiting in time from epilepsy surgery.

Mesial Temporal lobe seizures are the most common form of partial epileptic seizures originating in the temporal lobe, and they are frequently resistant to anti-epileptic drug treatment [6]. Temporal lobe epilepsy is recognized to include two types of Epileptic Zone (EZ), the medial temporal lobe subtype where the EZ is localized in the temporal mesial lobe and the lateral subtype when the EZ is localized within the neocortex. These two forms may be distinguished according to the etiology or the ictal electro clinical semiology but it has been shown that a great number of temporal lobe epilepsy (TLEs) are characterized by a more complex EZ including both mesial and lateral cortices. In generally the mesiolateral subtypes are more frequently associated with lesions lobe epilepsies [7].

In order for a focal epilepsy to be treated surgically, the electrical charges need to come from the same zone and this zone must be relatively stable, in order that the origin of these epileptic charges can be correctly identified. In this way the cortical region which is responsible can be removed by means of surgery.

Materials and Methods

At Neurosurgical Department, University Hospital "Mother Theresa", since 2013 there is a team consisting of different medical specialists, for the study and selection of candidates, who can benefit from surgery. At the same time, since many years now in neurological department there is already a successful tradition in the medicament treatment of epilepsy.

The team of medical doctors in our department which makes the treatment of these diseases by means of surgery, is made up of: neuro-epileptologists, radiologists, neurologists, psychologists and neurosurgeons. The activity of our unit is mainly based in choosing possible candidates for a surgical therapy which starts with an ambulatory consultation, followed by an evaluation of clinical documents such as: clinical history, the consultation of electrophysiological studies, the determination of the need for Video-EEG, observation of the MRIs that are conducted based on protocols for epilepsy.

At the end, the whole gathered information, is discussed with the multidisciplinary team. In this way a decision is made correlating with the surgical indications and type of surgery, which is personalized for each patient.

During the period, from 2013 until the year 2021, 35 patients have undergone an operation. All the patients were considered, based on the above-mentioned protocols, as pharmaco-resistant. The age of the patients varied from 15-47 years old. The shortest duration of the symptoms was noted to be 5 years, whilst the longest duration of the symptoms was 35 years. From this we concluded that the average duration of the symptoms is 15 years. All the patients have also undergone a Video EEG, where the collection of the ictal data made possible for the precise localization of the lesion to be identified. In 60% of the cases the EEG was congruent with the clinical data. In more than 90% of the cases, the ictal EEG data correlated with the registration of the interictal data, which demonstrated a temporal anterior starting point and from the temporo- basal region.

These data together with the semiology of the crisis, were used to determine the surgical indication

even in those patients, whose cerebral MRI 1,5 Tesla (in the beginning), was without any radiological findings suggested the hippocampal sclerosis (HS). In these patients the HS was confirmed on the basis of histopathological data. In 90% of the patients, the HS was well documented by the histopathological data that demonstrated clear the degeneration of mesial structure and in 10% of the patients the biopsy was normal but patients in the follow up were classified as Engel 1. During the period in which the patients were examined using an MRI 1,5 Tesla, only 60% of the patients, the radiological findings showed that results were compatible with HS, whilst while using an MRI 3 Tesla, the radiological findings showed that 80% of the patient's results were compatible with HS. In around 60% of the patients the epileptic zone showed to be on the left side of the temporal lobe, whilst in 40% of the patients it showed to be on the right side. Based on the clinical and radiological data it has been decided to perform a selective amygdalohippocampectomy (SAHE) in 5 patients and in 30 patients this was accompanied also with an anterior temporal lobectomy in order to remove also the neocortex.

Results

The post-surgical results were 80% of the patient's seizure free and without need to use any antiepileptic treatment, meaning Engel 1. 15% of the patients were seizure free but with the need of antiepileptic treatment and meaning Engel 2 and 5% of patients were not able to be cured by achieving only a modification of the semiology of the crisis and frequency, meaning Engel 3. [10]

Discussion and Conclusion

About 60 percent of all forms of epilepsy are focal, which means that epileptic seizures originate from a specific area of the brain. Mesial temporal lobe epilepsy (MTLE) involves the medial or internal structures of the temporal lobe. Seizures often begin in a structure of the brain called the hippocampus or surrounding area. MTLE accounts for almost 80% of all temporal lobe seizures.

Anterior temporal lobectomy in majority of the cases is the best surgical treatment of drug-resistant HS-TLE and long-term seizure free patients in this group have been reported about 70% (62-83%) [8, 9].

As our experience demonstrates, the surgical treatment of epilepsy from hippocampal sclerosis is successful in up to 80 percent of patients. For this reason, there should not be delays in classifying a focal epileptic patient as pharmaco-resistant, based on the recommendations of the International League Against Epilepsy (ILAE) [5]. This gives to the patient the opportunity to come to our center and undergo the aforementioned studies, in order to identify the epileptic focus and determine the possibility of surgical treatment.

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