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ORIGINAL ARTICLE

Frequency of Fits in Pregnant Women with Previously Controlled Epilepsy

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ABSTRACT

Background: Epilepsy drug therapy advancements have resulted in an increasing number of childbearing age well-controlled epileptic women. It is not surprising then, that the impact of pregnancy on the progression of epilepsy has sparked renewed interest.

Aim: The aim of current study was to evaluate the frequency of fits or seizure in pregnant women with previously controlled epilepsy.

Materials and Methods: This cross-sectional study was carried out on 98 pregnancies of 84 epileptic women during the period between August 2019 and August 2021in the department of neurology and gynaecology of Ayub Teaching Hospital, Abbottabad. All the pregnant women with less than three verified epileptic fits, pregnancy ended with abortion and incomplete seizure or fit frequency were excluded. All the patients were referred to Gynaecology and Neurology department for early pregnancy and planning by a neurologist and gynaecologist. Data analysis was done with SPSS version 23 with $p<0.05$ as statistical significance.

Results: The association of fits frequency on pregnancy was studied and monitored in 84 epileptic women out of 98pregnancies. About 49 (50%) pregnancies were not affected by fits frequency. The fits frequency was increased in 36 (37%) pregnancies or puerperium while decreased in 13 (13%) pregnancies. Sleep deprivation or drug regimen on-compliances associated was increased in 30 (30.6%) pregnancies. Out of 19pregnancies, eight (42%) had improvement with sleep deprivation correction during none months pre-gestation. Antiepileptic drugs with low plasma concentration of uncontrolled epilepsy during pregnancy were found in 47%.

Conclusion: Sleep deprivation, Non-compliance during pregnancy, and before and after pregnancy inadequate therapy all have a significant impact on the course of epilepsy during pregnancy. With proper medical care, pregnancy appears to have only a minor impact on the course of epilepsy.

Keywords: Epilepsy, Frequency fits, Sleep Deprivation.

INTRODUCTION

Epilepsy drug therapy advancements have resulted in an increased number of childbearing age well-controlled epileptic women with no surprising that the impact pregnancy on the progression of epilepsy has sparked renewed interest. Epileptically women with pregnancy or tend to have pregnancy substantially from clinical epilepsy. A number of previous studies reported a higher risk of various complications with epilepsy during pregnancy. The seizure or fits exacerbation prevalence will be experienced in 25 to 30% of women [1, 2]. A higher frequency of neonatal deaths reported and increased risk of malformation in newly born children from epileptic women compared to the rest of the population [3-7]. The outcome of fits frequency in fits/ seizure types and before and during pregnancy taking of antiepileptic drugs.

According to recent studies, the frequency of the fits deteriorated by 24% and improve in 23% of 2166 pregnancies. Fits frequency might be influenced by various factors. These factors are respiratory changes, non-compliance with a drug regimen, psychological problems, metabolic and harmonic factors, fit properties modifications, and antiepileptic drug kinetic pharmacology changes during pregnancy [8]. During pregnancy, fits frequency regulations causes by antiepileptic drugs plasma concentration reduction, non-compliance, and provocation of fits are suggested by preliminary studies [9]. Fits propensity changes could be monitored in pregnant women with no antiepileptic drug use. Advance knowledge will be required for specific risk factors in epilepsy women counseling and pregnancy outcome optimization. The present study was carried out with the purpose of assessing the frequency of fits in the seizure in pregnant women with previously controlled epilepsy and associated risk factors, complications, and pharmacological factors in individual fits relapse.

MATERIALS AND METHODS

This cross-sectional study was carried out on 98 pregnancies of 84 epileptic women presenting the department of neurology and gynaecology of Ayub Teaching Hospital, Abbottabad during the period between August 2019 and August 2021. All the pregnant women with less than three verified epileptic fits, pregnancy ended with abortion and incomplete seizure or fit frequency were excluded. All the patients were referred to Gynaecology and Neurology department for early pregnancy and planning by a neurologist and gynaecologist. The study enrolled all the epileptic women admitted and given birth in the Department of Obstetrics and Gynecology. The admitted patients were evaluated based on geographic location and epilepsy proportion. Data collected included

98 pregnancies of 84 epileptic women. The cases of twin births were excluded due to obstetric complications higher risk for the patients in general. Fits or seizure relapse or frequency and their promoting factors were especially emphasized on the basis of clinical history. A specific question was asked about routine dose and time prior to individual seizure. Upon admission, non-compliance with epileptic drugs was assumed. Additionally, ethanol consumption and sleep deprivation were sought out for seizure or fits provocation. Individual patient delay of 2 or more hours compared to the usual working day was defined as sleep deprivation. Patient of previous sleep deprivation was anticipated as a prompting feature in seizure provocation. Enzyme immunoassay was used for the measurement of valproic acid, Tegral and levetiraceram of plasma concentration through a single visit.

