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A Clinical Study of Maternal Complications and Perinatal Outcome in Pregnant Women with Epilepsy.

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Abstract
Objectives: *This study is conducted to determine the influence of epilepsy and its treatment on pregnancy and its outcome*
1) To study the maternal complications
2) To study the perinatal outcome
Methods*: It is a observational cross sectional study conducted on 50 pregnant WWE(women with epilepsy) > 28 weeks gestation admitted for labor in Vanivilas hospital and Bowring & Lady Curzon hospital affiliated to Bangalore Medical College and Research Institute, Karnataka, India from a period of November 2011 to May 2013.*
Results: *Incidence of pregnant WWE admitted for labor in our study is0.16%. Incidence of gestational epilepsy 4%. GTCS(generalized tonic clonic seizures) being the most common type present in 78% cases. 78% of WWE were on monotherapy of AED-Anti Epileptic Drugs;38% had convulsions during pregnancy; 6% hadintrapartum convulsions. 14% had post-partum convulsions within 24-48 hours ofdelivery. Seizure related head injury seen in 1 case. Status epilepticus in 1 case.*
Induction of labor was needed in 36% cases; cesarean section in 10% cases.
Post partum depression seen in 1 case.
Prematurity seen in 26% cases; low birth weight in 34% cases; still birth in 2%; intrauterine death in 2% and congenital malformations in 4% cases was seen.
Conclusion: *Majority of WWE can have safe pregnancyand childbirth with proper care and monitoring.Fetal malformations attributable to exposure ofAEDs occur in small proportion of instances only; fetal malformations is less inWWE on monotherapy excluding sodium valproate.*
Key words: *WWE - women with epilepsy; congenitalMalformations; seizures; AED- anti epileptic drugs*

I. Introduction

Epilepsy is the most common serious neurological problem faced by obstetrician[1] and affects approximately 30-60/10,000 pregnancies[2] . Women with epilepsy (WWE) who are considering pregnancy may have concerns about worsening of seizures, obstetric complications, abnormal delivery and malformation in their children. Pregnancy in WWE-Women With Epilepsy is still considered to be high risk because of the possible increase in frequency of seizures during pregnancy, labor, and delivery and because of the possible high number of complications during labor and adverse outcome. Higher rates of prematurity, low birth weight and neonatal and perinatal death have been reported among infants of mothers with epilepsy[3]. WWE on AEDs(anti epileptic drugs) stop taking medication without consultation due to concerns about malformations in their children due to AEDs. It is a psychological trauma to the patient and the family if the patient has a seizure attack during pregnancy. This study is intended to explore the maternal complications and perinatal outcome in women with epilepsy coming in labor to our hospital. This can aid in imparting better antenatal care, thus improving maternal and perinatal outcomes.

II. Objectives

To determine the influence of epilepsy and its treatment on pregnancy and its outcome
1. To study the maternal complications
2. To study the perinatal outcome

III. Methodology

The present study is a prospective observational study-cross sectional study conducted on 50 pregnant WWE (women with epilepsy)with>28 weeks of gestation who are being admitted for delivery to Vani Vilas Hospital and Bowring & Lady Curzon Hospital affiliated to Bangalore Medical College and Research Institute (a tertiary hospital and referral hospital), Bangalore, India in the period from Nov 2011 to May 2013. Written informed consent taken. A standard proforma used to collect the data. Ethical clearance obtained. Both treated and untreated WWE; booked/ unbooked / referred cases included in the study. Pregnant patients with other causes of seizures;preeclampsia were excluded.

The previous records of patients are studied to know the type of epilepsy and the treatment received. The type of treatment is recorded- monotherapy/ polytherapy; dose and type of drug recorded. Detailed history of the patient is taken,systemic examination and obstetric examination performed. History of epilepsy in detail was noted:- Age of onset; Duration of the disease; Type of epilepsy; Frequency of seizures in general, in previous and in present pregnancy; Frequency of attacks in present pregnancy in various trimesters; Type of therapy: monotherapy / polytherapy; drug- dosage, duration of therapy; Family history noted.Seizure attacks during labor and post partum period noted.

