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Focus laterality and interictal psychiatric disorder in temporal lobe epilepsy

Vladimir V. Kalinin *, Dmitriy A. Polyanskiy

Department of Brain Organic Disorders and Epilepsy of Moscow Research Institute of Psychiatry of Ministry of Health, Russia

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ABSTRACT

The current study was carried out in order to find the possible associations between foci laterality and kind of prevailed psychopathological disorder in patients with temporal lobe epilepsy (TLE). One hundred and ten patients with TLE (40 men and 70 women) were included into the study. Among all studied patients the left-focus activity was detected in 67 patients, right-sided foci—in 43 patients. No relationships between chronology variables of epilepsy (age, age at epilepsy onset, epilepsy duration) and different subtypes of psychopathology in studied patients were revealed. Diagnosis of organic affective disorder was observed more frequently in patients with right-sided foci, while diagnosis of organic anxiety disorder—in patients with left-sided foci ($\chi^2 = 7.0$, $p = 0.0081$; Fisher's exact test $p = 0.018$). The comparison of dysphoric disorder with anxiety or affective disorder could not reveal any statistically significant association with focus laterality. Obtained results are discussed in terms of association between the different subtypes of studied psychiatric disorders and foci laterality in patients with TLE.

1. Introduction

Concomitant psychopathological states such as affective and personality disorders seem to be the most frequent comorbid psychiatric pathology among patients with temporal lobe epilepsy (TLE). Despite their frequent prevalence that achieves about 8–50% among patients with epilepsy[1–5] the data on the type of affective disorder in relation to focus laterality in temporal lobe epilepsy remain obscure and rather controversial.

Thus, Flor-Henry[6] was the first who showed the more frequent occurrence of depressive disorder in the right focus, while psychoses with schizophrenic symptoms in the left-sided focus in temporal lobe epilepsy. On the other hand, Kanner[5] rejected any relation between focus laterality and depression development, while according to Schmitz[7,8] the opposite rule is true, and depression in epilepsy has occurred more frequently in patients with left temporal foci. In addition, Schmitz has stressed that left temporal focus with hypofunction of frontal lobes seems to be *conditio sine qua non* for development of interictal depression in epilepsy.[7,8]

Data on anxiety disorder in relation to focus laterality in patients with TLE are not less complicated than information on depression.[9–11] Thus, according to findings by Dobrochotova and Bragina, depression more frequently prevails in patients with right-sided foci while in patients with left-sided foci, as a rule, more frequently anxiety occurs than depression.[10] Here should be stressed that these results[10] were obtained analyzing the aura semiotics in patients with epilepsy and cerebral tumors, and in this context these data may be not properly comparable with mentioned above findings since data obtained in patients rather with depression or anxiety states in interictal period are required. Interestingly, the results by Altshuler et al.[11] obtained on patients with TLE in interictal period are consistent with mentioned above paradigm. In their study anxiety disorders were registered more frequently in patients with left than right-sided focus epilepsy.[11] Devinsky and D'Esposito in this context indicated that in cases with left-sided focus anxiety is developing more frequently simultaneously with depression, while in right-focus epilepsy isolated depression appears more frequently.[12]

Dysphoric mood or dysphoria continues to be rather the prerogative of epilepsy in terms of specific and most frequent affective disorder. This syndrome is known in psychiatry since works by Kraepelin and Bleuler and includes a pleomorphic pattern of symptoms including such affective symptoms as prominent irritability intermixed with euphoric mood, fear, anxiety, as well as anergia, pain and insomnia.[13,14] Blumer has offered a special diagnostic category for patients with persistent dysphoric mood in epilepsy, and called it "Interictal dysphoric

* Corresponding author at: Head of Department, Moscow Research Institute of Psychiatry of Ministry of Health, 3, Poteshnaya str., 107076 Moscow, Russia. Tel.: +7 495 963 76 37; fax: +7 495 963 76 37.
E-mail addresses: doct.kalinin@mail.ru, research-kalinin@yandex.ru (V.V. Kalinin).

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Table 1
Chronology variables in different subtypes of psychopathology in studied patients with TLE

Diagnosis	Age of patients	Age at epilepsy onset	Epilepsy duration
Organic affective disorder	32.86 ± 9.03	14.21 ± 10.69	18.64 ± 8.61
Organic anxiety disorder	34.18 ± 12.21	18.05 ± 9.08	15.91 ± 11.48
Interictal dysphoric disorder	32.22 ± 12.41	15.24 ± 12.62	16.97 ± 10.10
Mild cognitive impairment	32.68 ± 12.39	12.68 ± 9.96	19.98 ± 10.71
Personality disorder due organic causes (epilepsy)	31.75 ± 6.52	14.25 ± 8.55	17.5 ± 8.03

