PHYSIOLOGY

Hormonal effect

- Progesterone:
  - ↓ LES tone → reflux
  - ↓ gastric motility → nausea
  - ↓ intestinal motility → constipation
- HCG :
  - Direct trigger for **hyperemesis gravidarum**

Mechanical effects

a. Enlarging uterus → ↑ intra-abdominal pressure → reflux, hemorrhoids
b. Uterus → displaces:
   Appendix (upward + lateral)
   Stomach → worsens reflux

Hepatobiliary

- ↑ Estrogen → ↑ cholesterol saturation → gallstones
- ↓ gallbladder emptying → bile stasis
  so "Combination of progesterone + mechanical pressure lead to MOST GIT symptoms"

NAUSEA & VOMITING :

- Mild → common (up to 70–80%)
- Severe → **Hyperemesis gravidarum (HG)**

HG Definition: Severe vomiting + dehydration + ketonuria + weight loss

Complications of HG :

- Electrolyte imbalance
- Wernicke encephalopathy
- FGR, preterm birth

- **Pathophysiology :**
- hCG peak (9–12 weeks)
- Thyroid stimulation (TSH ↓, T4 ↑ sometimes)

Why hCG causes vomiting?

hCG stimulates vomiting via **multiple mechanisms**:

A. Direct central effect

- Acts on the **chemoreceptor trigger zone (CTZ)** in the brain
- Enhances sensitivity of the vomiting center

B. Estrogen-mediated effect

- hCG → ↑ ovarian estrogen production
- Estrogen:

- Slows gastric emptying
- Increases nausea sensitivity

INVESTIGATION :

- Urine ketones
- Electrolytes
- LFTs
- TFTs (exclude thyrotoxicosis)
- Ultrasound → exclude molar OR twin pregnancy

MANAGEMENT :

Step 1:

- Small frequent meals
- Ginger
- Vitamin B6

Step 2:

- Doxylamine + pyridoxine
- Metoclopramide

Step 3:

- Ondansetron (if refractory)

Severe HG:

- IV fluids (normal saline)
- Thiamine BEFORE glucose
- Electrolyte correction

GASRO-OESOPHAGEAL REFLUX: GERD

Why severe?

- ↓ Lower oesophageal sphincter tone (progesterone)
- ↑ intra-abdominal pressure

treatment:

1. Lifestyle:
   - Elevate head
   - Avoid fatty food
2. Antacids
3. H2 blockers (ranitidine/famotidine)
4. Proton Pump Inhibitors (PPIs) is safe if needed.

4. CONSTIPATION & HEMORRHOIDS

Causes:

- ↓ motility
- Iron supplements
- Reduced activity

Management:

- Diet (fiber 25–30 g/day)
- Bulk laxatives eg. (psyllium)
- Osmotic eg. (lactulose)

Avoid: Strong stimulant laxatives because uterine stimulation risk

Intrahepatic cholestasis of pregnancy: OR

(Obstetric Cholestasis of Pregnancy)

Obstetric cholestasis is a **pregnancy-specific liver disorder** that usually presents in the **late second or third trimester** with **pruritus without a primary skin rash**, together with **raised bile acids**, and it usually resolves after delivery.

Incidence: 0.2% – 2% of pregnancies

Why it happens

The cause is **multifactorial**. Current teaching describes interaction between:

1. **Hormonal factors** of pregnancy, especially high estrogen .
2. **Genetic susceptibility**, particularly hepatobiliary transport abnormalities
3. **Environmental influences**.

Clinical presentation

The classic symptom is **generalized itching**, often most marked on the **palms and soles**, and typically **worse at night**. Importantly, there is **no primary rash** in ICP, although scratching may produce secondary excoriations. Some patients may also have sleep disturbance, dark urine, pale stool, or rarely jaundice.

When to suspect ICP

Suspect ICP in any pregnant woman, especially after **28 weeks**, who has:

- Itching without rash
- Itching of palms and soles
- Abnormal liver tests
- History of ICP in a previous pregnancy
- Persistent symptoms despite apparently normal first blood tests.

