ORIGINAL ARTICLE

Self-perceived seizure precipitants among patients with epilepsy in middle-belt Nigeria

EO Sanya, K Mustapha[1], A Ademiluyi, A Bello, O Alaofin

Department of Medicine, University of Ilorin Teaching Hospital, Ilorin, [1]Department of Medicine, Ladoke Akintola University of Technology Teaching Hospital Osogbo, Osun, Nigeria

Abstract

Aim: Patient's perception of seizure precipitant is crucial in epilepsy management, but it is often overlooked by physicians. This may be due to neglect and underestimation of its importance. This study looked at frequency and nature of self-perceived seizure precipitants among patients with epilepsy.

Materials and Methods: A close-ended questionnaire-based study. Patients with active epilepsy (≥2 attacks/year) were recruited from the neurology clinic of the University of Ilorin Teaching Hospital (UITH), Ilorin.

Result: A total of 89 patients participated in the study and of these 41 (46.1%) were males. Their median age was 30 (21-52) years and median age at seizure onset was 22 (15-46) years. The median seizure duration was five (2-14) years. More patients (46.1%) had less than secondary school education and 12 (13.5) were uneducated. Generalized epilepsy was the predominant (68.6%) seizure type. A total of 33 (37.1%) subjects had ≥4 attacks/year, 29 (32.6%) had 5-12 attacks/year, and 27 (30.3%) >12 attacks/year. A total of 16 (18%) subjects did not mention any seizure precipitant, whereas 73 (82.2%) reported at least one specific seizure precipitant; of these, 62 (85%) patients reported ≥2 precipitants. Stress (41%), inadequate sleep (27%), and head trauma (26%) were the three leading seizure precipitants mentioned. Subject's age, sex, level of seizure control, and place of abode did not influence reported seizure precipitants. However, the more educated (>12 years education) patients significantly reported stress as seizure precipitant ($P < 0.05$). Most (80%) patients rightly indicated that antiepileptic drug was the best treatment for their seizure control.

Conclusion: The result of this study showed that the leading perceived seizure precipitants among epilepsy patients attending the neurology clinic of UITH were stress, inadequate sleep, head trauma, and demonic attacks and spells.

Key words: Perceived-seizure-precipitant- epilepsy -Nigerian

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Introduction

Epilepsy is the most common neurologic disorder in children, adults, and the elderly. It is characterized by occurrence of recurrent unprovoked seizures.[1] One major concern of people with epilepsy is the unpredictability of their seizure. Yet, publications have also shown that people with epilepsy do report that their seizures were provoked by a variety of endogenous or environmental precipitants.[2,3] Seizure trigger may be a specific facilitating or nonspecific factor that activate brain neural network to cause some functional instability and subsequent epileptiform discharges.[4] Seizure precipitants precede the onset of an epileptic attack and are considered to be a possible explanation for the attack.[5]

To effectively manage and educate people with epilepsy, doctors and healthcare professionals need objective and subjective evidence of seizure precipitants. Seizure precipitants are much more frequent in patients with active and/or intractable epilepsy. The perception of a seizure precipitant shows what patients believe triggered their seizures. However, it does not necessarily prove a causal

Address for correspondence:
Dr. EO Sanya,
Department of Medicine, Neurology Unit,
University of Ilorin, P O Box 5314 Ilorin, Kwara State, Nigeria.
E-mail: emanuelosanya@yahoo.com

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relationship more than an accidental association. Some epilepsies are more likely to be associated with seizure triggers especially idiopathic generalized epilepsy with myoclonic seizures and temporal lobe epilepsy.[2,6]

The factors that initiate epileptic seizure may be multiple with complex interactions so that it can be difficult for both patients and doctors to determine what specifically precipitates or facilitates an epileptic seizure.[7]

One previous study has shown that patients may deliberately induce seizure following knowledge of possible precipitant, whereas others consciously tried to avoid the seizure precipitants. Other patients have tried to stop their seizure from happening using inhibitory method.[8] Therefore, having the knowledge of potential seizure precipitant is important both to patients and the doctor. The belief in external seizure precipitant could influence compliance with prescribed medication and even influence health seeking behaviour and use of alternative medical therapy.[9,10] Clinically, knowing what is likely to precipitate a seizure could assist the physician in arriving at correct diagnosis and initiating appropriate medical therapy. Information regarding seizure precipitants could also be used to facilitate appearance of interictal epileptiform discharges during electroencephalogram (EEG) recordings.[11] Likewise, having a good knowledge of possible seizure initiator is vital to obtaining detailed history. This study, therefore, was carried out with the intention of understanding what patients believed precipitated their epilepsy attacks.

