HELLP Syndrome knowledge review

Terminology

- Gestational hypertension: hypertension presenting after 20 weeks without significant proteinuria and resolves by 12 weeks postpartum
- Chronic hypertension: hypertension presenting before 20 weeks or if the woman is already taking antihypertensive medication
- Pre-eclampsia: hypertension presenting after 20 weeks with significant proteinuria
- Pre-eclampsia with severe feature: pre-eclampsia with severe hypertension and/or with symptoms, and/ or biochemical and/or haematological impairment.
- Eclampsia: a convulsive condition associated with pre-eclampsia

TABLE 40-1. Diagnostic Criteria for Pregnancy-Associated Hypertension

Condition	Criteria Required
Gestational hypertension	BP > 140/90 mmHg after 20 weeks in previously normotensive women
Preeclampsia—Hypertension and:	
Proteinuria	• ≥ 300 mg/24h, or • Protein: creatinine ratio ≥ 0.3 or • Dipstick 1+ persistent[a] ***or***
Thrombocytopenia	• Platelets < 100,000/μL
Renal insufficiency	• Creatinine > 1.1 mg/dL or doubling of baseline[b]
Liver involvement	• Serum transaminase levels[c] twice normal
Cerebral symptoms	• Headache, visual disturbances, convulsions
Pulmonary edema	—

[a]Recommended only if sole available test.
[b]No prior renal disease.
[c]AST (aspartate aminotransferase) or ALT (alanine aminotransferase).
Modified from the American College of Obstetricians and Gynecologists, 2013b.

TABLE 40-2. Indicators of Severity of Gestational Hypertensive Disorders[a]

Abnormality	Nonsevere[b]	Severe
Diastolic BP	< 110 mm Hg	≥ 110 mm Hg
Systolic BP	< 160 mm Hg	≥ 160 mm Hg
Proteinuria[c]	None to positive	None to positive
Headache	Absent	Present
Visual disturbances	Absent	Present
Upper abdominal pain	Absent	Present
Oliguria	Absent	Present
Convulsion (eclampsia)	Absent	Present
Serum creatinine	Normal	Elevated
Thrombocytopenia (< 100,000/μL)	Absent	Present
Serum transaminase elevation	Minimal	Marked
Fetal-growth restriction	Absent	Obvious
Pulmonary edema	Absent	Present

[a]Compare with criteria in Table 40-1.
[b]Includes "mild" and "moderate" hypertension not specifically defined.
[c]Most disregard degrees of proteinuria as being nonsevere or severe.
BP = blood pressure.

HELLP

- Hemolysis, elevated liver enzymes and low platelet count
- May occur antepartum or postpartum
- Occurs in about 0.2 to 0.6% of all pregnancies and in 4 to 12 % of women with preeclampsia or eclampsia
- PIH, preeclampsia and HELLP syndrome are related and overlap in their presentations

Etiology

- The pathogenesis of HELLP syndrome is not well understood
- The final manifestation: microvascular endothelial damage and intravascular platelet activation

Risk factors

Comparison of Risk Factors for HELLP Syndrome and Preeclampsia

HELLP SYNDROME	*PREECLAMPSIA*
Multiparous	Nulliparous
Maternal age greater than 25 years	Maternal age less than 20 years or greater than 45 years
White race	Family history of preeclampsia
History of poor pregnancy outcome	Minimal prenatal care
	Diabetes mellitus
	Chronic hypertension
	Multiple gestation

Clinical presentation

- Nonspecific symptoms
  - Nausea/vomiting
  - Malaise/fatigue
  - Viral-like symptoms
- More specific ones
  - Mid-epigastric/right upper quadrant discomfort
  - Blurred vision
  - Altered consciousness
  - Edema

Diagnosis

- Pregnant women with signs of pre-eclampsia or even eclampsia, combined with the following triad of laboratory findings
- The Tennessee Classification
  - Complete form of the HELLP syndrome requires the presence of all 3 major components
  - Partial or incomplete HELLP syndrome consists of only 1 or 2 elements of the triad

