

The Influence of Non-Psychotic Mental and Personality Disorders on the Course of Epilepsy

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Abstract The purpose of the study was to study the concomitant pathology of epilepsy and non-psychotic mental and personality disorders in young men and to study the effects of this disease on the patient's quality of life. **Materials and methods.** The study involved 60 men aged 18-44 years. **Results and discussion.** In the course of the study, the interpretation of the indicators of 60 patients (100%) according to QOLIE-31 showed that 11 patients (18.3%) rated their quality of life as very low. Low and average quality of life data were determined in 18 (30%) and 21 (35%) patients, respectively. In 10 (16.7%) patients, the levels were in the range of optimal quality of life. The overwhelming majority of patients who participated in this study were found to have non-psychotic mental disorders in the form of anxiety, concern about their health status, and underestimation of self-esteem. A common nonpsychotic disorder in patients with epilepsy is considered to be an organic personality disorder. **Conclusions.** 1. This study shows the polymorphism of nonpsychotic psychiatric disorders associated with the diagnosis of epilepsy. 2. It was determined that with an increase in the duration of the disease in young patients with focal seizures, negative affective and personal components become very acute. 3. Mild depressive disorders prevailed in young men.

Keywords Epilepsy, Non-psychotic mental disorders, Personality disorders, Neuropsychological testing

1. Relevance of the Study

Epilepsy is often accompanied by affective and behavioral disorders consisting of depression, anxiety, and psychotic disorders [2,3]. Personality spectrum disorders (HR) are more common in people who suffer from a long period (usually from early childhood) and do not have a positive clinical result from anticonvulsants [4,5]. This premorbid disorder has a bad effect on the quality of life of patients [6]. With correctly selected PSS in monotherapy or adequate polytherapy, remission of epilepsy is achieved only in 50-70% of patients. At the same time, 30-50% of patients begin to develop pharmacoresistant epilepsy (FE).

It is generally believed that the difficulty of achieving remission of seizures is associated with two groups of causes or a combination of them. The existence of a gross morphological defect of the brain, genuine pharmacoresistance, a substandard course of the disease, including the existence of irreversible disorders of the mental spectrum are the determining factors and are relevant to the first group. The following group of factors has solvable causes: erroneous definition of the disease, an error in pharmacotherapy tactics or incorrect calculation of the PSS

dose, irrational polytherapy, patient's ignorance of the possibilities of epileptology, insufficient patient's compliance with mutual cooperation with the doctor and/or the patient's likelihood of concealing the presence of epilepsy [7].

However, when new groups of PSS appear, unpredictable side effects are still likely [8]. Thus, certain PSS are a risk of cognitive and affective disorders [1].

The prevalence of this disease in developed countries is 5-10 cases per 1000 population. Based on demographic studies conducted in developed countries, the incidence of epilepsy varies from 0.28 to 0.53 per 1000 population. The prevalence of this pathology in the CIS ranges from 0.96 to 10 cases per 1000 population. The prevalence of epilepsy ranges from 15 to 50 cases per 100,000 populations in various regions of Uzbekistan (on average, 30 per 100,000). In addition, the average incidence in men (53.7 per 100,000) is slightly higher than in women (46.3 per 100,000) [3].

Epilepsy is considered one of the most urgent clinical problems and at the same time an interdisciplinary problem directly related to psychiatry, neurosurgery, medical psychology and neurophysiology.

This disease has a particular negative impact on all areas of the patient's life, reducing its quality. Quality of life (QOL) in patients with epilepsy, in particular young patients, implies a socially active lifestyle [2].

In everyday life, men diagnosed with epilepsy are constantly experiencing discomfort. In general, this is a decline in social and personal ambitions, low self-esteem compared to healthy

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people, high levels of anxiety and depression. Depression in patients with epilepsy often occurs with symptoms that should be regarded as undesirable effects of antiepileptic drugs, including manifestations of epilepsy as such (sleep disorders, changes in appetite, behavioral disorders, lethargy or excessive irritability, etc.).

Premorbid disorders in epilepsy are an extensive heterogeneous group of different conditions, most of which are mental illnesses (personality disorder, dementia, depression, anxiety disorders, psychoses).

