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Original Research Article

Fetomaternal outcome in pregnant women with epilepsy in a tertiary care hospital: a retrospective study

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ABSTRACT

Background: Epilepsy is the second common chronic neurological disorder complicating pregnancy after migraine. Incidence of seizure disorder in women attending antenatal clinics is estimated to be 0.3-0.5% of all births. These pregnancies are a challenge to patient and clinician, the double burden of seizures and the antiepileptic drugs (AED) exposure are responsible for the poorer outcome of infants. The aim of the study is to analyse the fetal and maternal outcome in pregnancies that are complicated by epilepsy.
Methods: This was a single centre retrospective study on pregnant women with epilepsy at a tertiary care centre from the period of 01st August 2021 to 1st August 2024. The data of all booked antenatal patients diagnosed with epilepsy was collected from the labour records and electronic medical records. Details included in the study were preconceptionally counselling, age, parity, gestational age at the time of delivery, age of onset of epilepsy, duration of epilepsy, seizure during pregnancy, antiepileptic drug usage in pregnancy, maternal complications and fetal outcomes.
Results: Out of the total 6400 deliveries over in our institution I identified 54 patients with epilepsy complicating pregnancy thus giving a incidence of 0.84 %. Majority of patients were in the age group of 20-30 years . Having a duration of seizures more than 10 years. 87.03 % of patient had GTCS type of seizure and 68.51% of patient gave a history of seizure free period prior to pregnancy. 24.07 % of patients had incidence of antepartum seizures, though most of the patients didn't need any change in dose or medication. Even with the episodes of antepartum seizures 83.34% of females had a term delivery, 59.25 % patients had a normal delivery and 59.25 % of babies were >2.5 kg at the time of birth. Only 1 child was born with congenital anomalies and 25.92% children required NICU admission.
Conclusions: In this study we observed that though pregnancy with epilepsy needs comprehensive antenatal care and this results in uneventful pregnancies with good feto-maternal outcome.

Keywords: Antiepileptic drugs, Epilepsy, Feto maternal outcome, Pregnancy, Seizures

INTRODUCTION

Epilepsy is the second common chronic neurological disorder complicating pregnancy after migraine. About 2.5 million women in India suffer from epilepsy, with 52 of them being in the reproductive age group.[1] Incidence of seizure disorder in women attending antenatal clinics is estimated to be 0.3-0.5% of all births. These pregnancies are a challenge to patient and clinician alike, the double burden of seizures and the antiepileptic drugs (AED) exposure are responsible for the poorer outcome of infants born to mothers with epilepsy.[2] Majority of women with epilepsy will have normal, healthy infants. Effective preconceptionally counselling and medical care is essential for the treatment of the pregnant women with epilepsy.[3,4] Exposure to AED has been associated with two to three times increase in major malformations in infants exposed in utero as compared to the ordinary population.

It has been widely believed that epileptic women are at greater risk of seizures during pregnancy. However, studies in the English literature report different complication rates with no clear data. Although more than 90% of pregnant women do not encounter complications related to epilepsy, it has been reported that complications increase to some degree, and dismal obstetric outcome may be observed.[5]

Furthermore, a vast number of anticonvulsant medications should be investigated for their teratogenic effects. It was stated that newborns exposed to antiepileptic drugs (AEDs) in utero have 2–3-fold higher (3.3–9%) prevalence of major congenital abnormalities compared to that of none exposed newborns.[6] Congenital malformations such as cleft lip and palate, cardiac defects, neural tube defects (NTDs), skeletal abnormalities and hypospadias have been shown to occur as a result of intrauterine exposure to AEDs. These malformations are observed more frequently with increased doses of AEDs, higher serum levels of AEDs and phototherapeutic approaches.[7]

Epileptic women are under higher risks of abortion and premature delivery, and the newborn may encounter low birth weight, developmental delay, and even increased rate of fetal and neonatal death. Maternal deaths are also increased 10-folds in epileptic women mostly owing to quitting or noncompliance to medications leading to increased frequency of seizures.[8] Management of epileptic seizures during pregnancy includes decreasing the maternal and fetal risks due to uncontrolled seizures together with minimizing the potential teratogenic effects of AEDs.[9]

METHODS

Study place

This is a single center retrospective study conducted in the Department of Obstetrics and Gynaecology at Sri Devarj URS Medical College, kolar Karnataka, India.