Maternal outcome in terms of seizure frequency and its complications like seizure related injuries, status epilepticus during pregnancy/delivery and obstetric outcome like mode of delivery- vaginal delivery (spontaneous/induced) or caesarean section, occurrence of PPH was recorded.

Perinatal outcome in terms of LBW(low birth weight), IUGR (intrauterine growth restriction),IUD (intrauterine death), still birth, congenital malformations are noted.Maternal complications and perinatal outcome due to epilepsy and its management were analyzed.

Anticonvulsant therapy continued. Inj. Vitamin K 1 mg given to all babies after delivery. Exclusive Breast Feeding was encouraged. Contraceptive advice given. Acute seizures during hospital stay managed by phenytoin / benzodiazepines.

Descriptive and inferential statistical analysis has been carried out.The Statistical software namely SAS 9.2, SPSS 15.0, Stata 10.1, MedCalc 9.0.1 ,Systat 12.0 and R environment ver.2.11.1 were used for the analysis of the data and Microsoft word and Excel have been used to generate tables etc.

IV. Results

In the present study,total number of deliveries from November 2011 to May 2013- 31,038 deliveries. Total number of pregnant WWE studied- 50 cases. Incidence ofWWE in present study – 0.16%.Incidence of gestational epilepsy:4% (they had seizures during pregnancy only; other causes of seizures being ruled out). 54 % of study group were in the age group of 21-25 yrs.Majority of the patients were referred – 50%; 36% patients belonged to lower socioeconomic status.62% of study group were multigravida. 24% had history of abortions in previous pregnancies.1 of them had induced abortion due to anencephaly in previous pregnancy.The majority of study group 66% were Term gestation i.e., 37-40 weeks.Age of onset of epilepsy was between 15-19 years in 52% cases.Family history is present in 10% of cases in present study.

Table 1: Epilepsy onset age in years

Epilepsy onset age (yrs)	No. of patients	%
<10	2	4.0
10-14	10	20.0
15-19	26	52.0
20-24	10	20.0
25-29	2	4.0
Total	50	100.0

Duration of epilepsy ranged from 1-5 yrs in 46% of the patients. Most common type of epilepsy in the present study was GTCS – 78%

Table 2: Type of epilepsy

Type	No. of patients	%
GTCS	39	78.0
CPS-complex partial seizures	2	4.0
SPS-simple partial seizures	5	10.0
CPS with secondary generailization	4	8.0
Total	50	100.0

In the present study,38%hadconvulsions in the antenatal period; 6% had attacks in intrapartum period, 14% patients had their attacks in postpartum period. No convulsions seen throughout pregnancy ; intrapartum and post-partum in 50%cases.

In our study, 78% of patients were taking monotherapy12% polytherapy and 10% were not on any treatment

Table 3 : Drugs used

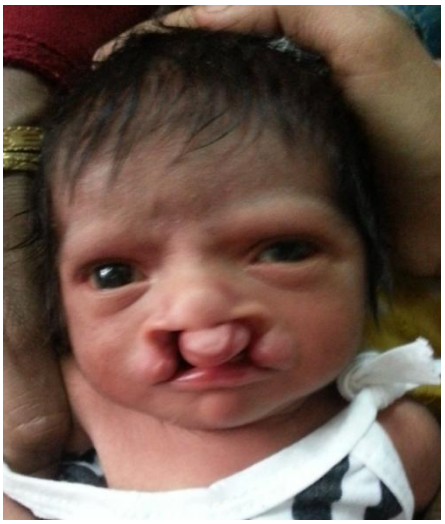
Drug	No. of patients (n=50)	%
No drug	5	10
Monotherapy	39	78
• PHT-phenytoin	15	30
• PB- phenobarbitone	13	26
• CBZ-carbamazepine	9	18
• LEV- levetiracetam	2	4.0
Polytherapy	6	12.0
• CBZ+clobazam	3	6.0
• PB+ CBZ	2	4.0
• PB+ CBZ+ Clobazam	1	2.0

90% of the study group had vaginal deliveries. 36% had induced labor in our study; 54% had spontaneous onset of labor.LSCS was done in 10% of the patients; done for obstetric indication in 4 cases and for 1 case it was done for intrapartum GTCS.