Affective disorders, anxiety disorders, psychoses, attention deficit hyperactivity disorder, and autism spectrum disorders are often diagnosed along with epilepsy as premorbid diseases. A number of specialists [6,7] consider mental and behavioral disorders to be complications of epilepsy, while other scientists [4] have demonstrated a two-way causal relationship between them.

The purpose of the study was to study the concomitant pathology of epilepsy and non-psychotic mental disorders in young men and to study the effects of this disease on the patient's quality of life.

2. Materials and Methods

The study involved 60 men aged 18-44 years. According to the WHO classification, all the subjects belonged to the group of young people. The average age of the patients was 33.90 ± 2.12 years.

Men with significant somatic pathology, acute and chronic, including brain tumors, acute traumatic brain injuries and acute infectious diseases of various etiologies were not included in the study.

The study included neuropsychological testing using the quality of life questionnaire for epilepsy-31 (QOLIE-31), the mini-examination of mental state (MMSE) and the International Survey of Personality Disorders (IPDE), based on the Diagnostic and Statistical Manual of Mental Disorders-5, the questionnaire of anxiety by signs of the condition (STAI), the scale of assessment of clinical Dementia (CDR) (Morris J.C., 1993), Hamilton Depression Assessment Scale (HDRS). Electroencephalography (EEG) and EEG video monitoring were used as screening methods.

A general examination and determination of basic physical data to exclude actual somatic pathology, including neurological examination, were carried out in accordance with generally accepted methods.

We analyzed the QOL of patients with epilepsy, the nature of epileptic seizures, their frequency, duration, including other complaints, medical history, and family history, in order to identify a genetic predisposition to epilepsy. The form of epilepsy and the type of epileptic seizures were determined in accordance with the International Classification of Epilepsy and Epileptic Seizures (International League against Epilepsy, 2017).

Correlation analysis (Pearson correlation coefficient) was used to determine the degree and nature of the relationship

between the studied parameters. All the differences and correlations mentioned in the article were considered statistically significant at $p < 0.05$.

3. Results and Discussion

In the course of the study, the interpretation of the indicators of 60 patients (100%) according to QOLIE-31 showed that 11 patients (18.3%) rated their quality of life as very low. Low and average quality of life data were determined in 18 (30%) and 21 (35%) patients, respectively. In 10 (16.7%) patients, the levels were in the range of optimal quality of life (Fig. 1). The results of high quality of life were not determined.

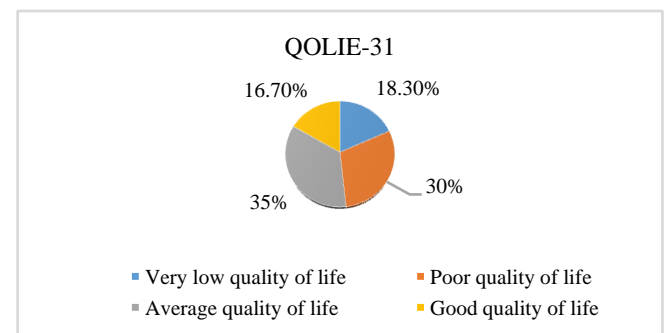


Figure 1. Assessment of the quality of life of patients with epilepsy

Based on the International Classification of Epilepsy and Epileptic Seizures, all patients were classified according to the form of epilepsy.

Due to the occurrence, structural epilepsy was detected in 31 patients (51.7%), infectious epilepsy in 17 (28.3%) and genetic epilepsy in 12 (20%). The duration of the disease ($M \pm SD$) turned out to be an average of 12.6 ± 4.3 years.

In this group of patients, the majority of epileptic seizures are of focal origin, which is related to the generalization of local focal effects in the brain. Some of the seizures with generalized onset were significantly less.

Nevertheless, despite adequate treatment of epilepsy, the majority of the studied patients had frequent and moderate seizures (54 and 36%, respectively), and only 10% had rare seizures (Fig. 2). This determined that long-term (on average 12.6 ± 4.3 years) pharmaco-resistant therapy prevailed in this group of epilepsy.

