

Eclampsia/Pre-Eclampsia

Aliases

Pregnant seizures, toxemia of pregnancy

Patient Care Goals

1. Recognize serious conditions associated with pregnancy and hypertension.
2. Prevention of eclampsia-related seizures.
3. Provide adequate treatment for eclampsia-related seizures.

Patient Presentation

Inclusion Criteria

1. Female patient, more than 20-weeks gestation, presenting with hypertension and evidence of end organ dysfunction, including renal insufficiency, liver involvement, neurological, or hematological involvement
2. May occur up to 6-weeks post-partum but is rare after 48 hours post-delivery
3. Severe features of pre-eclampsia include:
 - a. Severe hypertension (SBP **greater than** 160, DBP **greater than** 110).
 - b. Headache.
 - c. Confusion/altered mental status
 - d. Vision changes including blurred vision, spots/floaters, loss of vision (these symptoms are often a precursor to seizure)
 - e. Right upper quadrant or epigastric pain
 - f. Shortness of breath/Pulmonary edema
 - g. Ecchymosis suggestive of low platelets (bruising, petechiae)
 - h. Vaginal bleeding suggestive of placental abruption
 - i. Focal neurologic deficits suggesting hemorrhagic or thromboembolic stroke
4. Eclampsia
 - a. Any pregnant patient who is seizing should be assumed to have eclampsia and treated as such until arrival at the hospital.
 - b. Seizure in any late term pregnancy or postpartum patient
5. Eclampsia and pre-eclampsia associated with abruptio placenta and fetal loss

Exclusion Criteria

Chronic hypertension without end organ dysfunction

Patient Management

Assessment

1. Obtain history
 - a. Gestational age or recent post-partum
 - b. Symptoms suggestive of end organ involvement such as headache, confusion, visual disturbances, seizure, epigastric pain, right upper quadrant pain, nausea/vomiting, stroke symptoms, shortness of breath, hyperreflexia
 - c. Previous history of hypertension or known pre-eclampsia
2. Monitoring
 - a. Vital signs including repeat blood pressures every 10 min
 - b. Deep tendon reflex (DTR) assessment every 30 minutes if receiving magnesium infusion
3. Secondary survey pertinent to obstetric issues:
 - a. Constitutional: vital signs, orthostatic vital signs, skin color
 - b. Abdomen: distention, tenderness, uterine rigidity
 - c. Genitourinary: visible bleeding
 - d. Neurologic: mental status, focal deficits

Treatment and Interventions

1. Severely elevated blood pressures must be treated to reduce the risk of maternal stroke.
2. Goal BP is approximately 140/90 to reduce stroke risk but maintain uterine perfusion.
3. Treatment Recommendations Based on Blood Pressure and/or symptoms
 1. SBP 140-159 or DBP 90-109 mmHg without severe pre-eclampsia symptoms: Close monitoring of blood pressure and potential symptoms
 2. SBP 140-159 or DBP 90-109 mmHg with severe pre-eclampsia symptoms (severe headache, blurred vision, right upper quadrant abdominal pain: Initiate Treatment with **Magnesium sulfate [PARA]**
 3. SBP greater than 160 or DBP 110 mmHg with severe pre-eclampsia symptoms (severe headache, blurred vision, right upper quadrant abdominal pain: Initiate Treatment with Antihypertensives (typically **Labetalol [PARA]**) and **Magnesium sulfate [PARA]**
 - a. Antihypertensives are 1st priority followed by Magnesium
4. **Labetalol [PARA]**
 - a. Dosing
 - i. Initial Dose: 20mg IV/IO given over 2 minutes. Allow 10 minutes from administration for medication to take effect
 - ii. If BP remains severely elevated (greater than 160/110 mmHg) then administer 40mg IV/IO over 2 minutes. Reassess BP in 10 minutes
 - iii. If BP remains severely elevated (greater than 160/110 mmHg) then administer 80mg IV/IO over 2 minutes. Reassess BP in 10 minutes
 - i. May repeat dose every 10 minutes for severe hypertension up to a maximum cumulative dose of 300mg
 - iv. Alternate: Continuous infusion at rate of 1-2 mg/minute IV/IO
 - b. Goal is to reduce MAP by 20–25% initially
 - c. Ensure that HR is *greater than* 60 bpm prior to administration.
 - d. Repeat antihypertensives if blood pressure increases back into concerning ranges
5. **Magnesium sulfate [PARA]**
 - a. 4g IV/IO over 20 min, followed by 2g/hour IV/IO
 - b. Reassess vital signs every 10 min during transport and DTR every 30 minutes
4. Seizures associated with pregnancy greater than 20-weeks gestation
 1. **Magnesium sulfate [PARA]** : 4g IV/IO over 20 min, followed by 2g/hour IV/IO
 2. **Benzodiazepine [PARA]** per Seizures guideline, for active seizure not responding to magnesium
 - a. Midazolam 5-10mg IV/IO/IM/IN every 5-10 minutes
5. IV fluids:
 1. Normal saline [*AEMT*] or Lactated Ringers [*AEMT*] at KVO rate but restrict maximum rate of fluids to 80 mL/hr
OR
 2. Saline lock
6. Disposition
 1. Transport emergently to closest appropriate receiving facility, ideally OB capable hospital—notify en route if possible so the receiving team can prepare.
 2. Patients in second or third trimester of pregnancy should be transported on left side or with uterus manually displaced to left to ensure adequate uterine perfusion.

Patient Safety Considerations

1. Magnesium toxicity (progression)
 - a. Hypotension followed by
 - b. Loss of deep tendon reflexes followed by
 - c. Somnolence, slurred speech followed by
 - d. Respiratory paralysis followed by
 - e. Cardiac arrest.
2. Treatment of magnesium toxicity
 - a. Stop magnesium drip.
 - b. Give calcium gluconate in cases of pending respiratory arrest [*PARA*].

- c. Support respiratory effort.

Notes and Educational Pearls

Key Considerations

- Delivery of the placenta is the only definitive management for pre-eclampsia and eclampsia.
- Early treatment of severe pre-eclampsia with magnesium and anti-hypertensive significantly reduces the rate of eclampsia. Use of magnesium encouraged if signs of severe pre-eclampsia present to prevent seizure.
- Patients with a history of chronic hypertension may have superimposed pre-eclampsia.
- Although less frequent, eclampsia, including eclampsia-related seizures, can occur in postpartum patients.

Pertinent Assessment Findings

- Vital signs assessment with repeat blood pressure monitoring before and after treatment
- Assessment of deep tendon reflexes after magnesium therapy
- Examination for end organ involvement
- Evaluation of fundal height

Quality Improvement

- **Associated NEMESIS Protocol(s) (eProtocol.01)**
- 9914157—OB/GYN-Eclampsia
- 9914159—OB/GYN-Gynecological Emergencies
- 9914161—OB/GYN-Pregnancy Related Disorders

Key Documentation Elements

Document full vital signs and physical exam findings.

Performance Measures

- Patients with signs of hypertension and **greater than** 20-weeks gestation or recent post-partum should be assessed for signs of pre-eclampsia.
- Recognition and appropriate treatment of eclampsia

References

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10. treatment of critical blood pressure elevations is associated with reduction in eclampsia and severe maternal morbidity. *Am J Obstet Gynecol.* 2017;216(4):415.31-415.e.5.