Study duration

The study period of 01st August 2021 to 1st August 2024, after obtaining institutional Ethical Committee approval on 02 February 2024.

Data collection

The data of all booked antenatal patients diagnosed with epilepsy was collected from the labor records and electronic medical records. Out of the 6400 deliveries during these periods we identified 54 patients with epilepsy. The details of these 54 patients with epilepsy like preconceptionally counselling, age, parity, gestational age at the time of delivery, family history and mode of delivery will be studied. Other variables that will be studied includes age of onset of epilepsy, duration of epilepsy, seizure during pregnancy, antiepileptic drug usage in pregnancy, and maternal complications. Fetal outcomes such as number of live birth, stillbirth, birth weight, Apgar score, congenital anomalies and perinatal complications will also be studied. Both maternal variable and fetal variable were presented in frequency and percentage using SPSS version 17.

RESULTS

Out of the total 6400 deliveries over in our institution I identified 54 patients with epilepsy complicating pregnancy thus giving a incidence of 0.84 %. Majority of patients were in the age group of 20-30 years (Table 1). Having a duration of seizures more than 10 years. 87.03 % of patient had GTCS type of seizure and 68.51% of patient gave a history of seizure free period prior to pregnancy. (Table 2). 24.07 % of patients had incidence of antepartum seizures, though most of the patients didn't need any change in dose or medication (Table 3). Even with the episodes of antepartum seizures 83.34% of females had a term delivery, 59.25 % patients had a normal delivery and 59.25 % of babies were >2.5 kg at the time of birth. Only 1 child was born with congenital anomalies and 25.92% children required NICU admission (Table 4).

Table 1: Sociodemographic analysis.

Variables	Frequency	%
Age (in years)		
18-20	3	5.56
20-30	46	85.18
>30	5	9.25
Parity		
Primigravida	32	59.25
Multigravida	22	40.74
Preconceptional counselling		
Yes	5	9.25
No	49	90.74
Family history		
Yes	6	11.12
No	48	88.89

Table 2: Epilepsy characteristics.

Variables	Frequency	%
Duration of seizure disorder (in years)		
<1	1	1.85
1-5	6	11.12
6–10	11	20.37
>10	36	66.67
Types of seizures		
GTCS	47	87.03
Myoclonic	2	3.70
Status epilepticus	1	1.85
Others	4	7.40
Seizure free period prior to pregnancy		
<1 year	17	31.48
>1 year	37	68.51

Table 3: Epilepsy characteristics in pregnancy.

Variables	Frequency	%
Drug treatment		
No drugs	3	5.56
Monotherapy	37	68.51
Polytherapy	14	25.92
Incidence of seizure in pregnancy		
Antepartum	13	24.07
1 and 2 trimesters	4	7.40
3rd trimester	9	16.67
Intrapartum	1	1.85
Postpartum	3	5.56
Maternal complications		
PIH	7	12.96
PPH	4	7.40
Others	6	11.12
Change in dose/medication		
Needed	17	31.48
Not needed	37	68.51

Table 4: Fetal characteristics.

Variables	Frequency	%
Gestational age at delivery		
Pre term	9	16.67
Term	45	83.34
Mode of delivery		
Normal	32	59.25
LSCS	22	40.74
Sex of the baby		
Male	28	51.85
Female	26	48.14
Birth weight (kg)		
<2	10	18.51
2-2.5	12	22.23
>2.5	32	59.25
Congenital anomalies	1	1.85
FGR	7	12.96
NICU admissions	14	25.92

DISCUSSION

Pregnancy in a mother with epilepsy brings about several concerns including the risk of recurrent seizures, seizure aggravation, changes in drug levels because of altered pharmacokinetics and medication compliance and also because of the potential teratogenic effect of the AEDs.[1,2] Ideally effective Preconceptional counselling and preparation must be done and importance of planned pregnancy is to be emphasized.

