The association between epilepsy, aggression and violence has been a subject of debate for decades. Early epidemiological studies reporting an increased incidence of epileptic patients among prisoners and delinquents have promoted the opinion that epileptic patients show aggression and tend to express violent behavior more frequently than the general population [1,2]. This belief has further been strengthened by descriptions of bizarre and stereotypical behaviors during certain types of epileptic seizures, especially seizures originating in the frontal lobe, as well as by the not infrequent use of epilepsy as a defense strategy for crime perpetrators.

In the 1990s this widely held opinion gradually lost its popularity among experts after several large trials had demonstrated that aggressive phenomena, including completely destructive acts, might be induced by epileptic seizures. However, they are extremely rare [3].

The results of a recent large Swedish population study reported by Fazel and colleagues in 2011 show that epilepsy does not increase the risk of criminal offences [4]. The relationship between convictions for violent crime and previously established diagnoses of epilepsy and traumatic brain injury was studied on a sample that comprised the whole Swedish population followed from 1973 to 2009. The study included 22,947 people with epilepsy. The prevalence of convictions for violence was significantly higher in people with the diagnosis of epilepsy (4.2%) compared with the general population (2.5%) (OR = 1.5, 1.4-1.7). However, this significance was lost when individuals with epilepsy were compared with their healthy siblings, which suggests that the initial significance was influenced by genetic and/or early environmental factors and not epilepsy per se.

Yet, in spite of the evidence that violence during and between epileptic seizures is rare, negative stereotypes about epilepsy are still prevalent [5]. There is a common misbelief that aggression and violence are possible or likely during seizures and that individuals with epilepsy are dangerous and potentially violent, which increases stigmatization and discrimination of these patients.

Aggression and Epileptic Seizures

With regard to the time of occurrence, aggression in persons with epilepsy can occur during a seizure (ictal), before and after a seizure (periepileptic: pre-and postictal), and between seizures (interictal) [6].

Ictal Aggression

Ictal aggression is very rare. Literature data about ictal aggression are sparse and based mainly on reports of individual patients with frontal or temporal epileptic lesions [7-10].

In a large clinical series that included 5400 patients with epilepsy, aggressive behavior was recorded in 19 patients, and violent behavior during a seizure was observed in 13 [3]. In most cases aggression and violence during ictal electroencephalographic (EEG) discharges (ictal aggression) was non-motivated and unplanned, and in none of the cases was it associated with purposeful movements. In some cases, the patients demonstrated defensive aggression during another person’s attempts to calm them down during or immediately after the seizure. Direct (directed) ictal aggression was extremely rare.

When aggressive behavior is a feature of an epileptic seizure, an aggressive act must be accompanied by typical characteristics of a seizure: a seizure starts suddenly without provocation, lasts a short time (1-3 minutes) and ends abruptly with a violent act which manifests in the context of impaired consciousness with consequent amne-
Abbreviations

PIP – postictal psychosis
EEG – electroencephalographic

Industrial aggression (following the seizure cessation), with a sudden onset of a lucid interval (period lasting several hours or days characteristically after cluster seizures, after a lucid interval, has been documented so far [11].

Preictal Aggression

During the prodromal phase (several minutes, hours or days before the onset of seizure) some non-specific psychological changes may occur in the form of irritability, anxiety, depression, dysphoria, aggression, etc., which vary in intensity and cease with the seizure onset. Directed aggression is possible; however, behavior in this period is not a part of epileptic seizure.

Postictal Aggression

Postictal aggression is more frequent than ictal aggression. Episodes of postictal aggression last longer, the behavior is out of the person’s character and there is usually amnesia for the event. Postictal aggression may occur during the postictal automatism or it may be a part of the postictal confusion state, and these two conditions may co-occur. The patients are confused, their behavior is inappropriate, sometimes aggressive, and more aggressive while others attempt to calm them down (defensive aggression). Significant violence in this period is rare.

Postictal aggression may occur during postictal psychosis (PIP). Definite incidence and prevalence of PIP is not known, it is estimated to occur in the range from 6% to 10% of patients with epilepsy [12,13] and in 18% of patients with pharmacoresistant focal epilepsy [14]. Generally accepted criteria for the diagnosis of PIP were established by Logsdail and Toone in 1988 [15]. PIP occurs characteristiclly after cluster seizures, after a lucid interval (period lasting several hours or days after the seizure cessation), with a sudden onset of a concreteness of a seizure has been documented so far [11].

Interictal Aggression

Aggression and violence are much more common outside (between) epileptic seizures, and even then the association with epilepsy is questionable. Aggression which is not associated with a seizure is typically manifested as directed and socially understandable aggression – it is purposeful, coordinated and not stereotypical. Recovery is fast and there is no confusion. This aggression is often influenced by some events from the person’s surroundings, although the trigger-factor is not always easily perceptible and may last longer (several minutes or longer). Adverse effects of drugs and combined intoxication may lower the threshold of frustration tolerance, and impaired memory is often a consequence of affect and not of epileptic seizure.

A significant risk factor for interictal aggression is the presence of a structural brain damage. Trauma and encephalitis are associated with a higher incidence of epilepsy; however, a causal relationship between epilepsy and interictal aggression has not been established [18]. Lesions of the frontal region, left hemisphere and limbic system are also in a positive correlation with interictal aggression [19]. Pre-disposing factors for aggressive behavior include cognitive disturbances which frequently accompany brain injuries [20]. Aggressive disposition is found particularly in young men of lower socioeconomic status and educational level and of lower level of intellectual functioning with long-term behavioral problems, whereas epilepsy has not been proved to be a risk factor for aggressive behavior [21].

In addition, aggression may be influenced by interictal psychopathology; and comorbidity, in the sense of more frequent affective and schizophrenic disorders in individuals with epilepsy, is significant. Interictal aggression may be viewed in the context of antisocial personality disorder resulting from a difficult psychosocial background of the epileptic patient.

Conclusion

Aggressive behavior may occur in different social circumstances and patients with epilepsy are...
not immune to the possibility of being involved in an aggressive act. Although certain epidemiological studies report that epilepsy is twice or four times more frequent among prisoners than in the general population, its prevalence is the same as in the subpopulation with lower socioeconomic status. There is no evidence that aggression and violence are more frequent among epileptic patients compared to people without epilepsy, and there is no evidence that violence is more frequent in patients with temporal lobe epilepsy compared to patients with other types of epilepsy. Ictal aggression is extremely rare, stereotypical, defensive and non-directed. The association between violence, aggression, and epilepsy is multifactorial; they may co-occur in one person without affecting one another.

References

5. Kate Collins TB, Camfield PR, Camfield CS, Kay L. People with epilepsy are often perceived as violent. Epilepsy Behav 2007;10:69-76.

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