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Seizure Disorders in Pregnancy

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Introduction

Epilepsy is a challenging neurological problem encountered during pregnancy. It is defined as occurrence of two or more unprovoked seizures which is the clinical manifestation of an abnormal, excessive, purposeless and synchronised electrical discharge in the brain cells called neurons[1]. Though the incidence of epilepsy in pregnancy is less than 1%, apart from risk of injury, it has substantial effect on mother and foetus from conception till post-partum period if not supervised effectively. Moreover, the rate of maternal mortality is 10 times higher than those without seizure disorder in pregnancy[2]. The management of Women With Epilepsy (WWE) requires the joint efforts of obstetrician, neurologist, anaesthetist, and neonatologist. Since antiepileptic drugs (AEDs) play a major role in treatment, the vast spectrum of interaction of these drugs with pregnancy and lactation and *vice versa* always keeps a clinician in dilemma. This article highlights the overview of epilepsy in women from the pre-conception period to the post-partum period and the associated management dilemmas.

Diagnosis of epilepsy

The diagnosis of seizure disorder in pregnancy is to be confirmed by a neurologist or the medical practitioner who has expertise in epilepsy. WWE should undergo complete neurological evaluation prior to conception. The type of epilepsy should be recognised as focal, generalised, combined or unknown onset and related to any epileptic syndrome like Lennox-Gastaut syndrome or Dravet syndrome as per revised classification of international league against epilepsy (ILAE)[3]. The enquiry regarding duration, frequency, and severity helps to determine prognosis in pregnancy and to identify and prevent the factors of seizure deterioration. Generalised tonic clonic seizure is considered to cause maximum adverse effect on mother and foetus. Choice of AEDs also depends on the type of seizure disorder. Occurrence of seizure episode first time during pregnancy after 20 weeks in association with high blood pressure is mostly diagnosed to be eclampsia in the absence of any previous history of epilepsy. However, there can be other causes too (Table I). Proper history, examination, blood biochemistry, antibody testing, ECG and cerebrospinal fluid investigations are helpful in ruling-out these conditions. Imaging modality like MRI is a safe investigation for assessment during pregnancy with minimal radiation exposure to the foetus.

Table I: Causes of epilepsy in pregnancy.

Pregnancy specific	
Eclampsia	
PRES*	
Post-partum angiopathy (RCVS)#	
Nonspecific to pregnancy	
Metabolic conditions	Intracranial space occupying lesion
Hypogycaemia,	Intracerebral tumour (primary or metastatic)
Hyponatraemia,	Meningioma
Hypocalcaemia,	Cardiac conditions
Hypergycaemia hyperosmolar syndrome	Arrythymia
Infections	Asystole
Encephalitis,	Drug withdrawl
Meningitis	Cocaine
Cerebral malaria	Alcohol
Cerebral abscess	Psychogenic
Neurocysticercosis	Pseudoseizure or
Herpes simplex	Dissociative
humani mmunodeficiency virus	Autoimmune
Cerebrovascular accidents/	Idiopathic
Haemorrhage	Genetic
Infarction	
Central venous sinus thrombosis	
Head trauma	

**Posterior reversible encephalopathy syndrome, # Reversible cerebral vasoconstrictive syndrome.*

Effect of pregnancy on epilepsy

Pregnancy may influence the course of seizure disorders. In majority (67%) of WWE, there is no deterioration of seizure frequency in pregnancy[4]. The seizure-free duration and type of seizure disorder are the most important factors in predicting the occurrence of seizure. Females with seizure free span for last 5 years without AEDs have almost no further risk of epilepsy in pregnancy. Studies have shown that women who remain seizure free for at least 9 months to 1 year prior to conception, have a 74 - 92% chance of being seizure free during pregnancy[5]. Pregnant women with idiopathic generalised epilepsies are more likely to remain seizure free (74%) than those with focal epilepsies (60%). Only 15 %