Live births seen in 96% of patients; IUD seen in 1 patient; still birth seen in 1 patient following intrapartum convulsions.64% in the study group had their babies in the birth weight range of 2.5- 3.5 kg.
Abnormal fetal outcome seen in 38% cases; prematurity seen in 26% cases. LBW(<2.5 kg) seen in 34% (contributed mostly by prematurity),IUD in 2%, still birth in 2%.Congenital malformations: Cleft lip seen in 1 patient (2%) and NTD- Meningomyelocele seen in 1 patient(2%)

In our study, anemia seen in 10% of cases; ie., 5 cases- 3 cases are microcytic hypochromic anemia and 2 cases- dimorphic anemia as associated complications.

Congenital anomalies:



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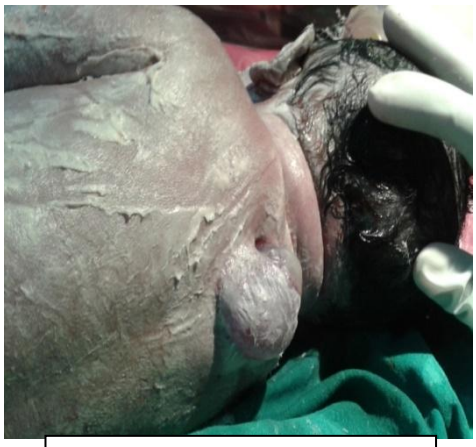

NTD - Meningomyelocele

V. Discussion

The incidence of WWE coming in labor in our study is **0.16%**; correlating with Dasgupta 1996 studies[4] showing 0.1%; Sabin & oxorn (1945-54) [5]– 0.2%;Olafsson E *etal*[6]1998 showing 0.33%.Incidence of gestational epilepsy in our study -4%. Our hospital being a Government hospital and referral center, the class of people who come here are often of lower socio-economic status; hence, lower socio – economic class is common in the present study.

In the present study group, the duration of epilepsy in most(46%) of the patients is 1-5 years. Family history of epilepsy was present in 5 patients (10%). Epileptic history present in mother in 2 cases; in sister in 2 cases; in both father and grandmother in 1 case.In one patient- patient has SPS and sister has GTCS.

Majority of the patients in this study group had GTCS-78% correlating with Sawheny *etal*[7]study showing 92.6% GTCS.78% patients on monotherapy; 12% patients on polytherapy in the present study correlating with other studies as shown in table.

Table 4: Comparison oftype of drug therapy with other studies.

Study	Monotherapy(%)	2 drug therapy(%)	3 drug therapy(%)	No therapy(%)
Sawheny *et al*	69.41%	28.31%	--	2.28
Sabers A *et al*[8]	71%	10%	7%	12%
Tomes L.C *et al*	78%	10%	10%	2%
Present study	78%	10%	2%	10%

In our study, most common drug used in monotherapy is phenytoin. Most commonly used polytherapy combination in our study is carbamazepine + clobazam.

Among the 50 patients studied; 38% were affected by pregnancy correlating with other studies as shown in the table below. Convulsions were common in second trimester. Intrapartum convulsions seen in 3 patients; Amongst them 1 had Status Epilepticus. This case was taken up for emergency LSCS.Two patients had antepartum convulsions along with intrapartum convulsions.In the postpartum period, convulsions seen in 7 patients; 2 of them had in antenatal period also. They had convulsions in first 24-48 hours postpartum. One patient had seizure related head injury. One more patient had status epilepticus in previous pregnancy; she is on polytherapy in the present pregnancy.