Materials and Methods

This was a cross-sectional observational questionnaire-based study carried out among patients with epilepsy attending the neurology clinic of the University of Ilorin Teaching Hospital (UITH), Ilorin. Ethical approval for the study was obtained from the ethics committee of the institution. Criteria for participating in the study were as follows: A diagnosis of epilepsy defined as occurrence of two or more unprovoked seizures, age ≥16 years, and active epilepsy (≥2 attacks/year).[1,2] The diagnosis of epilepsy was made on clinical grounds with or without EEG. All patients were using antiepileptic medications.

The study questionnaire contained information on age, gender, educational levels, age of seizure onset, and degree of seizure control (presence or absence of seizure in the past 12 months). It contained questions about both external and internal potential seizure precipitants such as stress, lack of sleep, menstruation, and fever. These questions were designed based on previous studies.[2,6,12]

Statistics

Data collected were analyzed using the Statistical Package for Social Sciences (SPSS) computer software (version 18). Frequency tables were generated for the variables. Means and standard deviations were determined when the variables have normal distribution and median and interquartile range if they were not normally distributed. Independent and dependent variables were cross-tabulated to examine the association and test the statistical significance with Chi-square test.

Results

A total of 89 patients participated in the study. The subjects consisted of 41 (46.1%) male and 48 (53.9%) females with median age of 30 (31-52) years. The median age of the females [41 (23-54) years] was significantly higher than that of the males [28 (21-41) years] with $P = 0.02$. Majority (53, 60%) of the patients are within the age bracket of 16-30 years. The mean seizure duration was 5 (2-14) years. A total of 12 (13.3%) patients had no formal education and 36 (40.4%) had less than secondary school education (below 12 years of education). A total of 41 (46.1%) subjects had above secondary school education (at least 12 years of education). Most subjects (83.6%) resided in urban communities with basic amenities like schools, electricity, and pipe-borne water. Generalized epilepsy was the predominant seizure type (79.1%). The frequency of seizure attack was ≤4 seizures/year in 33 (37.1%) patients, 29 (32.5%) patients had between 5-12 attacks/year and 27 (30.3%) patients had >12 attacks/year. The baseline characteristics and relevant clinical variables are presented in Table 1.

Seizure precipitants

A total of 16 (18%) patients did not mention any seizure trigger in this study. A total of 74 (82.2%) subjects indicated at least one specific seizure precipitant. The mean number of precipitants reported was 3 ± 2 (ranged; 1-13). A total of 11 (13%) patients had one seizure precipitant and 68 patients reported two or more precipitants. Stress, inadequate sleep, and head trauma were the three leading seizure precipitants. A total of 41 patients (46%) cited stress as seizure precipitant, 27 (30%) mentioned inadequate sleep, and 26 (29%) reported head trauma as seizure trigger. Three patients each, cited menstruation, prolonged reading and coffee as their perceived seizure precipitants. The three most frequently reported precipitants among the males were stress (19), fever (15) and head trauma (14); whereas among the females the three most frequently documented seizure triggers were stress, (22) inadequate sleep, (17) and demonic attacks (12) [Table 2].

