



Current psychiatric disorders in patients with epilepsy are predicted by maltreatment experiences during childhood



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ABSTRACT

Purpose: Childhood maltreatment has been shown to be a risk factor for the development of psychiatric disorders. Although the prevalence of psychiatric disorders is high in epilepsy patients, it is unknown if childhood maltreatment experiences are elevated compared to the normal population and if early maltreatment is a risk factor for current psychiatric comorbidities in epilepsy patients. This is the main purpose of this study.

Methods: Structured interviews were used to assess current Axis I diagnoses in 120 epilepsy patients from a tertiary Epilepsy Center (34 TLE patients, 86 non-TLE patients). Childhood maltreatment in the family and peer victimization were assessed with validated questionnaires. Patients' maltreatment scores were compared with those of a representative matched control group. Logistic regression analysis was conducted to assess the potential impact of childhood maltreatment on current psychiatric comorbidity in epilepsy patients.

Results: Compared to a matched control group, epilepsy patients had higher emotional and sexual maltreatment scores. Patients with a current psychiatric diagnosis reported more family and peer maltreatment than patients without a psychiatric disorder. Family maltreatment scores predicted the likelihood of a current psychiatric disorder. TLE patients did not differ from non-TLE patients according to maltreatment experiences and rates of current psychiatric disorders.

Conclusion: Our findings suggest that in epilepsy patients emotional and sexual childhood maltreatment is experienced more often than in the normal population and that early maltreatment is a general risk factor for psychiatric comorbidities in this group.

1. Introduction

Several studies have reported elevated rates of psychopathological symptoms and high prevalence rates of psychiatric disorders, specifically mood and anxiety disorders, in patients with epilepsy (Adams et al., 2008; Quiske et al., 2000; Reuber et al., 2004; Swinkels et al., 2001; overview in Kanner et al., 2012). Although epilepsy-related factors, such as seizure type or frequency (Thapar et al., 2009, 2005), epilepsy duration (Brandt et al., 2010; Gonçalves and Cendes, 2011) or age of onset (Baker et al., 2001) were discussed as being related to psychopathology in epilepsy patients, these associations were not found consistently (Gandy et al., 2013; Mensah et al., 2007; Vujisić et al., 2014). Previous studies involving patients with different psychiatric disorders delivered evidence, that early and ongoing life adversities, such as childhood maltreatment, are a crucial risk factor for the development of psychopathology throughout life (Carr et al., 2013;

Dannowski et al., 2012; Li et al., 2016; Waxman et al., 2014). However, research on early maltreatment experiences in epilepsy patients is rare. To date it is unexplored whether or not early maltreatment is a predisposing factor for the development of psychiatric disorders in epilepsy patients. Kaplan et al. (2013) and Proença et al. (2011) assessed maltreatment in patients with non-epileptic psychogenic seizures using the Childhood Trauma Questionnaire (CTQ). They included patients with epilepsies as a comparison group (82 patients with non-specified epilepsies in Kaplan et al., 20 TLE patients in Proença et al.). Confirming their hypotheses, Kaplan et al. (2013) as well as Proença et al. (2011) found higher rates of maltreatment experiences in patients with psychogenic non-epileptic seizures than in epilepsy patients. However, the reported maltreatment rates in epilepsy patients seemed also to be high. In another study, Lee et al. (2015) showed that epilepsy patients who perceived their seizures to be stress-triggered reported significantly more emotional abuse and a trend toward higher rates of

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Table 1
Characteristics of the whole patient group and the TLE- and non-TLE subgroup.

	All patients (n = 120)	TLE patients (n = 34)	Non-TLE patients (n = 86)	Control subjects (n = 120)
Sex	57 ♀, 63 ♂	17 ♀, 17 ♂	40 ♀, 46 ♂	57 ♀, 63 ♂
Age, M (SD)	35.42 (13.86)	38.24 (12.94)	34.30 (14.12)	35.42 (13.86)
Years of school education, M (SD)	10.23 (1.52)	9.94 (1.28)	10.34 (1.60)	10.08 (1.33)
Age of onset, M (SD)	16.96 (12.51)	18.97 (13.35)	16.16 (12.14)	
Years of epilepsy duration, M (SD)	18.44 (14.35)	19.27 (14.49)	18.12 (14.36)	
Number of seizure types, M (SD)	2.05 (.72)	2.06 (.74)	2.05 (.72)	
Seizure frequency, % (n)				
daily weekly	21.7 (26)	14.7 (5)	24.4 (21)	
monthly	34.2 (41)	32.4 (11)	34.9 (30)	
yearly	21.7 (26)	23.5 (8)	20.9 (18)	
none within the last year	16.7 (20)	20.6 (7)	15.1 (13)	
	5.8 (7)	8.8 (3)	4.7 (4)	

sexual abuse on the CTQ compared to those patients without stress-triggered epileptic seizures. Studies which compare maltreatment rates of epilepsy patients with those of the general population are missing. Additionally, it is still unknown whether or not current psychiatric comorbidities are associated with early maltreatment in epilepsy patients.

