DOI -10.21276/obgyn.2025.v12.i1.10 *ISSN Print – 2454-2334; ISSN Online – 2454-2342*

RESEARCH ARTICLE

A study on maternal and fetal outcome in epilepsy complicating pregnancy in a tertiary care centre

AR Jameela Ponmalar, Rema V Nair, Raagavi Sri S

Corresponding author: Dr AR Jameela Ponmalar, Associate Professor, Department of Obstetrics & Gynecology, Sree Mookambika Institute of Medical Sciences, Kulasekharam, Kanyakumari District, Tamil Nadu, India; Email: jameelaprasanth@gmail.com

ABSTRACT

Objectives: The purpose of this study is to determine maternal and fetal outcome in pregnant women with epilepsy (WWE). Antenatal care is done with multidisciplinary approach with preconception counseling by neurologist, about need to continue antiepileptic drugs (AED) with same or reducing dose. This prospective study was done by evaluating number of women who had generalized tonic clonic seizures, partial seizures, who were on monotherapy and polytherapy, who had term and preterm deliveries, underwent normal delivery and caesarean sections and babies with growth restriction or major congenital malformations (MCM). **Materials and methods:** This study was conducted in antenatal clinic, neurology clinic, obstetric wards and labour room at tertiary care hospital in Kulasekharam from January 2022 - August 2022. A total of 100 pregnant WWE were recruited which includes newly diagnosed epilepsy after 20weeks of gestation, at each trimester for seizure episodes on women with treated epilepsy and during postnatal period for intrauterine growth restriction and congenital abnormalities in babies born to women with treated epilepsy were recorded. **Result:** 100 pregnant WWE were studied over period of one year. Among women on antiepileptic drugs 60% had seizures. Emergency LSCS was reported in 21% of pregnant WWE, (64%) received monotherapy. There were no major congenital malformations (MCM) and 1 intrauterine death in our study. MCM was highest with valproate, 25% were preterm and 30% were low birth weight of <2,500gm. **Conclusion:** Pregnant WWE should receive multidisciplinary approach; risk of maternal and fetal complications can be reduced by preconceptional counseling, management during antenatal and postnatal period to reduce the risk of complications involving both mother and neonate.

Keywords: Antiepileptic drug, major congenital malformations.

Epilepsy is the second common chronic neurological disorder complicating pregnancy which requires medical treatment [1]. It is a condition in which a person has recurrent seizures which requires atleast two unprovoked seizures 24, hours apart. Seizures are due to abnormal hyper synchronous discharges from cortical neurons. Signs and symptoms depend on the cortical location and pattern of epileptic discharges from the brain. The cause of seizure may be primary (idiopathic) or secondary to intracranial tumors, infection (tuberculoma, neurocysticercosis), ischemia, trauma, or idiopathic. Treatment is same with antiepileptic drugs for both primary and secondary causes. Some women with epilepsy (WWE) may experience seizure only during pregnancy which is termed 'gestational epilepsy' such women would be seizure free between pregnancies. Another subgroup (gestational onset epilepsy) may have their first seizure during pregnancy and thereafter may continue to get spontaneous recurrent seizures [2]. About 2.5 million women in India suffer from epilepsy, with 52% of them being in the reproductive age group. Incidence of seizure disorder in women attending antenatal clinics is estimated to be <1% of all births [1]. By the time pregnant women seek antenatal care fetus is fully formed and chances for congenital malformations are more in women who are on teratogenic

Received: 3rd September 2022, Peer review completed: 20th October 2023, Accepted: 28th November 2024.

Jameela Ponmalar AR, Nair RV, Raagavi Sri S. A study on maternal and fetal outcome in epilepsy complicating pregnancy in a tertiary care centre. The New Indian Journal of OBGYN. 2025; 12(1): 55 - 9.

antiepileptic drug. Clinical studies have also shown that seizures in females are provoked by estrogen and progesterone.

The preconception counseling in WWE includes assessing the need for continuation of same antiepileptic drugs or shift to other antiepileptic drugs, correcting the dosage of antiepileptic drugs and prescribing folic acid. Increased incidence of antenatal and postnatal complications which includes pre-eclampsia, antepartum or postpartum hemorrhage and also adverse perinatal outcome like low birth weight, prematurity, mortality and development delay has been reported [3, 4]. Neonates of pregnant women with treated epilepsy was reported two to three fold increased risk for major congenital malformations (MCM) mainly associated with anti epileptic drugs treatment [5-10]. Intrauterine exposure to valproate seems to have highest malformation risk [7-10]. Some anti epileptic drugs are associated with specific malformations, that is, spina bifida and cleft lip-palate [3].