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WWE have increased seizure frequency in pregnancy. Increased hepatic and renal clearance of AEDs, increased volume of distribution and changes in serum protein binding decrease the levels of AEDs in blood leading to increased seizure frequency. Stress and decreased sleep during pregnancy also lower the seizure threshold. Concerns regarding the teratogenic effects of AEDs on foetus, reduces compliance among WWE and further enhances the risk of seizure episode (Table II). Seizure frequency increases with rise in oestrogen and decrease in progesterone levels[6], therefore the risk of seizure is more seen during the last trimester. There is insufficient evidence to state the increasing incidence of status epilepticus in pregnancy. However, 10% maternal mortality is reported owing to sudden unexpected death (SUDEP) in epilepsy with poorly controlled seizures being the main contributory factor[7].

Table II: Causes of increased frequency of seizures in pregnancy (approximately 15%).

- Stress
- Sleep deprivation
- Decreased adherence to AEDs
- ⇧Hepato-renal clearance of AEDs
- ⇧Volume of distribution and changes in protein binding of AEDs due to physiological haemodilution
- Change in oestrogen and progesterone levels

Effect of epilepsy and AEDs on pregnancy

As compared to women without epilepsy, WWE have 1.7 times increased risk of adverse pregnancy outcomes like spontaneous abortions, antepartum haemorrhage, foetal growth restriction, hypertensive disorders, preterm birth, caesarean section and post-partum haemorrhage[8]. Direct effect of generalised tonic-clonic seizures can lead to hypoxia and lactic acidosis, which may harm the foetus via placental transfer causing intrauterine foetal death[9].

The risk of congenital malformation to foetus in WWE not on AEDs is comparable to women without epilepsy (2 to 3%). The risk is two-fold increased (4 to 6%) in WWE on AEDs and is dependent on the type, number and dose of AEDs[10]. Valproic acid, though being the most effective AED, has maximum teratogenic potential followed by phenytoin, phenobarbitone, primidone, topiramate and carbamazepine. Neural tube defect is the commonest anomaly found in foetus of WWE exposed to sodium valproate, in addition to craniofacial, cardiovascular, and urogenital anomalies[11]. Orofacial clefts, cardiac malformations, and genitourinary defects are the major malformations described with phenytoin. Topiramate exposure in pregnancy is associated with an increased risk of foetal growth restriction and low birth weight[12]. Long-term studies on neurological development show higher rates of abnormal electroencephalogram (EEG) findings, developmental delay, lower intelligence quotient (IQ) scores and autistic spectrum in children exposed to AEDs *in utero*, especially with sodium valproate[13]. Risk of congenital malformation is dose dependant and is more associated with polytherapy as compared to monotherapy. Various effect of AEDs in pregnancy are shown in Table III. Lamotrigine and levetiracetam monotherapy at lower doses have found to have the least risk of congenital malformation and cognitive abnormality[14-16]. They are broad spectrum AEDs, effective in almost all types of seizures and are best choices in preconceptional and antenatal period[17]. But, they need dose escalation as their plasma concentration falls in pregnancy[18]. There is no AED which fall in FDA category A or B for pregnancy.

Table III: Various antiepileptic drugs and their effects and implications in pregnancy.

AED	Risk of CM	Specific CM	Neurodevelopmental delay, outcome in children	Require dose adjustment (‘!/“!), serum level of AED in pregnancy (‘!/“!)	Comments	FDA category for pregnancy
1st Generation						
Carbamazepine	2.6 to 6.6%	Microcephaly	Cognitive delay, Attention deficit hyperactivity disorder, Autism	No	Caution	D
Phenobarbitone	5.5 to 13.7%	Cardiac, cleft palate, hypospadiasis	High cognitive, psychomotor delay	Yes ‘!,(50 to 70% “!)	Avoid in pregnancy	D
Phenytoin	2.3 to 8.8%	NTD, cardiac, cleft palate, club foot	Not specific	Yes ‘!,(50 to 61%“!)	Caution	D
Valproate	6.7 to 10.3%	NTD, Orofacial, limb, skeletal malformation, hypospadiasis[11]	Low IQ, neurodevelopmental delay, cognitive delay, Autism[13]	No	Avoid in pregnancy	D
Ethosuximide	15.4%	Cleft palate	*	*	Avoid	C
Clobazam	9.4% - 22%	*	*	*	Avoid	C
2nd Generation						