Diagnosis

Diagnosis is based on **pruritus in pregnancy** plus **raised bile acids**, after excluding other liver or skin disease. Recent guidance highlights **non-fasting bile acids >19 micromol/L** as supportive of diagnosis.

Recent guidlines classifies severity by peak bile acid level into : **mild 19–39**, **moderate 40–99**, and **severe ≥100 micromol/L**.

Investigations

- **Serum bile acids**
- **Liver function tests**: ALT, AST, bilirubin; GGT may also be checked
- Assessment for differential diagnoses depending on history and exam
- Repeat testing if symptoms continue but first results are normal.

A woman may itch for **days or weeks before blood tests become abnormal**, so **normal first tests do not exclude ICP**. If symptoms persist, bile acids and LFTs should be repeated.

Differential diagnosis

- Pruritic dermatoses of pregnancy
- Viral hepatitis
- Gallstones or biliary obstruction
- Drug-induced liver injury
- Fatty liver disease
- Autoimmune or chronic liver disease
- Other causes of jaundice or transaminitis in pregnancy.

Maternal complications

For the mother, ICP is usually distressing rather than life-threatening. It is associated with increased rates of **preeclampsia** and **gestational diabetes** Symptoms and biochemical abnormalities usually improve rapidly after birth.

Fetal and neonatal complications

- **Spontaneous preterm birth**
- **Iatrogenic preterm birth** due to planned early delivery

- **Meconium-stained liquor**
- **Neonatal respiratory distress**
- **NICU admission**
- **Stillbirth**, especially with severe bile acid elevation.

Relationship to bile acid level

Risk increases with the **highest bile acid concentration**. stillbirth risk is not clearly higher than baseline in uncomplicated singleton pregnancy when bile acids are **19–39 micromol/L**, remains similar to baseline until **38–39 weeks** when bile acids are **40–99 micromol/L**, and rises substantially when bile acids are **≥100 micromol/L**, with many severe-case stillbirths occurring after **36 weeks**.

Medical treatment

The main drug used is **ursodeoxycholic acid (UDCA)**. Current guidance supports UDCA primarily for **maternal symptom relief**, especially pruritus. it is the **first-line agent for treatment of maternal symptoms**. **(10–15 mg/kg/day in 2–3 divided doses)**.

UDCA may improve **itching** and may reduce some biochemical abnormalities, but evidence show that it only may reduce preterm birth, but **does not prevent stillbirth**.

Symptomatic measures : Supportive treatment may include:

- Emollients
- Cool baths
- Loose cotton clothing
- Antihistamines, mainly to help sleep rather than treat the disease itself.

Vitamin K

A small number of women may need **vitamin K** if cholestasis is associated with malabsorption or coagulation concern.

Timing of delivery:

- **Bile acids 19–39 micromol/L:** consider delivery by **40 weeks**; in low-risk singleton pregnancy, expectant management to spontaneous labor may be reasonable.
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- **Bile acids 40–99 micromol/L:** delivery is generally recommended before term completion; Guidlines suggests delivery at **38–39 weeks** if no other risk factors.
- **Bile acids ≥100 micromol/L:** risk is clearly higher; Delivery recommends **35–36 weeks**,

Postpartum follow-up

Symptoms and biochemical abnormalities generally resolve after birth, often within **1–2 weeks**, although blood tests may take longer to normalize in some patients.Recurrence in future pregnancies is common. recurrence is around **70%–90%**

Contraception

After liver tests normalize, contraception is usually not restricted, although women who develop itching with **estrogen-containing contraception** should be reviewed.

Acute Fatty Liver of Pregnancy

Acute fatty liver of pregnancy is a **rare, life-threatening, pregnancy-specific liver disease** characterized by **microvesicular fatty infiltration of hepatocytes**, leading to acute liver dysfunction or liver failure, usually in the **third trimester** or early postpartum period. occur 1:10,000 pregnancies

AFLP is an **obstetric emergency** because deterioration may be rapid, with risks of **coagulopathy, hypoglycemia, renal failure, encephalopathy, pancreatitis, multiorgan failure, fetal compromise, stillbirth, and maternal death**.