In our study, Majority of patients were in the age group of 20-30 years. Similarly, the mean age for the study by Sharma P et al, was 26.14±3.97 years in the study population while in control group mean age was 26.37±4.19 years which was comparable to our study.[10]

Also, In this study by Sharma P et al, there were 10 preterm deliveries (28.57%) among cases whereas 03 in control population (8.57%) which was not statistically significant (P=0.062).[10] There were 25 (71.43%) term deliveries in cases and 32 (91.43%) in controls which were comparable to our results where we reported 45 term deliveries and 9 pre term deliveries. Also, in the study by Raji C et al, the rate of caesarean section was 28.18%, Labour natural in 62.72%.[11] Similar findings were observed in other Indian studies.[12,15]

As stated by several studies in present study also, age and BMI was not found to be associated with adverse fetomaternal outcome whereas parity and time of enrolment of the study was found to be correlated with the adverse fetal outcome. Though In an Indian study done by Hiralal K et al. found that increased maternal age was a risk factor for poor maternal and neonatal outcome which was not observed in the present study.[12] Sheela CN et al in their study done in 2009 found that parity was not significantly associated with any adverse maternal outcome which was in corroboration with the present study.[14]

In the Raji et al study, 59 cases had monotherapy. 15 cases were not on any treatment which is very similar to our present study.[11] Also, Remaining 36 cases had combined AEDs, further Raji et al. also stated that 95 (86.36%) patients were seizure free during pregnancy as compared to other study by Malik R et al.[16] In these 38 cases had pregnancy related complications of which the commonest was gestational hypertension in 22 (20%) cases which is comparable to Goel et al. study has reported PIH (24.3%), abruption (5.4%), GDM (2.7%) of cases in his study.[17]

A very similar study by Ozdemir et al, in which the mean birth week was 38.43±1.68 weeks (30–41 weeks) and mean birth weight was 2965.31±453.94 grams (1700–4240 grams).[18] Twenty-two patients had normal spontaneous vaginal delivery whereas 118 patients had caesarean section (C-section).

Among patients who had C-section delivery, 39 (33.05%) patients were operated according to neurologist advice due to frequent seizures, 45 (38.13%) patients had previous C-sections, 32 (27.12%) patients had suspicious traces of heart beats, and 2 (1.70%) patients had malpresentation preterm labor were observed in 8 patients. Major malformations, namely, cleft lip and palate, ventriculoseptal defect and spina bifida were observed in these patients, and they were on carbamazepine monotherapy, levetiracetam and carbamazepine polytherapy and lamotrigine and valproic acid polytherapy, respectively.

Thomas et al, studied the complications of pregnancy and delivery in women with epilepsy (WWE) and similarly concluded that there was no significant increase in the risk of complications of pregnancy or delivery except for spontaneous abortions, anaemia, ovarian cyst, fibroid

uterus and seizures in the peripartum period which were more frequent in WWE.[19] Frequency of caesarean section is not increased in WWE. There is no undue risk to pregnancy and childbirth in most WWE. Similarly, a very recent observational study by Singh et al. stated in their results that the percentage of IUD was 6% in cases and 14% in controls, the difference was not statistically significant.[20] The percentage of antepartum haemorrhage in cases was 4%, while it was 3.33% in controls.

The difference was not significant statistically. The percentage of abortions in cases was 4% and in controls it was 4%. The difference was not significant statistically. Also, reassured in conclusion that women with epilepsy, epilepsy in pregnancy in the majority of women is uneventful. AED use during pregnancy is generally not associated with adverse maternal and fetal or neonatal outcomes, although it is important to be aware that AEDs differ in their teratogenic potential.

CONCLUSION

Pregnancy with epilepsy presents a unique challenge both for the mother and her baby. In this study we observed that though pregnancy with epilepsy needs comprehensive antenatal care and this results in uneventful pregnancies with good feto-maternal outcome. These women should be managed with monotherapy at the lowest possible dosage to diminish the risk of complications and also maintain good seizure control. These high-risk pregnancies need spontaneous referral to tertiary care centres for better maternal and neonatal outcome. The perinatal complications can be diminished by the close coordination between the neurologist, obstetrician and the paediatrician.

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