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Seizure precipitants (triggering factors) in patients with epilepsy

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ABSTRACT

Aim: adult epilepsy clinic population: (a) to identify the frequency of seizure precipitants (triggering factors) and their relative frequency in those with psychiatric disorders, and in those in remission or with active epilepsy, differences in frequency with regard to gender, seizure duration, number of drugs taken; (b) to determine which precipitants patients most commonly report; and (c) to identify differences in the distribution of precipitants among generalized, temporal, and extratemporal epilepsies.
Methods: Consecutive patients attending a tertiary-care epilepsy clinic were prospectively and an open personal interview to identify and characterize seizure precipitants. Information about the epilepsy and clinical characteristics of patients was collected during the interview and from medical records.
Results: Of 104 patients, 97% cited at least one precipitant. Stress, sleep deprivation, and fatigue were the most frequently reported precipitants. Patients with psychological comorbidities reported a greater percentage of seizures with seizure precipitants. Patients with idiopathic generalized epilepsy seemed to be more sensitive to seizures during awakening and sleep deprivation, patients with extratemporal epilepsy reported more frequent seizures during sleep. There were no differences in frequency or type of seizure precipitants with regard to gender, seizure duration or frequency, and the number of antiepileptic drugs taken.
Conclusion: The findings may have implications for the better management of epilepsy by increasing a focus on nonpharmacological therapy. The implications of the findings for nosology and causation of epilepsy are also briefly discussed.

1. Introduction

Studies in general epilepsy populations show that up to 91% of patients with epilepsy can identify at least one seizure precipitant [1–4]. It has also been suggested that there may be differences in the distribution of these precipitants among different types and characteristics of epilepsy [2,5] and in those with psychiatric comorbidity. It has been claimed that a better knowledge of seizure precipitants would improve our understanding of the mechanism of seizure genesis and support the use of nonpharmaceutical approaches to seizure management, especially for people with poorly controlled epilepsy.

This study was, therefore, undertaken (a) to identify the prevalence of seizure precipitants in an adult hospital specialized epilepsy clinic population and their frequency in those with psychiatric disorders, in those in remission or with active epilepsy, or differences in frequency with regard to gender, seizure duration, and number of drugs taken; (b) to determine which precipitants patients most commonly report; and (c) to identify differences in the distribution of precipitants among generalized, temporal, and extratemporal epilepsies. The study was prospective in consecutive patients. As this was based in a specialized epilepsy clinic, the patients were well documented and categorized, and to ensure comprehensive evaluation, data were collected in all cases through questionnaires and an interview.

2. Participants and methods

This was a prospective study of consecutive patients, attending to the epilepsy out-patient clinic of one of the authors (SDS) at the National Hospital for Neurology and Neurosurgery, London, from April to September 2011, who gave consent and met the following criteria: (i) aged 18 years or above, (ii) able to fill in a questionnaire, and (iii) with a confirmed diagnosis of epilepsy. Type and frequency of seizures, age at onset and duration of epilepsy, psychiatric comorbidities, and current medication were obtained from the personal interview and from the medical record.

A questionnaire listing seizure precipitants was personally administered to the participants by one of the authors (MF). After completing the questionnaire, the patients were also interviewed personally (by MF) and were asked a series of open questions to identify additional precipitant factors not included in the questionnaire lists and for additional comments or description in a neutral (nondirective) manner. The questionnaire listed the following precipitant factors: stress; emotions; sleep deprivation; seizure during sleep; seizure

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Table 1
Clinical characteristics of patients.

	No. of subjects (%)
Gender	
Male	50 (48%)
Female	54 (52%)
Median age, year (range)	41 (18–72)
Median duration of epileptic history, year (range)	22 (3–59)
No. of current antiepileptic drugs	
1	36 (35%)
2	43 (41%)
3	17 (16%)
4	8 (8%)
Seizure frequency[a]	
Daily	8 (8%)
Weekly	25 (24%)
Monthly	29 (28%)
Yearly	15 (43%)
SF > 1 year	26 (25%)
Diagnosis	
TLE	41 (39%)
HS	14 (13%)
Structural	10 (10%)
Unknown	17 (16%)
Extratemporal	29 (28%)
Structural	17 (16%)
Unknown	12 (12%)
IGE	27 (26%)
Other generalized or multifocal	7 (7%)

[a] 1 missing data.
Abbreviations: No: number; SF: seizure free; TLE: temporal lobe epilepsy; HS: hippocampal sclerosis; IGE: idiopathic generalized epilepsy 7.

during awakening; fatigue; alcohol; menstrual cycle; fever; intercurrent illness; general illness; poor compliance with antiepileptic therapy; other drugs; toxin or illicit drugs; foods or dietary changes; sexual intercourse; pain; visual stimuli; tactile stimuli; auditory stimuli; olfactory stimuli; and complex stimuli like reading, eating, and memory. For every factor, we asked patients to indicate what percentage of all their seizures could be related to that factor. The questionnaire lists had been previously developed in a pilot study based on an interview and then validated in a small pilot population. This combination of checklist questionnaire and interview gave, in our opinion, the most accurate and comprehensive data quality. Psychiatric comorbidity was identified and classified on the basis of a clinical interview by an experienced neuropsychiatrist.