Classification

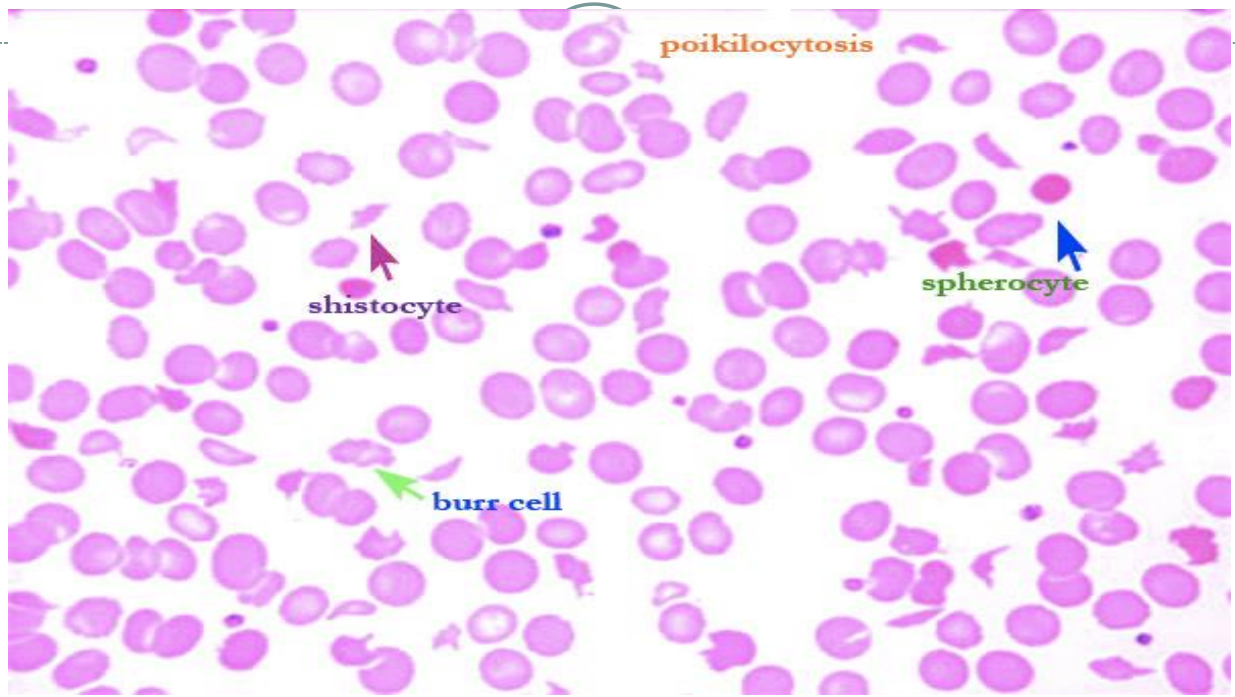
Table I. Main diagnostic criteria of the HELLP syndrome.

HELLP class	Tennessee classification	Mississippi classification
1	PLTs $\leq 100 \times 10^9$/l AST ≥ 70 IU/l LDH ≥ 600 IU/l	PLTs $\leq 50 \times 10^9$/l AST or ALT ≥ 70 IU/l LDH ≥ 600 IU/l
2		PLTs $\leq 100 \times 10^9$/l and $\geq 50 \times 10^9$/l AST or ALT ≥ 70 IU/l LDH ≥ 600 IU/l
3		PLTs $\leq 150 \times 10^9$/l and $\geq 100 \times 10^9$/l AST or ALT ≥ 40 IU/l LDH ≥ 600 IU/l

PLTs, platelets; AST, aspartate aminotransferase; LDH, lactate dehydrogenase; ALT, alanine aminotransferase.

Hemolysis

- MAHA blood picture: spherocytes, schistocytes, triangular cells, burr cells, polychromasia, increase reticulocyte counts
- Increased serum lactate dehydrogenase (LDH) levels
- Decreased haemoglobin concentrations



http://www.mt.mahidol.ac.th/e-learning/AutomateReport/MAHA_2.jpg

Elevate liver enzymes

- Enhanced asparate aminotransferase (AST) and alanine aminotransferase (ALT) levels: obstruction of hepatic blood flow by fibrin deposits in the sinusoids

Thrombocytopenia

- Due to increased consumption
- Platelets are activated, and adhere to damaged vascular endothelial cells, resulting in increased platelet turnover with shorter lifespan

Investigation

- Blood chemistry: CBC with PBS, BUN, creatinine, coagulogram, liver enzymes, LDH, and uric acid
- Liver imaging is important for the evaluation of subcapsular or intraparenchymal haemorrhage and hepatic rupture: ultrasound (U/S), magnetic resonance imaging (MRI)

Complication

- Maternal
  - DIC
  - Hemorrhagic stroke
  - Hepatic rupture
- Fetus
  - Preterm delivery

Management

- Management is similar to severe pre-eclampsia; conservative or aggressive remains controversial

Delivery

- Before the gestational age of fetal viability
  - Delivery be undertaken shortly after initial maternal stabilization
- At 34 0/7 weeks or more of gestation
  - Delivery be undertaken soon after initial maternal stabilization

Delivery

- From the gestational age of fetal viability to 33 6/7 weeks
  - Delivery be delayed for 24–48 hours if maternal and fetal condition remain stable to complete a course of corticosteroids for fetal benefit
  - If the maternal condition worsens, immediate caesarean section is inevitable

TABLE 40-10. Indications for Delivery in Women < 34 Weeks' Gestation Managed Expectantly

Corticosteroid Therapy for Lung Maturation[a] and Delivery after Maternal Stabilization:

