Approach Considerations in Seizures in Pregnancy

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Presentation

- Introduction
- Etiology
  - Epilepsy
    - Status epilepticus
  - Eclampsia
  - Stroke
- Management

Introduction

- Seizure;
  - A seizure is a transient disturbance of cerebral function caused by abnormal, paroxysmal, hypersynchronous electrical neuronal activity in the cerebral cortex.
  - Seizures during pregnancy complicate <1% of all gestations;
    - however, they are associated with increased adverse maternal and perinatal outcomes.

1. Hart LA1, Sibai BM. Seizures in pregnancy: epilepsy, eclampsia, and stroke. Semin Perinatol. 2013 Aug;37(4):207-24. doi: 10.1053/j.semperi.2013.04.001.

Etiology

Potential causes of seizures in pregnancy and postpartum.

Epilepsy
Cerebrovascularaccidents
- Hemorrhage
- Rupturedaneurysmormalformation
- Arterialembolismorthrombosis
- Cerebralvenousthrombosis
- Hypoxic ischemicencephalopathy
- Angiomas

Eclampsia/postpartumangiopathy
Congenital braindefects
Infectious encephalitis:bacterial,viral,parasitic,tuberculosis
Trauma
Brain tumors:benign,neoplastic
- Primary
- Metastatic

Liver/renal failure
Metabolic derangement:hypoglycemia,hyponatremia,hyperosmolarstates(hyperosmolarnonketotichyperglycemia),andhypocalcaemia
Drug overdose/withdrawal
Thrombophilia:antiphospholipidsyndrome
Autoimmune disorders
- Systemiclupuserythematosus
- Thromboticthrombocytopenicpurpura

1. Hart LA1, Sibai BM. Seizures in pregnancy: epilepsy, eclampsia, and stroke. Semin Perinatol. 2013 Aug;37(4):207-24. doi: 10.1053/j.semperi.2013.04.001.

Epilepsy

- Incidence at pregnancy
  - 3–5 birthsper 1000 will be to women with epilepsy.
- In women who already have epilepsy
  - 15–30% may experience an increase in seizures.
  - Status epilepticus occurs in only 1–2% of pregnancies.
  - REASON?
    - ***Pregnancy induced changes in antiepileptic drug pharmacokinetics***

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2. Beach RL1, Kaplan PW. Seizures in pregnancy: diagnosis and management. Int Rev Neurobiol. 2008;83:259-71. doi: 10.1016/S0074-7742(08)00015-9.

Risk of Epilepsy in Pregnancy

Maternal and fetal/neonatal complications in women with epilepsy.

Maternal complications

- Repeat seizures (hypoxia)
- Status epilepticus
- Seizures in labor
- Gestational hypertension
- Preterm labor (if a smoker)

Fetal/neonatal complications

- Miscarriage (2 x normal)
- Congenital anomalies (2–3 x normal)
- Hypoxia
- Small for gestational age
- Low birth weights
- Preterm delivery (if a smoker)
- Low IQ
- Abnormal behavior

1. Hart LA1, Sibai BM. Seizures in pregnancy: epilepsy, eclampsia, and stroke. Semin Perinatol. 2013 Aug;37(4):207-24. doi: 10.1053/j.semperi.2013.04.001.

Anti-epileptic Drugs and Pregnancy

Potential fetal risks/malformations associated with AEDs.

IQ drops

Cardiac

Neural tube defects

Oral-facial clefts

Hypospadias

Skeletal abnormalities

Being small for gestational age

There is no increased risk of perinatal death for infants born to women with epilepsy

Rate is dependent on agent, dose, and use of polytherapy.