Table 5 – Effect of pregnancy on epilepsy in various studies

Effect of pregnancy on epilepsy	Sabin & Oxorn	Schimdt *et al*[9]	Sawheny *et al*	Present study
No changes	54.55%	63%	56.52%	62%
Affected	16.36%	37%	43.48%	38%

Obstetric outcomein the present study is compared with other studies as shown in the table below.

Table 6-Obstetric outcome in different studies

Obstetric outcome	Sawheny *et al*	Sabin & Oxorn	Present study
Preterm deliveries	30%	12.72%	26%
FTVD	43%	81.27%	64%
LSCS	27%	6%	10%

Previous history of abortions in the study amounted to 24% cases. One of them had molar pregnancy and post evacuation seizures during previous pregnancy. One patient who had intrapartum convulsions had still birth. One patient had GTCS in third trimester (8^{th} month) following which she had IUD.

Abnormal fetal outcome in our study:Congenital anomalies were seen in 2 babies (4% cases); both are referred cases who reported to us in labor. 1 baby had NTD-meningomyelocele and patient was on phenobarbitone therapy.1 baby had cleft lip and patient was on phenytoin therapy.Both babies were referred to paediatric surgery department.In our study, congenital anomalies were seen in the WWE on monotherapy. This is seen mostly because number of pregnant WWE on polytherapy in the present study was less. (6 cases). Perinatal wastage in the present study seen in 4 %; still birth – 1 case following intrapartum seizures; IUD- 1 case. In a study by Sawheny *etal*, still birth was seen in 0.63% and congenital anomalies in 0.63%.

Table 7 - Incidence of congenital anomalies in different studies:

Authors	Congenital anomalies (%)
Laine *et al*	20%
Sabers A *et al*	5.3%
Sawheny *et al*	0.63%
Present study	4%

Majority of the babies (64%) in this present study were in the range of 2.5-3.5 kg. LBW (<2.5 kg) seen in 34%; prematurity contributing to majority of the LBW babies.

One patient had a history of infant death in previous pregnancy as the baby also had epilepsy.

Newborns received 1 mg vitamin K at birth.No adverse neonatal outcome in the live births in the present study till the day of discharge.In our study, none of the babies showed features of neonatal depression or coagulopathy.Patients were educated about having an attender for taking care of the baby.

Counseling done for all patients regarding their illness. Necessity of adequate sleep during pregnancy and post-partum was explained.Folic acid supplementation was taken by all patients on AEDs.Postpartum depression seen in 1 patient who had meningomyelocele baby.

Excusive Breast Feeding (EBF) was encouraged even in WWE taking AEDs.

Contraception:IUD – Intrauterine device is the most commonly advised method in the present study; PPIUCD – Post Partum Intrauterine Copper Device inserted in 5 patients. Oral Contraceptive failures are more common in women taking AEDs. Limiting method advised in women having 2 or more children. Barrier method was used by some.

VI. Conclusion

Majority of WWE can have safe pregnancy and childbirth. 50% WWE did not have seizures in antepartum; intrapartum and post-partum period. Status epilepticus seen rarely. Prematurity and LBW can be present. Fetal malformations attributable to exposure of AEDs occur in small proportion of cases only; fetal malformations are less in WWE on monotherapy excluding sodium valproate[10]. Complications are rarely observed during delivery in WWE. The pregnancy complication of WWE can approach the rates in the general population if comprehensive care of women with epilepsy during the reproductive years include effective preconceptional counseling, regular follow up in pregnancy, effective use of prediagnostic tests; optimization of AEDs; folic acid supplementation and encouraging deliveries in medical unit.

Conflict of interest : The authors have no conflict of interest.

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