The most important goal of therapy, both prenatally and antenatally, is to control seizures episodes. In treating WWE the first thing is to determine whether a woman requires antiepileptic drugs if so she needs either monotherapy or polytherapy. Following treatment free plasma levels of antiepileptic drugs should be regularly checked and antenatal ultrasonography should be done to rule out congenital malformations.

Materials and methods

The study was conducted during January 2022- August 2022 in department of Obstetrics & Gynaecology, Sree Mookambika Institute of Medical Science, Kulasekharam.

Sample size used in this study: $n = 4\ Pq/d^2$

$= 4x51.7x100\text{-}51.7/20x51.7/1002$

$= 94.8$

$n \sim 100$

Sample size = 100 women with epilepsy. Based on the previous studies [1] prevalence was taken as 51.7% and sample size was arrived as 100.

Inclusion criteria

1. All antenatal women with previous history of seizure episode
2. Both primigravida or multigravida
3. Both booked and unbooked cases
4. Any type of seizure disorder (GTCS, partial)
5. Women with regular or irregular intake of AEDs
6. Epileptic women on monotherapy or polytherapy
7. Patients not on any treatment as per neurologist advice or discontinued by self.

Exclusion criteria

1. Women with eclampsia
2. Women with postpartum eclampsia
3. Hysteric or psychogenic causes

Statistical methods: Data were entered in Excel sheet and was analyses using SPSS software version 21.

Pregnant WWE, included in this study were investigated with detailed history regarding their age, booking status, gravida and details of last menstrual period to assess the expected date of confinement. Their past obstetric history was obtained especially their obstetric complications like oligohydramnios, PIH, antepartum hemorrhage in previous pregnancy was obtained. Any history of imminent symptoms like headache, nausea, vomiting, blurring of vision, epigastric pain and oliguria was obtained. Past history regarding the age of onset of seizures, type of seizure, period at which the she had last episode of seizure, disease free interval and history of status epilepticus was obtained. The detail of antiepileptic drugs, type and duration, regular or irregular intake of anti epileptic drugs and folic acid was obtained. History of other medical comorbidities like diabetes mellitus, hypertension, tuberculosis, heart disease and renal disease were elicited. Detail neurological history was taken to rule out CNS lesion, trauma, infection, and tumor.

General and systemic examination including CNS examination, per abdominal examination was done for all patients. Blood pressure measurement was also done. Neurologist opinion was obtained for all cases.

Investigations like hemoglobin, urine routine including (albumin, sugar) blood urea, sugar, renal function test, liver function tests and platelet count were done. EEG was taken for all cases. Ultrasonographic examination was done for gestational age assessment, liquor status, IUGR and to rule out any congenital anomalies.

All pregnant WWE were admitted in antenatal ward before the expected date of delivery and their treatment was customized according to neurologist opinion. Once the patient gets into labour, they were monitored carefully with partogram and the mode of delivery was recorded. Postnatally all patients were advised to undergo CT to rule out causes for epilepsy. Anti epileptic drugs were continued even after delivery.

Fetal outcome was obtained by birth weight, and evidence of congenital anomalies. Preterm baby, IUGR, low head circumference and anomalies were admitted in neonatal intensive care units.

Results and observations

Out of 100 cases studied primigravida constitute 68 cases (68 %) and multigravida constitute 32 cases (32%) (table 1).

Table 1 : Obstetric score

Obstetric score	Frequency No	Percentage %
Primipara	68	68%
Multipara	32	32%
Total	100	100%

Out of 100 cases studied of 64 cases (64%) were on monotherapy and 15 cases (15%) were on polytherapy. 12% had irregular intake of AED and 4% of cases discontinued the treatment after becoming pregnant. About 5% cases were not on any treatment as per neurologist advice (table 2).

Table 2 : Type of AED therapy

Type of therapy	Cases No	%
Mono therapy	64	64%
Polytherapy	15	15%
Irregular	12	12%
Discontinued	4	4%
Nil	5	5%
Total	100	100%

Gestational age at delivery in our study was 55/100 cases (55%) had preterm delivery which includes both early and late preterm and 45/100cases (45 %) delivered at term (table 3).

Table 3: Gestational age at delivery

Gestational age at delivery (in weeks)	Frequency No	Percentage %
< 34 weeks -Early Preterm	5	5%
34 – 37weeks -Late Preterm	50	20%
> 37 weeks – Term	45	75%
Total	100	100%

58/100 (58 %) of cases had normal delivery while 34/ 100 (34%) of cases underwent both elective and emergency LSCS for various indication. Assisted delivery accounted for 8% (table 4).