Lamotrigine	1.9 to 2.6%	No	No[15] Autism#	Yes'!, 50 to 70% (56.1%)"!	First-line drug (focal and generalised seizure in pregnancy)	C
Levetiracetam	0.7 to 2.8%	No	No	Yes '!,40 to 60%"!(40%)[18]	First-line drug in pregnancy (focal, generalised and myoclonic seizure in pregnancy)	C
Oxcarbamazepine	2.39%	Hypospadiasis*	*autism, neonatal abstinence syndrome[16]	Yes'!,32% "!	'! risk of seizure, Caution	C
Eslicarbazepine	*	*	*	*	Avoid	C
Felbamate	*No	*	*	*	Avoid	C
Gabapentin	*22%	Cardiac (VSD),	SGA	Yes'!,"!*	Avoid	C
locasamide	*	*	*	Yes'!*,39%"!*	Avoid	C
Topiramate	4.4%	Cleft lip, microcephaly(18.5%)	No *	Yes'!,30-40% "!	Caution	D
Zonisamide	*	Anencephaly, ASD	SGA*	Yes'!,30%"!	Avoid 40% risk of breakthrough seizure	C
3rd Generation						
Perampenal	*	Low APGAR Score, cystic fibrosis, congenital deafness*	*	*	Avoid	C
Pregabalin	3.3%*	VSD	*	Yes*	Avoid	D

**Insufficient data/limited studies, #Rare studies, CM: Congenital malformation, VSD: Ventricular septal defect, SGA: Small for gestational age.*

Management in Preconception phase

Preconceptional counselling plays a very important role in managing WWE right from prior to conception to antenatal, intrapartum and post-natal period. Complete verbal and written information regarding the effect of pregnancy on seizure profile and effect of epilepsy and AEDs on pregnancy should be provided to the women and her relative. Pharmacotherapeutic issues regarding adherence to AEDs should be addressed[17]. Pregnancy *per se* should not be considered a contraindication to WWE. Selection of appropriate AED weighing the risk benefit ratio should be taken to obtain effective control of seizure episodes prior to pregnancy in consultation with a neurologist. Teratogenic drugs (e.g., sodium valproate) should be replaced with other drugs (levetiracetam and lamotrigine). AED polytherapy should be switched to monotherapy if possible. The lowest effective dose of the most appropriate AED should be used. The therapeutic range of AEDs should be established in the preconception stage to eliminate inter-individual variations. WWE should be warned against abrupt discontinuation of AEDs.

Folic acid deficiency in preconception period, is associated with development of various congenital malformation like neural tube defects, oesophageal atresia, conotruncal heart defect, cleft palate, urinary malformations and omphalocoeles. Therefore, levels of folic acid should be measured preconceptionally to detect folate deficiency[19]. Folic acid supplementation (5 mg/day) at least 3 months prior to conception and until at least the end of the first trimester is recommended. Folic acid also reduces the cognitive impairement in children exposed to AEDs in *utero*[20].

Antenatal care and management

WWE presenting with unplanned pregnancy should be discouraged to stop or change the antiepileptic drugs abruptly of their own. This can result in epileptic attack, resulting in foetal intracranial haemorrhage, transient foetal bradycardia, miscarriage, or even death of the mother and foetus. WWE should be managed jointly by an obstetrician and neurophysician. Proper evaluation is to be done in case seizure occurs first time in pregnancy to know the cause (Table I). AEDs levels should be monitored closely and the therapeutic range should be individualised. In case of controlled seizure on AED polytherapy an attempt should be made to reduce the number of drugs and dose to lowest therapeutic level[21]. Valproic acid should be avoided if possible. Levetiracetam, lamotrigine and carbamazepine are good choice AEDs.