1. The EURAP Study Group (2006). Seizure control and treatment in pregnancy. Observations from the EURAP Epilepsy Pregnancy Registry. Neurology 66, 354–360.
2. Beach RL1, Kaplan PW. Seizures in pregnancy: diagnosis and management. Int Rev Neurobiol. 2008;83:259-71. doi: 10.1016/S0074-7742(08)00015-9.
3. Harden CL,MeadorKJ,PennellPB,etal.Practiceparameter update: managementissuesforwomenwithepilepsy—focus on pregnancy(anevidence-basedreview):teratogenesisand perinatal outcomes:reportoftheQualityStandardsSubcom- mittee andTherapeuticsandTechnologyAssessment Subcommittee oftheAmericanAcademyofNeurologyand American EpilepsySociety. Neurology. 2009;73(2):133–141

Management of Epilepsy in Pregnancy

After delivery

- Counseling regarding breastfeeding/sleep deprivation
- Decrease AED dose serially in first 4–6 weeks
- Maintain plasma levels at prepregnancy levels

1. Hart LA1, Sibai BM. Seizures in pregnancy: epilepsy, eclampsia, and stroke. Semin Perinatol. 2013 Aug;37(4):207-24. doi: 10.1053/j.semperi.2013.04.001.

Status Epilepticus in Pregnancy

- Place patient in the left lateral decubitus position.
- O2, IV fluids, glucose
- Drugs:
  - Benzodiazepins (*first-line treatment)*
    - Lorazepam (0.02–0.03 mg/kg IV)
  - Phenytoin
  - Barbiturates
  - Propofol
  - Magnessium
    - If maternal convulsions are due to eclampsia,
    - 6g loading dose followed by 2g/h maintenance.

1. Barnett, C., and Richens, A. (2003). Epilepsy and pregnancy: Report of an Epilepsy Research Foundation Workshop. Epilepsy Res. 52, 147–187.
2. Hart LA1, Sibai BM. Seizures in pregnancy: epilepsy, eclampsia, and stroke. Semin Perinatol. 2013 Aug;37(4):207-24. doi: 10.1053/j.semperi.2013.04.001.

Delivery and Breast feeding

- A diagnosis of epilepsy is not an indication *per se* for caesarean delivery.
- All of the AEDs are measurable in breast milk.
  - Lamotrigine
- Taking AEDs does not generally contradict breastfeeding

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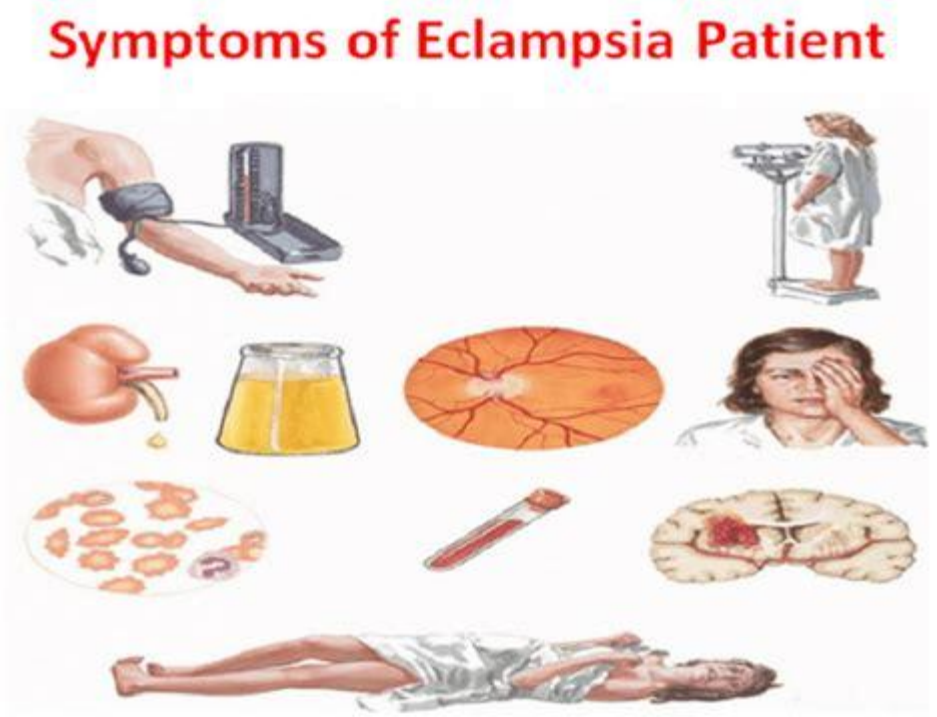
2. Newport DJ,PennellPB,CalamarasMR,etal.Lamotriginein breast milkandnursinginfants:determinationofexposure. Pediatrics. 2008;122(1):e223–e231
3. Crawford P.Bestpracticeguidelinesforthemanagementof women withepilepsy. Epilepsia. 2005;46(suppl9):117–124