The distribution of reported precipitants was determined both within and across populations and by epilepsy type. The significance of observed differences between groups was determined using χ^2 and regression analysis. These values were calculated using SPSS for Mac 20 Standard Version (SPSS Inc., Chicago, IL, USA). A p value < 0.05 was considered statistically significant.

3. Results

A total of 104 (50 males and 54 females) patients were interviewed. Clinical characteristics of patients are shown in Table 1. Fig. 1 shows the overall distribution of precipitants. Stress, sleep deprivation, fatigue, and poor compliance with AED treatment were the most frequently reported precipitants (82%, 71%, 68%, and 54%, respectively).

A total of 28% of the patients claimed to have 100% of their seizures related to some precipitant factors. There were 33%, 16%, 12%, and 9% who reported the presence of some precipitant factors in 75% to 99%, 50 to 75%, 25 to 50%, and less than 25% of their seizures, respectively. Only 3% of the patients reported no precipitant factors. Patients reporting that all their seizures were related to precipitant factors were more frequently affected by seizures during sleep (31%), stress (24%), and sleep deprivation (21%).

Among complex stimuli or activities, spontaneously reported as precipitant factors during the open-question interviews, watching television and working at a computer were the most common, which were both present in 7% of the patients.

The proportion of provoked seizures was no different between patients with active epilepsy and patients seizure-free for more than 1 year.

There were no differences in frequency or type of seizure precipitants with regard to gender, seizure duration or frequency, and the number of antiepileptic drugs taken.

Psychological comorbidities were present in 23% of the patients (depression in most cases), and these patients more frequently claimed to have >50% of provoked seizures (95% vs. 75% of the patients without psychological comorbidities, $p = 0.04$); however, this difference was significant only in the univariate and not in the multivariate analysis. These patients were not more likely to identify stress and emotions as precipitant factors.

Analyses of precipitant factors in patients with generalized, temporal, or extratemporal lobe epilepsy revealed some differences in the distribution of these factors between epilepsy syndromes (Table 2). Stress was less commonly a precipitant factor in temporal lobe epilepsy ($p < 0.05$). Patients with generalized epilepsy were more sensitive to

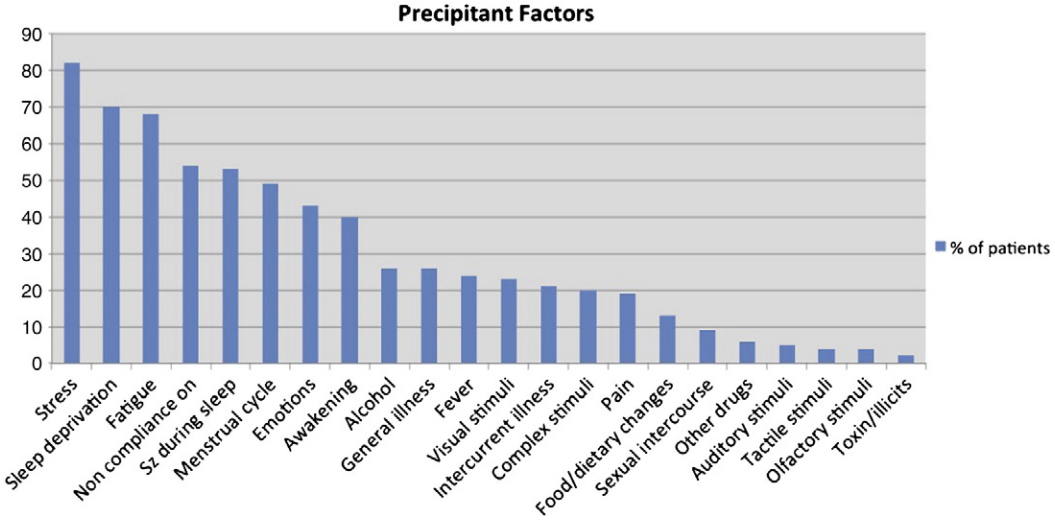

Fig. 1. Overall distribution of precipitants in the study population.