Pathophysiology

caused by **microvesicular fatty change in the liver**, often linked to **fetal fatty acid oxidation defects**. Toxic fatty acid metabolites may accumulate in the maternal circulation and injure the maternal liver.

Risk factors : Recognized risk factors include:**twin pregnancy**

- possible association with **low maternal BMI**
- fetal disorders of fatty acid oxidation
- overlap with or coexistence of **preeclampsia**.

Time of presentation : AFLP most often presents in the **late third trimester**, commonly around **34–37 weeks**, but it may also present **immediately postpartum**.

Clinical presentation : Presentation is often nonspecific at first. Common symptoms include:

- **nausea and vomiting**
- **abdominal pain**, often epigastric or right upper quadrant
- **malaise**
- **jaundice**
- **headache**
- **polydipsia/polyuria**
- later, **confusion or encephalopathy** in severe disease.

Laboratory abnormalities : Typical abnormalities include

- elevated **AST/ALT**
- elevated **bilirubin**
- **hypoglycemia**
- **leukocytosis**
- elevated **ammonia**
- elevated **urate**
- **coagulopathy**
- **renal impairment**
- sometimes thrombocytopenia and DIC.

Differential diagnosis

- **HELLP syndrome**
- severe **preeclampsia with liver involvement**
- **viral hepatitis**
- **drug-induced liver injury**
- **thrombotic microangiopathy**
- less often acute biliary disease or other causes of acute liver failure.

AFLP versus HELLP syndrome :AFLP is more likely to have:

- **jaundice**
- **hypoglycemia**
- **encephalopathy**
- **renal dysfunction**
- more marked **coagulopathy**.

HELLP is more likely to have:

- **hypertension**
- **proteinuria**
- more obvious **hemolysis**
- more severe **thrombocytopenia**.

Investigations : In suspected AFLP, assess urgently with:

- CBC and platelets
- AST, ALT, bilirubin, albumin
- PT/INR, aPTT, fibrinogen
- blood glucose
- renal function and electrolytes
- uric acid
- serum ammonia if available
- group and cross-match
- urinalysis and blood pressure assessment
- fetal assessment
- ultrasound if needed.

Imaging

Ultrasound may show a **bright liver** or **ascites**, but normal imaging does **not exclude** AFLP. Liver biopsy is rarely required in routine emergency management because current guidance favors diagnosis based on clinical and laboratory findings.

principle of management:

Stabilize the mother, then deliver promptly.
correcting coagulopathy and metabolic derangement, including hypoglycemia, before **prompt delivery**.

Initial management

Management should occur in a **multidisciplinary team**, ideally involving obstetrics, anesthesia, hepatology, neonatology, hematology/blood bank, and ICU if needed.

Immediate steps

- admit to a high-dependency or intensive care setting if severe
- assess airway, breathing, circulation
- monitor urine output

- correct **hypoglycemia** with dextrose
- correct **coagulopathy** with appropriate blood products
- manage fluids carefully
- treat complications such as renal failure, DIC, encephalopathy, pancreatitis, or sepsis if present
- prepare for delivery once maternal stabilization begins.

Delivery

Delivery is the definitive treatment. The exact mode depends on maternal stability, fetal condition, cervical status, and coagulation profile. Vaginal delivery may be possible if the mother is stable and labor is imminent, but cesarean may be necessary for obstetric indications or urgent fetal/maternal deterioration. The key point is **not to prolong pregnancy unnecessarily**.

Maternal complications :Maternal complications may include:

- DIC and hemorrhage
- acute kidney injury
- hepatic encephalopathy
- pancreatitis
- acute liver failure
- multiorgan failure
- ICU admission
- maternal death in severe cases.

Fetal and neonatal complications

- fetal distress
- prematurity
- neonatal asphyxia
- NICU admission
- stillbirth or neonatal death.

Postpartum course

Most women begin to improve **after delivery**, and the postpartum course depends strongly on how quickly the pregnancy is terminated after symptom onset.

Recurrence risk is under 10%,