ILAE, 2019 report has concluded that a decrease of more than 35% in AED levels is associated with worsening of seizure control[9]. Therefore, close monitoring of antiepileptic medication serum levels during pregnancy in each trimester is important because of the increased clearance of these during pregnancy and frequent requirement for dose escalation especially with lamotrigine and levetiracetam

(Table III). Frequency of drug level monitoring may vary with type and level of control of seizure. More frequent AED monitoring is required in females with active epilepsy (a seizure within the past 12 months), bilateral tonic-clonic seizures and having modifiable risk factors for SUDEP (non-adherence to medication, alcohol and drug misuse, having focal to bilateral tonic-clonic seizures or generalised tonic-clonic seizures, having uncontrolled seizures, living alone and sleeping alone without supervision)[17].

In case it there is no facility for monitoring drug levels, dose of AED can be increased if female is on lamotrigine, levetiracetam or oxcarbazepine; type of seizure is changed from focal to generalised; seizure control has been sensitive to change in AED levels before pregnancy[9].

AEDs also alter the pharmacokinetics of folic acid metabolism. Folic acid is a vitamin B involved in the synthesis of purines, which are required for DNA formation, and low levels are associated with reduced growth, risk of congenital malformation, and anaemia. Women taking enzyme-inducing AEDs (e.g., strong inducers: carbamazepine, phenytoin; weak inducers: topiramate, oxcarbazepine, eslicarbazepine acetate) have a greater risk of folic acid deficiency during pregnancy compared with the general population. Valproate, although not enzyme inducing, interferes with folate absorption and folate-related co-enzymes. Therefore, folic acid supplementation is essential in antenatal period too. High-dose supplementation is recommended for enzyme-inducing and older AEDs. The American College of Obstetricians and Gynaecologists (ACOG) and the United Kingdom guidelines[20] recommend a daily folic acid supplementation of 4 mg and 5 mg respectively. No clear guidelines for dosing folic acid with newer AEDs such as lamotrigine or levetiracetam are available. Certain studies recommend high-dose folic acid supplementation in high-risk cases like previous pregnancies with NTDs, unplanned pregnancy not supplemented with folic acid, and women with low intake or impaired adherence to daily folic acid supplementation. In addition, women with known genetic variations in the folate metabolic cycle, those exposed to medications with antifolate effects, smokers, diabetics, and the obese may benefit from higher doses of folic acid daily during the first trimester[22]. However, according to other authors, there is no reason to use higher dosages since there is no evidence that higher dosages are more useful and at least 0.4 mg/day is considered enough[9]. Therefore, the dose to be used is between 0.4 and 5 mg and should be evaluated in each specific clinical case[23].

Though, there is less, but significant obstetric risk like spontaneous abortion, pre-eclampsia, antepartum haemorrhage, preterm labour and foetal growth restriction, antenatal care should be imparted as high-risk pregnancy. Risk factors such as sleep deprivation, dehydration, fever and stress; seizure type and frequency; adherence to AEDs should be assessed in each antenatal visit. Early anomaly scan should be done at 11 to 14 weeks to detect neural tube defect. Option of aneuploidy screening should be given. Detailed anomaly ultrasound scan is recommended at 18 to 22 weeks to detect other congenital malformations and cardiac defects. Foetal echo may be also be advised in case of suspicion of cardiac anomaly. Serial growth scans are required for detection of small-for-gestational-age babies and to plan further management in WWE exposed to AEDs. Number of antenatal visits should be individualised taking the serum level of AEDs, clinical seizure control and associated obstetric complications into consideration.