For epilepsy evaluation, seizure orfits frequency and types were compared during nine months in each patient before pregnancy and each pregnancy trimester. Following the delivery, three months duration fits frequency changes were analyzed during the puerperium. Actual fits frequency was given as a standard for defining increase and decrease in it. Percent ages were also considered for inadequate changes.

RESULTS

The association of fits frequency on pregnancy was studied and monitored in 84 epileptic women out of 98 pregnancies. About 49 (50%) pregnancies were not affected by fits frequency. The fits frequency was increased in 36 (37%) pregnancies or puerperium while decreased in 13 (13%) pregnancies. Sleep deprivation or drug regimen on-compliances associated was increased in 30 (30.6%) pregnancies. Out of 19 pregnancies, eight (42%) had improvement with sleep deprivation correction during none months pre-gestation. Antiepileptic drugs with low plasma concentration of uncontrolled epilepsy during pregnancy were found in 47%. The antiepileptic drug was not taken by 23 (23.5) pregnancies. Table 1 demonstrates the series clinical data and baseline characteristics. Fits or seizure type based distribution is given in Table 2 and Figure-1. Administration of single-drug treatment was carried out in 75 (76.5%) patients with Tegral (n = 27), Levetiraceram (45) and valproic acid (n = 3) in Table 3. In 42 pregnancies two antiepileptic drugs and three drugs were prescribed to 2 pregnancies as shown in Table 4.

Table 1. Patient's clinical features

Clinical Features	Values
Patients	84
Pregnancies	98
Delivery Age	26±5 years
Generalized Epilepsy	43
Epilepsy Duration	14±5 years
Focal Epilepsy	43
Generalized tonic-clonic seizures	38 (39%)

Table-2. Seizure or frequency types

Seizure Types	Frequency (n)	Percentage (%)
One type	32	38.2
Two types	48	58.1
Three types	3	3.7
Total	84	100

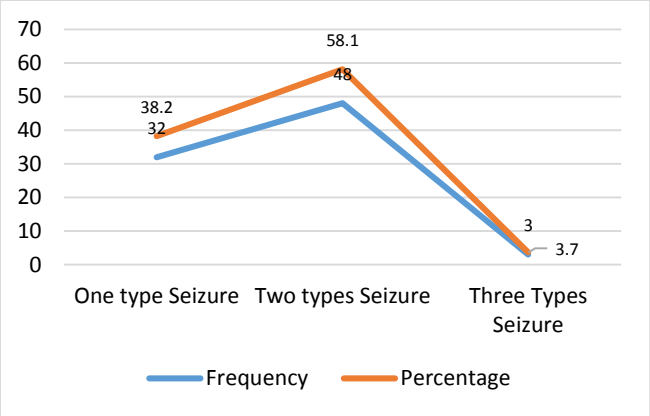

Figure 1. Seizure types and its prevalence

Table-3. Single drug Administration among 75 Patients

Drug Name	Frequency (n)	Percentage (%)
Tegral	27	36
Levetiraceram	45	60
Valproic acid	3	4

Table 4. Drugs against pregnancies association among 136 patients

Drug	Pregnancy	Percentage
Single Drug Administration	56	67.6
Two Drug Administration	26	30.9
Three Drug Administration	2	1.5
Total	84	100

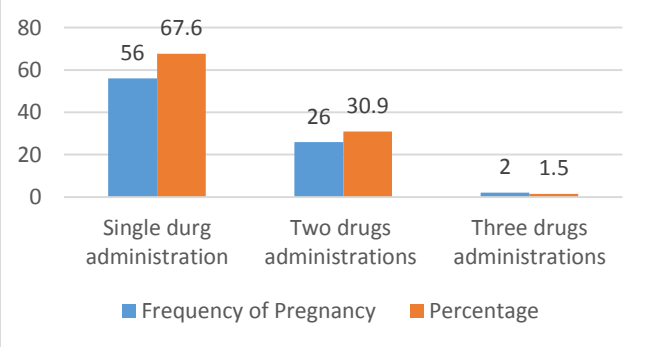

Figure 4. Frequency of Drugs and Pregnancies

In 36 pregnancies, seizures or fits frequency increased. Sleep deprivation or non-compliances were recorded in temporary relationships in 24 (68%) pregnancies. Comparing the general and focal epilepsy, later one has a lower prevalence 41 (48.8%) vs. 43 (51.2%). On clinical baseline characteristics, non-compliances matched other patient's characteristics. The prevalence of non-compliance was found in 3 pregnancies out of 36pregnancies. The non-compliance was significantly related to the seizure off its frequency increases. The beneficiary effect of seizure of fits frequency on pregnancy was noted in 19 pregnancies. The fits frequency reduced by 50% (24-69%) in 8 patients and completely controlled was 11 patients during pregnancy. Sleep deprivation was in eight women of nine months presentationalage significantly associated with seizure or fits while the rest were seizure-free during pregnancy. New