Factors that influence reported seizure precipitant

Equal proportions (46% each) of male and female patients reported stress as seizure precipitant ($P = 0.3$). Although, more females (35%) compared with males (24%) indicated inadequate sleep as seizure precipitants, the difference was not statistically significant ($P = 0.08$). More males (37%)

Table 1: Demographic and clinical variables

	Number	Weighted percentage (%)
Age* (years)	30 (21-52)	
Males	28 (21-41)	
Females	41 (23-54)	
At onset of seizure (years)	22 (15-46)	
Duration of disease (years)	5 (2-14)	
Gender		
Male	41	45.6
Females	49	54.4
Place of abode		
Rural	14	14.4
Urban	76	85.6
Education		
Uneducated	12	13.5
≤Secondary school	36	40.4
>Secondary school	41	46.1
Seizure types		
Focal	29	31.4
Generalized	61	68.6
Level of seizure control		
≤4 attacks/year	33	37.0
5-12/year	28	31.5
>12/year	28	31.5

*Values given as median (interquartile range)

Table 2: Self-reported seizure precipitants by sex

Factors	Male *n*=41	Female *n*=48	Total *n*=89
Nothing	7 (17)	9 (19)	16 (18)
Stress	19 (46)	22 (46)	41 (46)
Poor/inadequate sleep	10 (24)	17 (35)	27 (30)
Trauma	15 (37)	11 (23)	26 (29)
Demonic attacks	14 (34)	12 (25)	26 (29)
Fever	15 (37)	10 (21)	25 (28)
Fatigue	12 (29)	11 (23)	23 (26)
Prolonged thinking	9 (22)	9 (19)	18 (20)
Spells	8 (20)	9 (19)	17 (19)
Hunger	8 (20)	7 (15)	15 (17)
Sudden awakening	5 (12)	10 (21)	15 (17)
Bad dream	4 (10)	10 (21)	14 (16)
Smoking	10 (24)	2 (4)	12 (13)
Change of weather	5 (12)	3 (6)	8 (9)
Alcohol	4 (10)	2 (4)	6 (7)
Television/blinking light	4 (10)	1 (2)	5 (6)
Coffee	2 (5)	2 (4)	4 (4)
Menstruation	0	3 (6)	4 (4)
Prolonged reading	1 (2)	2 (4)	3 (3)
Spicy food	2 (5)	1 (2)	3 (3)
Others	5 (12)	3 (6)	8 (9)

than females (23%) reported head trauma as seizure precipitant and the difference was not significant ($P = 0.07$). Patients with more than secondary school education (62%) reported stress as a seizure precipitant compared with those who had less than secondary school education (27%) with statistically significant difference ($X^2 = 12.3$, $P = 0.002$). The level of seizure control, patient's age, and place of residence did not influence reported seizure triggers.

Treatment option

The majority (80.2%) of patients rightly mentioned antiepileptic drugs as the best treatment option for epileptic seizure and 9.3% mentioned surgical intervention. The incorrect treatment options mentioned included prayer (53.4%), charms and amulet (4.7%) and use of antibiotics (3.5%) [Figure 1].

Discussion

The finding from this study showed that most of the patients with epilepsy that participated in this study had at least one seizure precipitant, though a small percentage did not associate their epileptic fit with any precipitant. The three most reported seizure precipitants were stress, inadequate sleep, and head trauma. Most patients with epilepsy that attended the neurology outpatient clinic in UITH Ilorin linked their seizures to at least one precipitating factor, an observation that is similar to findings from earlier publications. The frequency of reported seizure precipitating in existing literatures varies between 53-92%.[2,7] Till date, more than 40 seizure precipitants have been reported by patients.[2,4] The mean number of seizure trigger is about 3-4 per subject, and this is comparable with that of previous studies.[7,13] This observation confirms the difficulty that often arises in trying to identify what exactly provoked an epileptic fit. It is plausible that many precipitants act in concert to lower seizure threshold in susceptible individuals. On the other hand about 18% of patients did not associate their epileptic seizures with any precipitants. An observation that agrees with what had been reported, where some patients did not relate any factor as precipitating their seizure, especially in idiopathic generalized epilepsy.[8] Close to one-third of the patients studied by Sperling *et al*., did not have any specific trigger.[14]