If admission is required antenatally, WWE at reasonable risk of seizures should be kept in an environment that allows for continuous observation by a caretaker, partner, or nursing staff. There is no role for routine antepartum foetal surveillance with cardiotocography in WWE taking AEDs[20].

Intranatal care

Though there is increased risk of seizure frequency in labour, women should be assured as only 2% of WWE have been reported to have epilepsy during delivery[24]. Risk of seizure in labour varies with the AEDs (lamotrigine and carbamazepine – 2.6%, phenobarbitone – 1.9%, valproate – 1.4%). If seizure deterioration is anticipated in the peripartum period, delivery should take place where there are facilities for maternal and neonatal resuscitation and treatment of maternal seizures.

Adequate analgesia and appropriate care in labour should be provided to prevent occurrence of seizure. Pethidine, in higher doses, should be avoided or used with caution, as it is metabolised to norpethidine, which is epileptogenic. Epidural analgesia can be the option. Less number of visitors should be allowed in the vicinity. Patient should be kept in a calm environment so that she can take sleep in-between. Bed railing should be padded to avoid injury. One caregiver should always be present in the labour room along with the patient. Oral AED intake should be continued, but should be replaced with parenteral alternative in case of non-tolerance. Long-acting benzodiazepines, such as clobazam can be considered if there is a very high risk of seizures in the peripartum period. Seizures in labour should be terminated as soon as possible with benzodiazepines like lorazepam (drug of choice), diazepam, or midazolam to avoid maternal and foetal hypoxia and foetal acidosis. If seizures are not controlled, the loading dose of phenytoin (or fosphenytoin), 10 - 15 mg/kg should be administered by intravenous infusion, with the usual dosage for an adult of about 1,000 mg[25]. This should be followed by maintenance dose.

Seizure disorder in pregnancy is not the indication for induction of labour (IOL). But, the evidence suggests an increased incidence of IOL in WWE. AEDs do not have any interaction with drugs that are used for IOL. Hyperventilation and maternal exhaustion should be avoided because these conditions can exacerbate a seizure in the labouring women. Epilepsy is not an indication for a caesarean section but should be considered for obstetric reasons. Epidural anaesthesia is preferred as it allays pain and prevents seizure. In case of repeated seizures (status epilepticus), patient should be considered for mechanical ventilation and early termination by caesarean section. Uterotonic administration and CTG monitoring should be considered in case of uterine tonicity. Though few studies have reported risk of maternal and neonatal haemorrhage in WWE taking enzyme inducing AEDs. However, there is less evidence for the role of vitamin K prophylaxis, especially women on enzyme-inducing AEDs[26].

Post-partum care and breastfeeding

The frequency of seizure episodes decreases in post-partum period, but AEDs intake should not be stopped. The dose of AEDs should be reviewed by measuring the serum levels within 10 days of delivery to avoid toxicity. Lamotrigine, levetiracetam and oxcarbamazepine levels sharply rise in blood, therefore, doses need to be tapered. Dose reduction is also needed with eslicarbazepine, gabapentine, lacosamide, oxcarbazepine, pregabalin, rufinamide, topiramate, valproic acid and vigabatrin as the physiological renal and hepatic enzymatic changes (e.g., glucoronidation) associated with pregnancy resolves in 2 to 3 weeks. Whereas cytochrome P450 coenzymes may take 1 to 2 months to return to baseline clearance rate. As such, dose titration is less likely required in WWE taking enzyme-inducing drugs like carbamazepine, clobazam, ethosuximide, felbamate, phenytoin, phenobarbitone, primidone, tiagabine and zonisamide[9].

Secondly, trigger of epilepsy like sleep deprivation should be avoided. Caregiver should be advised to adopt shift approach so as to allow mother with epilepsy to have adequate sleep. Responsibility of baby should be shared with family. Emotional and mental support should be provided to avoid stress and postpartum depression. Various safety measures should be taken to avoid injury to mother and baby in case of unexpected epilepsy. Mother and baby should not be allowed to bathe alone in the early post-partum period as there is risk of drowning and injury in bathroom in case of sudden epilepsy. Baby carrier should be used while walking around with the baby. In patients with uncontrolled epilepsy, a safety strap is recommended while holding the baby.