No statistically significant differences were obtained between groups.

disorder", although that category unfortunately has not been included in DSM-IY or ICD-10.[14] Unlike the sadness, the dysphoric mood has outward vector of blame that is directed to surroundings of patient. In addition it may be accompanied by symptoms of anger, gloomy affect, fury, hostility and aggression with destructive deeds.[15]

Understanding of relationship between personality in epileptic patients and foci laterality is not less ambiguous.[16–18] The prominent personality characteristics including viscosity, excessive religiosity, hypergraphia and other epileptic features have been observed more frequently in patients with left-sided focus in study by Brandt et al.[16] On the other hand, in study by Bear and Fedio[17] no differences between left and right foci in viscosity values have been observed, although the majority of authors confirmed the higher level of viscosity in patients with left-sided foci.[18,19]

If the left focus determines both affective and personality disorder, then the relationship between them may be presumed. Along with this the duration of epilepsy in relation to personality disorder and cognitive deterioration should also be taken into account.[20–23]

2. Objective

The current study was carried out in order to find the possible effect of foci lateralization and epilepsy duration on kind of psychiatric disorder with emphasis on interictal affective and anxiety in patients with temporal lobe epilepsy.

3. Material and methods

The study has been carried out on 110 patients with TLE. Among all studied patients were 40 men and 70 women. The focus laterality was detected strictly by visual EEG-method, and data on ictal semiotics have not been used for this purpose. The left-sided foci were detected in 67 patients, right-sided foci—in 43 patients. The symptomatic form of TLE was diagnosed in 12 men and 36 women, cryptogenic form—in 28 men and 34 women, respectively.

Psychiatric assessment was performed in order to set strictly one of the next psychiatric diagnostic categories in accordance with ICD-10: (1) organic affective disorder (F06.3) (14 patients); (2) organic anxiety disorder (F06.4) (55 patients); (3) mild cognitive impairment (F06.7) (44 patients); (4) personality disorder due organic causes (i.e. epilepsy) (F07.0) (66 patients).

Along with above-mentioned ICD-10 criteria the diagnosis of "Interictal dysphoric disorder" also was used. Principally, the concomitant existence of dual diagnostic category per one patient was allowed, including one affective and one personality or cognitive disorder. All psychiatric categories primary were diagnosed based upon psychiatric interview, and physician (D.P.), who performed this interview, was blind to EEG findings. In addition the Hamilton Rating Scale for Depression[24] and Hamilton Rating Scale for Anxiety[25] also were used for assessment of degree depression and anxiety, respectively. The cutoff scores for depression and anxiety in the current study were 15 points for depression and 14 points for anxiety. In cases of both affective and anxiety symptoms, the final diagnostic decision was dependent on prevailed psychopathology.

The data on age of patients and epilepsy onset were also obtained and included in the final analysis.

4. Statistics

All data were processed by Statistica program (6th version) on personal computer. χ^2 statistics was used in to find the possible discrepancies between diagnostic subgroups in relation to focus laterality.

In addition the means of such variables as age of patient, age at epilepsy onset and epilepsy duration in different diagnostic subgroups were also analyzed using *t*-test.

5. Results

The main results are listed in the next several tables. Table 1 contains so-called chronology variables of epilepsy in different subtypes of psychopathology in studied patients. As can be seen no statistically significant discrepancies in chronology variables between different diagnostic subgroups were obtained. It implies that studied chronology variables have no relationship with development of mentioned diagnostic categories in patients with epilepsy.

In Table 2, relationship between foci laterality and development of organic affective disorder or organic anxiety disorder is shown. As can be seen, a category of organic affective disorder was observed more frequently in patients with right-sided foci, while diagnosis of organic anxiety disorder—in patients with left-sided foci. Fisher's exact test ($p = 0.018$) and χ^2 statistics ($\chi^2 = 7.0$ $p = 0.0081$) detected statistically significant discrepancies between patients with diagnosis of organic affective disorder (organic depression) and diagnosis of organic anxiety disorder. The odds ratio ($\omega = 4.6$) indicates that patients with left-sided foci are on average five times more frequently to have diagnosis organic anxiety disorder than diagnosis of organic affective disorder, compared with patients, who have right-sided foci. On the contrary, the probability for organic anxiety disorder development in patients with right-sided foci is five times lesser than for organic affective disorder.

Table 2
Focus laterality in patients with organic depression and organic anxiety

Psychopathological disorder	Left-sided focus	Right-sided focus	Total
Organic depression	6	11	17
Organic anxiety	35	14	49
Total	41	25	66

$\chi^2 = 7.0$, $p = 0.0081$; Fisher's exact test two-tailed $p = 0.0184$; odds ratio $\omega = 4.6$.