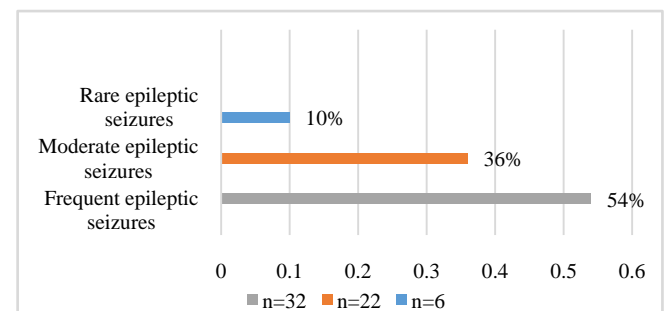


Figure 2. Frequency of epileptic seizures in patients with epilepsy

The overwhelming majority of patients who participated in this study were found to have non-psychotic mental disorders in the form of anxiety, concern about their health status, and underestimation of self-esteem. Personal and situational anxiety was determined by STAI, with an average score of 56.7 ± 0.45 points. This in itself determined that the majority of patients were highly anxious individuals, with a tendency to interpret a threat to their self-esteem and life in a wide range of cases and respond to it with a very high level of anxiety.

A common nonpsychotic disorder in patients with epilepsy is considered to be a personality organic disorder. In the development of disorders, the leading role belongs to the reactions of individuals to the attitudes of others, including acceptance of the fact of their illness and related defects [1]. S. Waxman and N. Geschwind [10] identified these symptoms of behavioral deviation in epilepsy as emotional hyperesthesia, perfectionism, excessive religiosity, decreased sexual activity and hypergraphia. The authors defined this condition as interictal behavior syndrome, which was later renamed Gastaut-Geschwind syndrome in psychiatric literature. IPDE scale analysis revealed the presence of organic personality disorder in 44 patients (73.3%) caused by epilepsy.

Total changes in the bioelectric activity of the brain were found with a decrease in high-amplitude slow oscillations and signs of irritation of the cerebral cortex in the form of multiple sharp waves, peaks, generalized synchronous bursts consisting of pointed waves on the EEG in patients with personality changes. The dominant rhythms were alpha with delta — 9%, theta — 2%, alpha — 49%, beta-1 — 37%, beta-2 — 3%. Paroxysmal activity was more often recorded in the left temporal region, less often in the right temporal region. In many patients, generalized bursts of paroxysmal activity were signaled, indicating involvement of the brainstem in the pathological process.

Apparently, the long-term and often chronic course of the disease, the presence of interictal epileptiform activity and morpho-focal changes in the brain are the cause of disorganization of the intellectual-mnemonic, emotional-volitional and behavioral spheres in young men with epilepsy.

Cognitive disorders are often a clinical symptom of epilepsy. Various factors play an important role in the development and course of cognitive disorders: the etiology of the disease, the type and frequency of epileptic seizures, interictal epileptiform activity on the EEG, background factors, taking certain antiepileptic drugs, and psychosocial factors leading to the exacerbation of seizures [9].

MMSE was used in this study [6]. Analysis of the test data in 60 patients (100%) showed that 23 (38.3%) of them had moderate cognitive impairment. Moderate cognitive impairment was observed in 25 (42%) people, dementia — in 12 (20%) people (Fig. 3).

Minor cognitive changes and dementia were not uncommon in patients with combined focal and generalized epilepsy, and patients with focal and unexplained epilepsy often experienced mild cognitive impairment. Unilateral, in most cases temporal, foci of activity on the EEG with different

locations in the brain were typical for patients with mild cognitive impairment. The predominant rhythms were: alpha with delta — 15%, theta — 9%, alpha — 28%, beta-1 — 30%, beta-2 — 18%. The EEG of patients with moderate cognitive impairment was characterized by disorganization, hypersynchronization of electrical activity, and increased slow-wave activity. The dominant rhythms were: theta with delta — 26%, theta — 32%, alpha — 18%, beta-1 — 14%, beta-2 — 10%. Cognitive impairments correlate with a decrease in fast-wave activity in the frontal and parietal regions of the brain ($r = 0.45$; $p < 0.05$). At the same time, memory is impaired, as the frontal and parietal regions are involved in passive processes of storing and recalling information.