WHO recommends breast feeding in WWE in post-partum period, as it provides many benefits for the infant including nutrition, immunoprotection, and cognitive development. ILAE 2019, advocated that the adaptation to bottle feeding may be allowed as per seizure sensitivity based on history and type of epilepsy; this permits uninterrupted sleep for at least 4 hours. Pumping breast milk during the day to maintain milk supply and a partner feeding the child during the night can assure both less sleep deprivation for the mother and the benefit of breast milk over formula nutrition for the child[23]. Though, potential transfer of AEDs through breast milk and their side-effect has been a matter of concern, but in breastfed infants the level of AEDs is much lower than the umbilical cord blood AEDs[27,28].

The safety and low levels of AEDs in breastfed infants depends on plasma protein binding, oral bioavailability, milk-to-plasma ratio (M/P ratio) and plasma half-life. These drugs are categorised in 5 lactation groups (ranging from L1- safest to L5- contraindicated) depending upon the safety profile (Table IV). Ethosuximide, zonisamide, benzodiazepines (though single dose does not alter the levels in infants) and felbamate are probably high-risk and contraindicated in breastfeeding[27].

Table IV: Safety profile of AEDs in lactation.

Catogory	AED	Dose adjustment(“!‘!)
L2-Safe*	Carbamazepine	Not required
	Phenytoin	
	Valproic acid	
L3-Moderately safe#	Levetiracetam	“!
	Pregabalin	
	Lamotrigine	
	Tiagabine	
	Vigabatrine	
	Topiramate	
	Oxcarbazepine	
L4-possibly hazardous”	Zonisamide	
	Primidone	-
	Phenobarbital	“!
	Clobazam	-
	Clonazepam	-
	Ethosuximide	-
Insufficient data	Eslicarbazepine-acetate	“!
	Perampanel	-
	Lacosamide,	“!
	Brivaracetam	-

**High degree of protein binding in plasma, low degree of penetration into breast milk, M/P ratio 0.01 to 0.7, #Low degree of protein-binding in plasma (from 15% of topiramate to 55% of lamotrigine and oxcarbazepine), low molecular weight, M/P ratio from 0.1 to 2.0" low degree of protein-binding, M/P ratio from 0.3 to 2.8, high excretion into breast milk.-Insufficient studies or data.*

The effect of AEDs in the baby can be reduced by appropriate timing of medication. Breastfeeding mothers on once-a-

day AED should be advised to take it at the beginning of baby's longest sleep, usually right after the bedtime feeding. In case when medication is to be taken more than once a day, mother should be advised to breast-feed the baby immediately before taking a dose. That's when the level is likely to be lowest.

Breastfed infants should be watched for diarrhoea, sleepiness, excessive crying, vomiting, decreased appetite, and appearance of rashes. Infant should be reviewed by the neonatologist and neurologist for untoward effect of AEDs. The risk of the child developing epilepsy in life depends mainly on the type of epilepsy in the mother, especially hereditary epilepsy syndrome. The risk increases with decreasing gestation age and birth weight[29].