Table 4: Mode of delivery

Mode of delivery	Frequency No	Percentage %
Spontaneous Labour	58	58%
Assisted delivery	8	8%
Elective LSCS	13	13%
Emergency LSCS	21	21%

58/100 (58%) of cases were of birth weight between 2.5 – 3 kg. Birth weight of less than 2.5 kg accounted for 30/100 (30%) (table 5).

Out of 100 cases studied 44 cases (44%) had no complications and 56 cases (56%) had mentionable complications (table 6).

Table 5: Birth weight

Birth weight (in Kgs)	Frequency No	Percentage %
< 2 kgs - Low birth weight	7	7%
2 - 2.49 kgs - Low birth weight	23	23%
2.5 – 3 kgs	58	58%
> 3 kgs	12	12%
Total	100	100%

Table 6: Obstetric complications

Complications	Frequency No	Percentage %
Intrauterine death	1	1
IUGR	26	26%
Oligohydramnios	17	17%
Gestational hypertension	12	12%
Total cases with complications	56	56%
Cases without complications	44	44%
Total	100	100%

Discussion

We made a prospective study which includes 100 WWE complicating pregnancy to assess the maternal and fetal outcome. Our study showed majority of cases (68%) were primigravida and (32%) were multigravida, which was similar to study conducted by Prameeda PR et al showed 61.1% women were primigravida and 38.9% women were multigravida which concludes in both studies epileptic episodes were significantly increased in primipara [1].

In our study 64 cases (64%) of patients were on monotherapy, 15% of the patients were on polytherapy (combination of carbamazepine and phenytoin - 4 cases, carbamazepine and clobazam - 8 cases, phenytoin and lamotrigine - 3 case), 12% were on irregular treatment and 4 cases (4%) discontinued AED after becoming pregnant. In the study conducted by Danielsson KC et al [7], AEDs were used by 1200 WWE among which 1022 WWE were on monotherapy and remaining cases were on polytherapy, hence concluding that majority of women were on monotherapy does not have any major congenital malformation.

About 78% of patients on epileptic drug were on regular intake of folic acid and 7 % were on irregular intake, while 15 % did not have any drug intake in our study. According to Danielsson KC et al [7] regular consumption of folic acid was increased among pregnant women with epilepsy, which showed significantly increased over time in both the studies.

In our study 55% of women delivered prematurely and 45 % of women delivered at term, which was significantly high compared to the study by Khursheed R et al [4] who had reported 10% of preterm delivery in women with epilepsy.

In our study, 58% of cases had normal delivery while 34% of cases underwent LSCS for various indications including failed induction, fetal distress, oligohydramnios, IUGR and previous LSCS. Assisted delivery accounted for 8%, which showed there is no significant relation between mode of delivery and epilepsy complicating pregnancy. Mode of delivery in epileptic women is nearly comparable to study of Prameeda PR et al [1], Galappatthy P et al [3] who observed normal vaginal delivery in 43.7% of cases and LSCS in 25.6%. While Khursheed R et al [4] reported in their studies had more number of women (65%) underwent LSCS in WWE.

Birth weight of less than 2.5 kg accounted for 30% with mean birth weight of 2.65 kg in our study. Similarly Galappatthy P et al [3] has reported that fetus exposed to AEDs were at increased risk of low birth weight, concluding that both study showed significant relation between intake of antiepileptic drug and low birth weight babies.

In our study out of 100 cases, there were (26%) 26 cases of IUGR, (17%) 17 cases of oligohydramnios, (9%) 9 cases of malpresentation, (4%) 4 cases of abruption placenta, preterm cases accounted for 18% (18 cases). There was 1case of intrauterine death, (12%) 12 cases were found to have gestational hypertension. Khursheed R et al [4] observed 15% of patients had gestational hypertension, 15% of WWE had IUGR babies, and no maternal death. Prameeda PR et al [1], observed IUGR is statistically significant in epileptic women on AEDs and preterm labour in (11.9%) of cases and there was no case of abruptio placenta, placenta previa, PIH or gestational diabetes. Type and occurrence of obstetric complications appear variable in different studies [10-14].