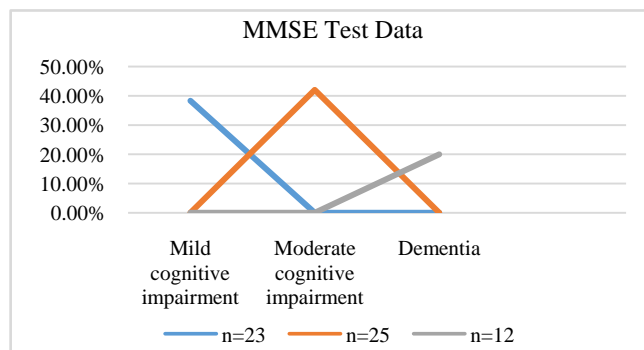


Figure 3. MMSE test data analysis

The CDR scale was used to identify the severity of dementia (Morris J.C., 1993). Data processing showed that 6 patients had a non-obvious stage (CDR—0.5) and 4 men had a mild stage (CDR-1).

Continuous mild forgetfulness and partial reproduction of facts are typical for patients with questionable dementia (CDR-0.5). The subject is fully oriented, except for minor difficulties with orientation in time. Such patients have minor impairments in the field of social activity. Patients take full care of themselves.

People with mild dementia (CDR-1) had moderate memory loss (especially in relation to current events), affecting daily activity. The patients had moderate time disorientation, moderate problem-solving difficulties, and needed to be encouraged to act at this stage of dementia.

The EEG recorded activity with sharp peaks in the form of single waves, including acute wave—slow wave, spike-and-wave, or polyspike-and-wave complexes. The spatial distribution of these waves was different. Bilaterally synchronous paroxysmal activity is also indicative of dementia. The ratio of rhythms on the EEG was as follows: delta — 24%, theta — 27%, alpha — 14%, beta-1 — 19%, beta-2 — 16%.

Depression is the most common comorbid disorder seen in individuals with epilepsy. These patients face many psychosocial problems throughout their lives [7]. The effects of anticonvulsant drugs, including the neurobiology of epilepsy itself, significantly affect the etiology of depression in people with epilepsy. Such patients have a significantly increased risk of suicidal thoughts and ideas about suicide. A decrease in the quality of life also leads to mood disorders and, as a result, to depression.

An analysis of the data of 60 people using HDRS showed that mild depressive disorders were observed in 24 (40%) people, moderate — in 16 (27%), and severe depressive disorders — in 20 (33%) patients (Fig. 4).

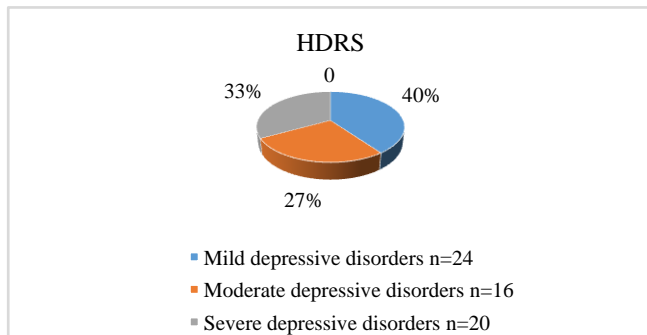


Figure 4. HDRS scale data analysis

There was a tendency to desynchronization, an increase in beta activity (15-20 Hz) mainly in the frontocentral and parietal leads, more often on the right on the EEG. The dominant rhythms were beta with delta components — 15%, theta — 16%, alpha — 18%, beta-1 - 41%, beta-2 — 21%.

4. Conclusions

1. This study shows the polymorphism of nonpsychotic psychiatric disorders associated with the diagnosis of epilepsy. Premorbid conditions often worsen, and their impact on the patient's health and quality of life becomes the most significant compared to epilepsy.
2. It was determined that with an increase in the duration of the disease in young patients with focal seizures, the negative affective and personal components of the response to the disease in the form of neurasthenic, melancholic, apathetic and egocentric manifestations become very acute. Most of the patients had an organic personality disorder. There were also mild and moderate cognitive disorders, including dementia. The weakening of cognitive functions correlates with a decrease in the presence of fast-wave activity in the frontal and parietal regions of the brain ($r = 0.45$; $p < 0.05$).
3. Mild depressive disorders prevailed in young men. The depth of depression correlated with the duration of the disease ($r = 0.39$; $p < 0.05$), introversion ($r = 0.33$; $p < 0.05$), age ($r = 0.29$; $p < 0.05$) and polytherapy ($r = 0.53$; $p < 0.05$).

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