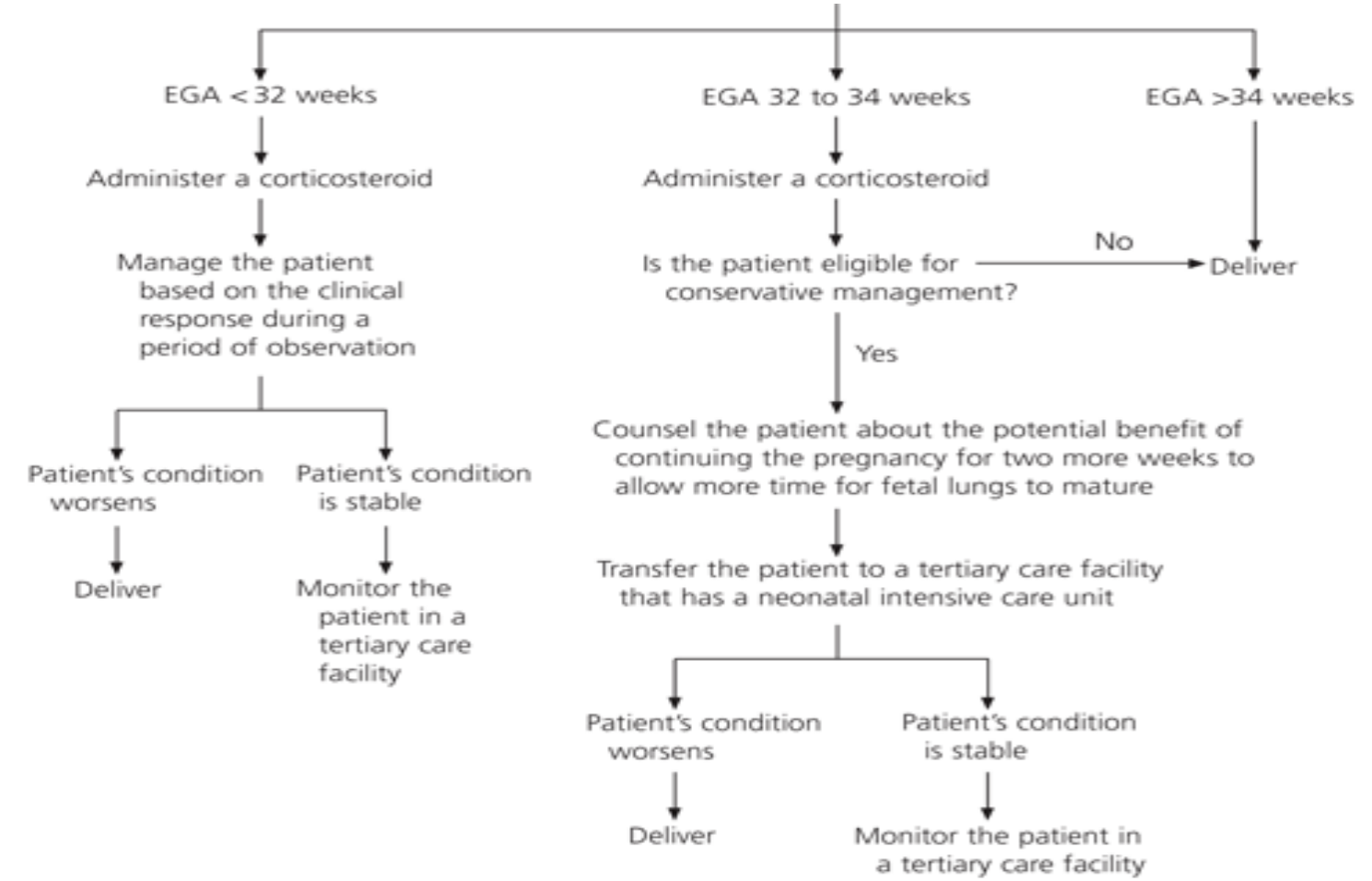
- Uncontrolled severe hypertension
- Eclampsia
- Pulmonary edema
- Placental abruption
- Disseminated intravascular coagulation
- Nonreassuring fetal status
- Fetal demise

Corticosteroid Therapy for Lung Maturation—Delay Delivery 48 hr If Possible:

- Preterm ruptured membranes or labor
- Thrombocytopenia < 100,000/μL
- Hepatic transaminase levels twice upper limit of normal
- Fetal-growth restriction
- Oligohydramnios
- Reversed end-diastolic Doppler flow in umbilical artery
- Worsening renal dysfunction

[a]Initial dose only, do not delay delivery.

From the Society for Maternal-Fetal Medicine, 2011, and the Task Force of the American College of Obstetricians and Gynecologists, 2013b.



*—*Consider the use of antepartum and postpartum high-dose dexamethasone (Decadron) therapy in all patients with HELLP syndrome if laboratory abnormalities are present.*

Management

- Plasmapheresis: progressive increase in bilirubinaemia, serum creatinine, severe thrombocytopenia and for HELLP syndrome persists for more than 72 h postpartum
- Magnesium sulphate: prophylaxis against seizures
- Antihypertensive drug

Management

- For patients with a platelet count □ 70,000/μl, the spinal or epidural anaesthesia is not suggested, due to possible bleeding.
- The American Society of Anesthesiologists has not recommended a safe limit for the platelet count in parturient women with preeclampsia

References

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- National institute for health and care excellence. Hypertension in pregnancy: diagnosis and management. Clinical guideline 2011
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Thank you