Although it is difficult to quantify stress, it remained the most reported seizure trigger in several publications.[2,3] Emotional stressors may initiate epileptic fits especially when combined with fatigue and/or chronic sleep deficiency.[8,15] Emotional stresses such as worry, frustration, anxiety, and anger have been reported to precede seizures in more than 60% of patients.[16] The result of this study showed patients with more than 12 years of education associating stress as seizure precipitant. It is possible that the well-educated patients are engaged in jobs that put more stress on them than the less educated subjects. Marital status, level of seizure control, and place where patients reside did not influence reported seizure precipitant. The finding of a recent study that used animal model of stress found that chronic stress may increase risk of epileptogenesis, especially when the stressors are severe, prolonged, or occurred early in life.[17] Although the result from human studies are

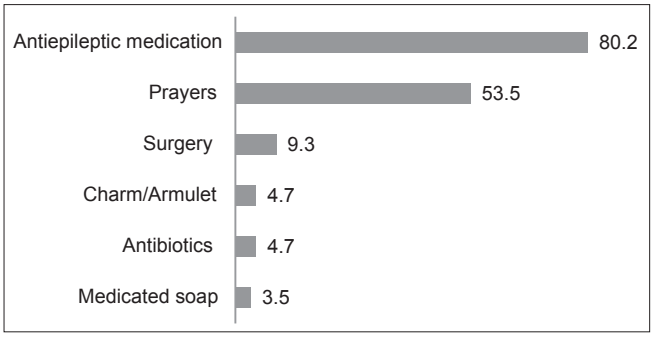

Figure 1: Best treatment options for epilepsy

inconclusive on the role of stress as trigger for epileptic seizures, life events seem to suggest that stress may trigger seizures in certain individuals.[4,8]

Insufficient sleep, trauma and fever are other seizure triggers mentioned in this study like in other publications.[2,3,15] Sleep deficiency has been shown to lower seizure threshold, doing so makes it easy to provoke epilepsy and epileptiform discharges on EEG.[11] This is the reason why patients with epilepsy are requested to have reduced sleep the night prior to EEG investigation.[11] In literature, head trauma has been associated with increased risk of seizure development with rate as high as 15% depending on age and severity of injury.[18,19] High-grade fever can trigger seizure in all age groups; however, children and elderly people are more vulnerable. Febrile illnesses caused by viral and bacterial agents may initiate seizures when patients with epilepsy have associated vomiting or diarrhea and it is due to decreased absorption of antiepileptic drugs.[7,20]

Other seizure triggers reported by this group of patients included the following: Hunger, prolonged thinking, and sudden awakening from sleep. Sudden awakening may trigger seizure in some specific epilepsy syndrome such as juvenile myoclonic epilepsy.[21] This may be more common after provoked awakening rather than spontaneous awakening.

It may be difficult to completely separate patient's perceived seizure precipitants from the prevailing social belief. In several African countries, the belief in spiritual or supernatural cause for an epileptic fit is common and widespread.[22,23] It is not surprising, therefore, that some patients in this study believed their seizures resulted from demonic attacks, spells, and bad dream. The report of spell and bad dreams as seizure precipitants was more common among women than men, and the difference was not statistically significant. When people attribute supernatural or spiritual causes to seizures, they are less likely to present to hospitals first after the attack but would rather visit spiritual home and the herbalist.[8,21,22] This invariably could result in late presentation, delayed diagnosis and drug commencement, and widened treatment gap.

The clinical relevance of knowing what precipitates seizures cannot be overemphasized. In difficult to treat epilepsy, the use of non-pharmacological therapy as adjunct to AEDs is now being encouraged.[24] Psychological therapy is now an integral part of managing intractable epilepsies.[24] With the techniques of behavioural modifications, patients are now taught how to interrupt the beginning of seizures and neutralize effect of provoking factors.[13] Equally, physical and psychological methods such as exercise, yoga, and meditation may be helpful in stress-induced seizures, which is the most reported seizure precipitant.

Conclusion

The result of this study showed what majority of epilepsy patients who attended the neurology clinic in UITH Ilorin believed initiated their seizures. The leading precipitants were stress, trauma, inadequate sleep, and demonic attacks as well as spells. Although it can be argued that these are subjective responses, the mentioned seizure precipitants are not quite different from those reported in other similar studies conducted in other populations.

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