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HELLP Syndrome: Hemolysis, Elevated Liver Enzymes, Low Platelets

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HELLP Syndrome: Hemolysis, Elevated Liver Enzymes, Low Platelets

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Introduction

Research was conducted on HELLP Syndrome to determine the underlying mechanisms of how to prevent this condition from occurring or worsening.

- HELLP Syndrome is a rare life-threatening condition.
- Significant maternal and infant morbidity and mortality can occur due to this syndrome (Lisonkova et al., 2020).
- Women with preeclampsia are at higher risk for developing HELLP syndrome (preeclampsiafoundation, 2021).
- HELLP was chosen as the topic because although it is a rare condition, awareness and early detection are crucial in preventing mortality (preeclampsiafoundation, 2021).
- HELLP Syndrome can cause maternal organ damage and increased risk for bleeding (Stojanovska & Zenclussen, 2020).
- For infants it can cause premature delivery, growth restriction, and even perinatal death known as stillbirth (americanpregnancyassociation, 2021).

Signs and Symptoms

Can include one or more of these symptoms:

- Epigastric (abdominal) pain
- Nausea, Vomiting, indigestion
- Headaches that won't go away with medication
- Bleeding
- Swelling in the hands and face
- Shortness of breath
- Vision changes such as: blurred vision, double vision, and/or flashing/flickering lights in vision
- High blood pressure
- Protein in the urine

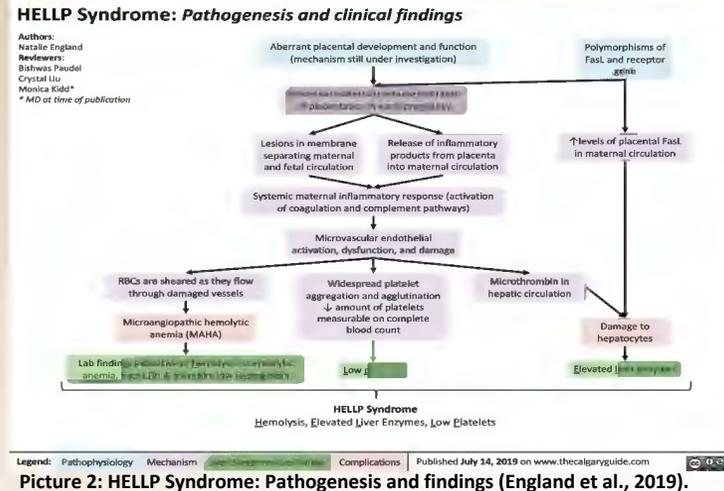
Lab values are based on a classification system of severity which include:

- Class I (severe):
 - AST > 70 IU/L
 - LDH > 600 IU/L
 - Platelets $< 50,000/uL$
- Class II (moderate):
 - AST > 70 IU/L
 - LDH > 600 IU/L
 - Platelets $>50,000$ and $< 100,000/uL$
- Class III (mild):
 - AST > 40 IU/L
 - LDH > 600 IU/L
 - Platelets $>100,00$ and $< 150,000/uL$ (preeclampsiafoundation, 2021).



Picture 1: Helpful HELLP Syndrome Treatments (Olah, 2021).

Pathophysiological Processes



Picture 2: HELLP Syndrome: Pathogenesis and findings (England et al., 2019).

Underlying Pathophysiology

- Although the exact etiology is unclear, it is thought to be a systemic inflammatory response that triggers the complement cascade sometimes by abnormal fatty acid oxidation by the placenta/fetus (Farhan et al., 2022)
- An ischemic reperfusion injury activates the inflammatory response (Farhan et al., 2022) by:
 - First, trophoblast cells aid in placental attachment and spiral artery remodeling, but inadequate trophoblast activation and defective endothelial apoptosis can cause impaired spiral artery remodeling (Stojanovska & Zenclussen, 2020).
 - Uterine spiral arteries allow maternal blood flow to the placenta, but impaired remodeling causes placental ischemia and a stress response (Liu et al., 2022).
- The endothelium becomes activated which increases the release of the antiangiogenic factors which reduces growth of blood vessels further causing injury (Farhan et al., 2022).
- The fetus can also contribute to this disease by an abnormal oxidation of fatty acids (can't use fat for energy) so it releases metabolic intermediates into maternal circulation (Farhan et al., 2022).
- This can cause further dysfunction in the vascular system and increase liver dysfunction.
- The defective endothelium causes platelet adhesion which activates the coagulation cascade (Farhan et al., 2022).
- This causes platelet aggregation and further damage to the endothelium which results in thrombocytopenia and an inflammatory response (Farhan et al., 2022)
- All of these factors create multiorgan dysfunction and hepatic death causing HELLP Syndrome (Stojanovska & Zenclussen, 2020).

Significance

- Because there are multiple factors contributing to multiorgan dysfunction, many severe conditions can occur from HELLP Syndrome.
- DIC can occur due to coagulation activation which causes platelet aggregation (Petca et al., 2022).
- Although HELLP Syndrome occurs in approx. 45,000 women, the Preeclampsia Foundation shares that mortality is about 25% in mothers and 7.7-60% in infants (2021).
- Awareness of this condition and early detection is critical in reducing life-threatening complications from occurring.
- Recognition of this syndrome can be difficult due to generalized characteristics and often being confused with other disease processes (Rezq et al., 2022).
- The significance of HELLP Syndrome is that due to the generalized symptoms and difficulty in detection, it can lead to multiple organ dysfunction like renal and liver damage, bleeding disorders like DIC, and even hypertensive disorders that can lead to stroke which can be difficult to treat (Farhan et al., 2022).
- Early detection and prompt treatment, including early delivery of the fetus, if necessary, can prevent comorbidities and fatal complications (Rezq et al., 2022).

Conclusion

Although HELLP syndrome is rare, it is a life-threatening condition that can occur in the maternal population with increased risk for morbidity and mortality. Awareness of this syndrome along with early detection of symptoms and conditions can result in improved patient outcomes for both the mother and infant while reducing comorbidities.

Nursing Implications

- Early identification leads to better prognosis, so the nurse needs to be diligent in monitoring for any of the previously stated signs and symptoms.
- Aside from early detection of symptoms, dependent on condition, nurses should advocate for transfer of care to the ICU for maternal complications and NICU for infant complications (Farhan et al., 2022).
- Nurses should monitor blood pressures more frequently in case there is a need to initiate IV antihypertensives or even put on magnesium to reduce risk of seizures.
- If patients report epigastric pain, anticipate lab draws to determine liver function.
- If patients experience DIC, monitor signs and symptoms for increasing blood loss and prepare for blood transfusions.
- Administration of betamethasone may be required to help lung maturation in infants (Briceño-Pérez et al., 2019).

References