drugs were introduced in four patients out of eleven with increased plasma concentrations while no change was found in plasmaconcentrations in five pregnancies. No therapy was given to the two patients during pregnancy. The standard value for fits frequency was set based on which increased and decreased fit frequency was measured. Patients with primary generalized epilepsy, with no generalized tonic-clonic seizure and only one seizure type and no generalized tonic-clonic seizure before pregnancy years were less common inseizure frequency increase in the group.

DISCUSSION

The current study findings suggest that epileptic women had more chance of pregnancy compared to mild epileptic women. In nearly two-thirds of all pregnancies, pregnancy had no or a beneficial effect on seizure frequency. Seizure or fits frequency increased in 36 (37%) pregnancies. The overall findings of the current study matched with few others studies [10-12]. The seizure or fits frequency random fluctuation takes into account the change in epilepsy course due to various factors. Regardless of pregnancy, these responsible factors have been observed in timespan of 18 months which could possibly affect the epileptic change of course in pregnant epileptic women. About 49 (50%) pregnancies were not affected by fits frequency suggested optimal result of drug treatment couldprovide 70-80% complete fits control achievement at the onset of pregnancy with adequate drug therapy. About 63% of women were treated with antiepileptic drugs of lower plasma concentration. Uncontrolled epilepsy among 47% of pregnant women had the highest antiepileptic drugs plasma concentration which was still less than standard.

Fits or seizure frequency can be reduced with an improvement of sleep deprivation or non-compliance in 11 (57.9%) of19 pregnancies by inadequate therapy during pregnancy. Seizure or fits frequency in eight pregnancies cannot be explained due to seizure frequency fluctuation in a random manner or other hormonal changes [13]. Improved drug findings during treatment may be responsible for fits frequency reduction and reverse mechanism for deteriorating epilepsy course during pregnancy. Approximately, 24 (68%) in 36 pregnancies, seizure frequency increase were associated with sleep deprivation or drug regimen prescription during admission. Epileptical pregnant women were determined based on majorfactors of seizure provocation in the preventable mechanisms [14-16]. Generalized epilepsy was suspected in a non-compliance or sleep, deprivation woman. Sleep deprivation provocation and non-compliance history were involved in single relapse among generalized seizures. Drug regimen noncompliance is the most common at the beginning of a pregnancy. A number of women cite fear of deformities or other antiepileptic drugs as an adverse effects are the reason for discontinuing treatment. Unfortunately, some doctors supported the women's decision to reduce or discontinue drug treatment, possibly because they were under the impression that the teratogenicity risk increased with higher doses of the antiepileptic drug. There is currently no evidence to support this impression."

Seizure relapse in puerperium findings was associated with routinely missed diagnoses by patients or insufficient therapy of drugs because of the patient's lack of knowledge about drug treatment or because drugs were forgotten in the respective hospital. Furthermore, during pregnancy sleep deprivation occurs characterized by seizure relapse during puerperium breastfeeding. Mother care should be taken about her sleep regularly at night. Increased frequency was found in 54 pregnant epileptic women due to sleep deprivation or non-compliance. Plasma concentration steady-state was not sufficient in the drug treatment of nine pregnancies during pre-gestational periods. Despite the higher concentration of plasma during pregnancy, increased fits frequency was found in two women. Chronic epilepsy spontaneous course regardless of pregnancy was found in six patients unexplained consequently during 18months. Additionally, pregnant women with sleep deprivation and antiepileptic drugs not taking patients is the major factors for seizure frequency increase in eight patients. Also, epilepsy during pregnancy was related to the two major contributors sleep deprivation and non-compliance. Another study suggested course of epilepsy, epilepsy duration, and generalized tonic-clonic pre-pregnancy frequency cannot be conformed [17-19]. The epileptic women pregnancies management and clinical implication in our study suggested a complete epilepsy control with the renewed effect of drugs while planning the pregnancy [20]. Breastfeeding, sleep deprivation, deficient drug deliveries, and reduction in drug usage ordiscontinuity during early pregnancy could be the specific risk factor observed in our study.