Eclampsia

- Eclampsia is the most common cause of new-onset seizures during pregnancy.
- 4-5 in 10.000 pregnancies
- Convulsions +
- Preeclampsia
  - Generalized edema,
  - Hypertension,
  - Proteinuria



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2. Sibai BM.Eclampsia.VI.Maternal–perinataloutcomein254 consecutive cases. Am JObstetGynecol. 1990;163(3):1049–1054

Eclampsia

- Persistent occipital or frontal headaches, blurred vision,
- Photophobia,
- Epigastric and/or right upper-quadrant pain,
- Altered mental status.

- The onset of eclamptic convulsions can be antepartum, intrapartum, or postpartum

1. Katz VL,FarmerR,KullerJA.Preeclampsiaintoeclampsia: toward anewparadigm. Am JObstetGynecol. 2000;182 (6):1389–1396
2. ChamesMC,LivingstonJC,IvesterTS,BartonJR,SibaiBM.Late postpartumeclampsia:apreventabledisease? Am JObstet Gynecol. 2002;186(6):1174–1177

Management of eclamptic convulsions

Signs and symptoms of magnesium toxicity.	
Manifestations	**Level (mg/dL)**
Loss of patellar reflex	8 – 12
Double vision	8 – 12
Feeling of warmth, flushing	9 – 12
Somnolence	10 – 12
Slurred speech	10 – 12
Muscular paralysis	15 – 17
Respiratory arrest	15 – 17
Cardiac arrest	30 – 35

Give calcium gluconate 1 g IV

1. Beach RL1, Kaplan PW. Seizures in pregnancy: diagnosis and management. Int Rev Neurobiol. 2008;83:259-71. doi: 10.1016/S0074-7742(08)00015-9.
2. Sibai BM. Management ofEclampsia.ManagementofAcute Obstetric Emergencies. Philadelphia,PA:Saunders;115–123.

Management of eclamptic convulsions

- Second: reduce blood pressure
  - SBP 140 – 160 mmHg
  - DBP 90 – 105 mmHg
  - First line tx:
    - IV Labetalol 20 mg (repeat dose 40 mg, 80mg at 10 min interval)
      - Avoid in bradycardia and severe asthma
    - IV Hydralazine 5 mg (repeat dose 5 – 10 mg at 20 min interval)
      - Avoid with severe headache and tachycardia
    - PO Nifedipine 10 – 20 mg (repeat dose 10 -20 mg at 30 min interval)
      - Avoid with headache and tachycardia

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Management of eclamptic convulsions

- Second line tx:
  - IV Nitroprusside
    - Caution for cyanate and thiocyanate accumulation
  - IV Nitroglycerine
    - Ideal in setting of pulmonary edema
  - IV Enalapril
    - Use only postpartum given potential adverse fetal effects
- Thirth: Manage complicaons like DIC/ pulmonary edema
- Fourth: Begin inducon/delivery within 24 hours
  - Cesarean delivery recomended for those with eclampsia before 30 weeks of gestation who are not in labor and whose Bishop score is below 5.

1. American CollegeofObstetriciansandGynecologists.ACOG Practice BulletinNo.125:chronichypertensioninpregnancy. Obstet Gynecol. 2012;119(2Pt1):396–407
2. Beach RL1, Kaplan PW. Seizures in pregnancy: diagnosis and management. Int Rev Neurobiol. 2008;83:259-71. doi: 10.1016/S0074-7742(08)00015-9.


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Stroke

- Especially intracerebral hemorrhage and cerebral venous sinus thrombosis.
- Origin of stroke
  - Arterial:
    - 2nd–3rd trimester, first week postpartum
    - Acute decompensation of cortical function: hemiplegia, aphasia, and hemianopsia
  - Venous:
    - 3 days–4 weeks postpartum
    - Severe progressive headache, papilledema, weakness, convulsions, and aphasia

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Management of Stroke in Pregnancy

- Multidisciplinary approach
  - Patients with a single transient ischemic attack can be managed with low dose aspirin therapy.
  - If the attacks increase in frequency and duration, heparin at therapeutic levels should be started
    - Warfarin contraindicated.
- Seizure management is same.

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Thank you…