Contraception

Contraception should be offered to WWE to avoid unplanned pregnancy[20]. Choice of contraception depends on various pharmacokinetic interactions between hormonal contraception (HC) and AEDs. Most combined oral contraceptives (COCs) are metabolised by cytochrome P450 enzymes. Enzyme inducing antiepileptic drugs like carbamazepine, phenytoin and phenobarbitone, induce these enzymes resulting in the decreased efficacy of COCs. Patients receiving these AEDs should take at least 50 mcg of ethinyl estradiol (high-dose COCs) or two tablets of 30 mccg ethinyl estradiol. Alternatively, one can switch to another method like IUCD (intrauterine devices). If the patient prefers only oral contraception, use of smartphone app (pill-reminder), digital tablet dispenser, or other measures are suggested to minimize number of missed pills. These women should also be provided with the option of drugs that have no interactions with HCs. Valproic acid, vigabatrin, gabapentin, tiagabine, levetiracetam, zonisamide, ethosuximide, and benzodiazepines – including clobazam and clonazepam – pose no risk of contraceptive failure. Progesterone-only pill, progestin/progesterone implants, combined contraceptive patches, and vaginal ring are not recommended because of reduced efficacy. If depot medroxyprogesterone injection is given, it should be given at more frequent intervals (10 week interval rather than 12 week interval)[30].

In contrast, the oestrogenic component of COCs can lower lamotrigine levels by 40% to 60%, by increasing uridine-diphosphate glucuronosyl transferase (UGT) mediated glucuronidation, thus enhancing the risk of breakthrough seizures. Therefore, lamotrigine levels should be carefully monitored before and after starting a COC, and doses adjusted accordingly, potentially by up to 50%. Options like IUCD, DMPA, implants should to suggested. Any hormonal contraception can be offered to patients receiving levetiracetam[31].

Concerns like alteration of milk production, cardiovascular and thromboembolic risk in post-partum women, COCs are contraindicated. Copper IUCD should be the choice for these patients.

WHO Medical Eligibility criteria (MEC), 2016 for use of different contraceptive methods in women with epilepsy and AEDs usage is shown in Table V[32].

Table V: Medical eligibility criteria (MEC) for contraception in epilepsy.

Medical eligibility	COCpill/ patch/ring	POP	Inj DMPA	Implant	Levonor-gesterol-IUCD	Copper IUCD
Epilepsy – no AED/on non EIAED	1	1	1	1	1	1
EIAED *	3	3	1	2	1	1
Lamotrigine	3	1	1	1	1	1
Breast feeding <6 weeks	4				3	1"
Breast feeding (6 weeks to 6 months)	3	1	1	1	1	1©

*EIAED = Enzyme inducing antiepileptic drug, *Phenytoin, carbamazepine, barbiturates, primidone, topiramate, oxcarbazepine; Felbamate and topiramate,are less potent enzyme inducers but, selectively, induce metabolism of progesterone and oestrogen component of OCPs, respectively. COC: Combined oral contraception, POP: Progesterone only pills, DMPA: Depot medroxyprogesterone acetate, IUCD: Intrauterine contraceptive devices, MEC: 1. no restriction, 2. advantages of using the method outweigh the theoretical or proven risk, 3. theoretical or proven risks outweigh the advantages of using the method, 4. unacceptable health risk/contraindication" ruling-out contraindications for IUCD postpartum period, like post-partum haemorrhage, severe anaemia, prolonged leaking (>18 hrs) and preferably within 24 hrs of delivery, ©Post-menstrually,once the menses resumes or when its sure patient is not pregnant.*

Conclusion

Epilepsy is a common chronic neurological problem in pregnancy, associated with foeto-maternal morbidity and mortality. The management requires multidisciplinary team of obstetrician, neurologist and neonatologist. WWE should undergo proper preconception counselling and folic acid supplementation. Pregnancy should be planned after complete evaluation and adequate control of seizure episodes with safe AEDs. Lamotrigine, levetiracetam and oxcarbamazepine are safe and preferred in pregnancy. Patient should be monitored for obstetric complications and detailed anomaly scan is a must at 18 to 22 weeks. AED levels should be monitored closely. Advocating good safety precautions, along with appropriate choice and adherence to antiepileptic drugs avoids seizure episodes and risk of injury to mother and baby even during delivery. Caesarean section should be reserved for obstetric indication or in cases of status epilepticus. Breast feeding should be

advocated as much as possible. Counselling and administration of appropriate contraception, unaffected by antiepileptic drugs, like intrauterine contraceptive devices should be promoted in post-partum period.

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