Conclusion

Hundred epileptic WWE who were assessed for fetal and maternal outcome had few complications like prematurity, oligohydramnios, intrauterine growth restriction and low birth weight babies which were slightly increased. The incidence of reduced occurrence of antenatal complications and major congenital anomalies in our study might be due to early and regular antenatal checkup, regular intake of anti epileptic drugs preferred by neurologist and regular intake of folic acid. Pregnant WWE has to be considered as high risk pregnancy which needs multidisciplinary approach involving neurologist, obstetrician and pediatrician. Hence referral to tertiary care centres soon after evaluating epileptic history for a better outcome for both mother and fetus.

Conflict of interest: None. **Disclaimer:** Nil.

References

1. Prameeda PR, Shahida J, Seetha PM. A Study on Maternal and Perinatal Outcome in Epilepsy Complicating Pregnancy. JMSCR. 2020; 8(1): 842-8.
2. Melikova S, Bagirova H, Magalov S. The impact of maternal epilepsy on delivery and neonatal outcomes. Child's Nervous System. 2020 Apr; 36(4): 775-82.
3. Galappatthy P, Liyanage CK, Lucas MN, Jayasekara DT, Abhayaratna SA, Weeraratne C, et al. Obstetric outcomes and effects on babies born to women treated for epilepsy during pregnancy in a resource limited setting: a comparative cohort study. BMC pregnancy and childbirth. 2018 Dec; 18(1): 1.
4. Khursheed R, Ajaz S, Jeelani B, Wani S, Ahmed A. Fetomaternal outcome in epilepsy in pregnancy in a tertiary care hospital. Journal of the Scientific Society. 2021 Jan 1; 48(1): 21.
5. Fonseca M, Joshi A. Maternal and fetal outcome of pregnancy complicated by convulsions. International Journal of Reproduction, Contraception, Obstetrics and Gynecology. 2018 Sep 1; 7(9): 3801-8.
6. Bansal R, Suri V, Chopra S, Aggarwal N, Sikka P, Saha SC, et al. Change in antiepileptic drug prescription patterns for pregnant women with epilepsy over the years: Impact on pregnancy and fetal outcomes. Indian Journal of Pharmacology. 2019 Mar; 51(2): 93.
7. Danielsson KC, Gilhus NE, Borthen I, Lie RT, Morken NH. Maternal complications in pregnancy and childbirth for women with epilepsy: Time trends in a nationwide cohort. PloS one. 2019 Nov 25; 14(11): e0225334.
8. Soontornpun A, Choovanichvong T, Tongsong T. Pregnancy outcomes among women with epilepsy: A retrospective cohort study. Epilepsy & Behavior. 2018 May 1; 82: 52-6.
9. Shahla M, Hijran B, Sharif M. The course of epilepsy and seizure control in pregnant women. Acta Neurologica Belgica. 2018 Sep; 118(3): 459-64.
10. Kinney MO, Morrow J, Patterson CC, Campbell E, Russell A, Smithson HW, et al. Changing antiepilepsy drug-prescribing trends in women with epilepsy in the UK and Ireland and the impact on major congenital malformations. J Neurol Neurosurg Psychiatry. 2018; 89: 1320-3.
11. Meador KJ, Pennell PB, May RC, Gerard E, Kalayjian L, Velez-Ruiz N, et al. Changes in antiepileptic drug-prescribing patterns in pregnant women with epilepsy. Epilepsy Behav. 2018; 84: 10-4.

12. Bansal R, Suri V, Chopra S, Aggarwal N, Sikka P, Saha SC, et al. Levetiracetam use during pregnancy in women with epilepsy: Preliminary observations from a tertiary care center in Northern India. Indian J Pharmacol. 2018; 50: 39-43.
13. Meador KJ, Cohen MJ, Loring DW, et al. Two-year-old cognitive outcomes in children of pregnant women with epilepsy in the Maternal Outcomes and Neuro-developmental Effects of Antiepileptic Drugs Study. JAMA Neurol. 2021 Aug 1; 78(8): 927-36.
14. Anderson P. Reassuring findings for antiseizure medications in pregnancy. Medscape Medical News. 2021 Jun 10.

AR Jameela Ponmalar [1], Rema V Nair [2], Raagavi Sri S [3]
[1] Associate Professor, Department of Obstetrics & Gynecology, Sree Mookambika Institute of Medical Sciences, Kulasekharam, Kanyakumari District, Tamil Nadu, India; [2] Professor, Department of Obstetrics & Gynecology, Sree Mookambika Institute of Medical Sciences, Kulasekharam, Kanyakumari District, Tamil Nadu, India; [3] Postgraduate student, Department of Obstetrics & Gynecology, Sree Mookambika Institute of Medical Sciences, Kulasekharam, Kanyakumari District, Tamil Nadu, India.