CONCLUSION

Sleep deprivation, Non-compliance during pregnancy, and before and after pregnancy inadequate therapy all have a significant impact on the course of epilepsy during pregnancy. With proper medical care, pregnancy appears to have only a minor impact on the course of epilepsy.

REFERENCES

1. Bruno E, Maira G, Biondi A, Richardson MP. Ictal hypoxemia: a systematic review and meta-analysis. Seizure 2018;63:7-13.
2. Christensen J, Vestergaard C, Hammer Bech B. Maternal death in women with epilepsy: smaller scope studies. Neurology 2018;91(18):e1716-e1720.
3. MacDonald SC, Bateman BT, McElrath TF, Hernández-Díaz S. Mortality and morbidity during delivery hospitalization among pregnant women with epilepsy in the United States. JAMA Neurol 2015;72:981-988.
4. Edey S, Moran N, Nashef L. SUDEP and epilepsy-related mortality in pregnancy. Epilepsia 2014;55(7):e72-e74.
5. Fisher RS, Acevedo C, Arzimanoglou A, Bogacz A, Cross JH, Elger CE, et al. ILAE Official Report: A practical clinical definition of epilepsy. Epilepsia 2014; 55: 475-482.
6. Fiest KM, Sauro KM, Wiebe S, Patten SB, Kwon C-S, Dykeman J, et al. Prevalence and incidence of epilepsy: A systematic review and meta-analysis of international studies. Neurology 2017; 88: 296-303.
7. Watila MM, Beida O, Kwari S, Nyandaiti NW, Nyandaiti YW. Seizure occurrence, pregnancy outcome among women with active convulsive epilepsy: One year prospective study. Seizure 2015; 26: 7–11.

8. Morrell MJ, Montouris GD. Reproductive disturbances in patients with epilepsy. Cleve Clin J Med 2004; 71: S19-S24.
9. Viale L, Allotey J, Cheong-See F, Arroyo-Manzano D, Mccorry D, Bagary M, et al. Epilepsy in pregnancy and reproductive outcomes: a systematic review and meta-analysis. Lancet 2015; 386: 1845-1852.
10. Mawer G, Briggs M, Baker GA, Bromley R, Coyle H, Eatock J, et al. Pregnancy with epilepsy: Obstetric and neonatal outcome of a controlled study. Seizure 2010; 19: 112-119.
11. Tomson T, Battino D. Teratogenic effects of antiepileptic drugs. Lancet Neurol 2012; 11: 803-813.
12. Güveli BT, Rosti RÖ, Güzeltaş A, Tuna EB, Ataklı D, Sencer S, et al. Teratogenicity of Antiepileptic Drugs. ClinPsychopharmacolNeurosci 2017; 15: 19-27.
13. Camfield P, Camfield C. Incidence, prevalence and aetiology of seizures and epilepsy in children. Epileptic Disord 2015; 17: 117-123.
14. Algahtani H, Shirah B, Alzahrani A, Shaheen M. Perception and attitude of the general population towards epilepsy in Jeddah, Saudi Arabia. J Epilepsy Res 2019; 9: 42-50.
15. Fisher RS, Cross JH, French JA, Higurashi N, Hirsch E, Jansen FE, et al. Operational classification of seizure types by the International League Against Epilepsy: Position Paper of the ILAE Commission for Classification and Terminology. Epilepsia 2017; 58: 522-530.
16. Neyaz HA, Aboauf HA, Alhejaili ME, Alrehaili MN. Knowledge and attitudes towards epilepsy in Saudi families. J TaibahUniv Med Sci 2017; 12: 89-95.
17. Shahid R, Nazish S, Zafar A, Aljafaari D, Alabdali M, Ishaque N, et al. Epidemiological study of epilepsy from a tertiary care hospital in kingdom of Saudi Arabia. Neurosciences 2018; 23: 223-226.
18. Hamdy NA, Alamgir MJ, Mohammad EGE, Khedr MH, Fazili S. Profile of epilepsy in a regional hospital in Al-qassim, Saudi Arabia. Int J Health Sci 2014; 8: 247-255.
19. Battino D, Tomson T, Bonizzoni E, Craig J, Lindhout D, Sabers A, et al. Seizure control and treatment changes in pregnancy: Observations from the EURAP epilepsy pregnancy registry. Epilepsia 2013; 54: 1621-1627.
20. Patel SI, Pennell PB. Management of epilepsy during pregnancy: an update. TherAdvNeurolDisord 2016; 9: 118-129.