Some (Perini et al., 1996; Quiske et al., 2000), but not all (Adams et al., 2008; Swinkels et al., 2001) studies on psychopathology in patients with epilepsy report TLE patients to be at a higher risk for having psychiatric comorbidities compared to patients with other kinds of epilepsies. The increased risk in TLE patients to develop psychiatric comorbidities has been discussed as a result of the high sensitivity of limbic areas towards stress-induced dysregulations of the hypothalamus-pituitary-adrenal axis (HPA) (Koe et al., 2009). HPA dysregulations fostered by early life stress, such as maltreatment, are considered fundamental for the development of psychiatric disorders (Tofoli et al., 2011). Human studies have demonstrated HPA dysregulations due to childhood maltreatment to be accompanied by structural and functional brain changes in limbic areas (Teicher et al., 2011, 2002). HPA dysregulations are also discussed as being associated with the occurrence of epileptic seizures and epileptogenesis in animal studies. Induced HPA hyperactivity promotes both, epileptogenesis, e.g., due to accelerated amygdala kindling, and depression-like symptoms in rats (Mazarati et al., 2009). Animal studies also show that exposure to early life stress (e.g., induced by maternal separation) increases the risk of developing epilepsy, in particular TLE (Ali et al., 2013; Koe et al., 2014; Salzberg et al., 2007). Those results suggest that epilepsy and psychopathology might share common pathogenic mechanisms, maybe specifically linked with stress-induced alterations within the temporal lobes (see also Jones and O'Brien, 2013). However, human studies that investigate whether there is a specific association between early maltreatment and psychopathology in TLE compared to other kinds of epilepsies are missing.

In this study, we investigated maltreatment experiences and peer victimization during childhood and adolescence in a large sample of patients seeking inpatient treatment in a German tertiary Epilepsy Center. We compared the childhood maltreatment rates of the epilepsy patients with those of an age- and gender-matched sample from the general population. We further assessed current psychiatric disorders in the epilepsy patients using a structured clinical interview to test whether current psychiatric comorbidity is predicted by early maltreatment experiences. Additionally, we aimed at studying whether patients with TLE were specifically prone to maltreatment and/or psychiatric disorders compared to non-TLE patients. We hypothesized that patients with epilepsy report more maltreatment experiences during childhood and adolescence compared to the control group. Analogous to patients with psychiatric disorders but without epilepsy, we assume that epilepsy patients with a current psychiatric comorbidity experienced more maltreatment compared to patients without psychiatric comorbidity.

Also comparable to findings in psychiatric patient groups, we hypothesize that the experience of early maltreatment is a predictor for the presence of a current psychiatric disorder in epilepsy patients. Based on the findings suggesting that psychiatric disorders and epileptogenesis may share common neurobiological mechanisms in the temporal lobe, it is conceivable that TLE patients report higher rates of maltreatment experiences and/or psychiatric comorbidity compared to patients with other types of epilepsy.

2. Material and methods

2.1. Epilepsy patients

Patients were recruited from March through November of 2011 at the Epilepsy Center Bethel, Krankenhaus Mara, Germany, a large tertiary referral center specializing in inpatient treatment of patients with difficult-to-treat epilepsies. During this period, epilepsy patients who were electively admitted to the hospital for at least seven days were asked to take part in this study. The overall response rate was 59%. The non-responders (n = 83) did not differ according to age (non-responders' mean = 36.53 years; SD = 13.86, $t = 0.57$, $p = 0.571$) and sex distribution (42 women [51%] and 41 men [49%], $\chi^2 = 0.085$, $p = 0.770$) from the participants in this study.

For the purpose of this study, we included patients admitted for the non-surgical treatment of their epilepsy, with age ≥ 18 years, no epilepsy surgery within the last 2 years, no documented intellectual disability (IQ > 70), fluent German language abilities, and absence of psychogenic non-epileptic seizures. We report the results from 120 patients who fulfilled the inclusion criteria and who underwent the full diagnostic procedure of this study. Epilepsy diagnoses were made by experienced epileptologists based on history including ictal and/or interictal EEG recordings, high-resolution MRI scanning and seizure semiology. Thirty-four patients suffered from TLE (see Table 1). The remaining 86 patients had extratemporal epilepsies (n = 23), multilobar epilepsies (n = 26), unknown focal epilepsies (n = 17), idiopathic generalized epilepsies (IGE; n = 12), or unclassifiable epilepsies (n = 8). Epilepsy-related and demographic characteristics are summarized in Table 1. There were no significant differences according to age, years of school education, age of epilepsy onset, epilepsy duration, number of seizure types (all $t \leq 1.43$, all $p \geq 0.162$) and sex distribution ($\chi^2 = 0.12$, $p = 0.730$) between the TLE and the non-TLE patients. TLE and non-TLE patients also did not differ according to the frequency distribution of patients within each seizure frequency category (all $\chi^2 \leq 1.42$, $p \geq 0.233$).

2.2. Selection of matched control subjects for the CTQ analyses

Klinitzke et al. (2012) and Iffland et al. (2013) selected a representative sample in terms of gender, age, and education from all

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