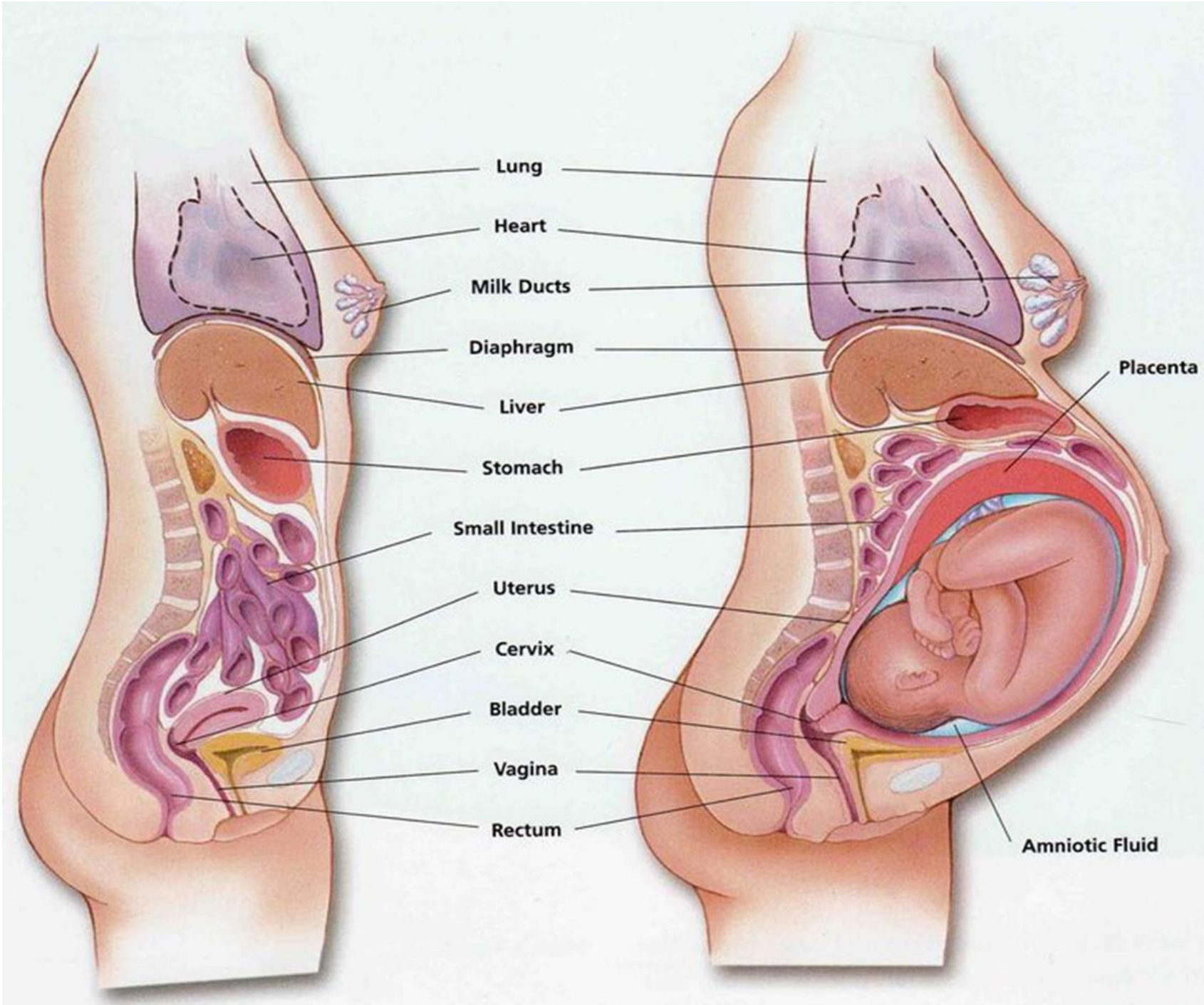
Liver Disease in Pregnency
(Jaundice in Pregnancy)


Lung
Heart
Milk Ducts
Diaphragm
Liver
Stomach
Small Intestine
Uterus
Cervix
Bladder
Vagina
Rectum
Placenta
Amniotic Fluid

Physiological changes in hepatic parameters

NO CHANGE

- Hepatic blood flow
- Hepatic & splenic size
- Liver histopathology
- Bilirubin- direct or indirect, AST, ALT, GGTP, TBA
- PT/INR

WITH CHANGE

- Albumin - ↓ 20%–50%
- Globulin -↑
- Fibrinogen - ↑ 50%
- Ceruloplasmin & transerrin - ↑
- ALP - ↑ 2-4 fold
- LDH - ↑ slight
- Cholesterol & TGL - ↑2fold

↑ AST, ALT,S Bb, TBA during pregnancy indicate liver disease

Table 6.8.1 Normal ranges for liver enzymes in non-pregnant and pregnant populations

Liver enzyme	Non-pregnant	Trimester		
		1st	2nd	3rd
AST (IU/L)	7–40	10–28	10–29	11–30
ALT (IU/L)	0–40	6–32	6–32	6–32
Bilirubin (μmol/L)	0–17	4–16	3–13	3–14
Gamma GT (IU/L)	11–50	5–37	5–43	3–41
Alkaline phosphatase (IU/L)	30–130	32–100	43–135	133–418

- ALT, alanine transaminase; AST, aspartamine transaminase; GT, glutamyl transpeptidase.

Obstetric Cholestasis:

- Cholestasis is an impairment of bile flow which may clinically present with fatigue, pruritus and, in its most overt form, jaundice.
- Obstetric cholestasis is uncommon condition, specific to pregnancy
- Aetiology relate to genetic predisposition to the cholestatic effect of estrogen (Increased estrogen levels lead to increased cholesterol secretion and supersaturation of bile).
- The importance of this condition is its association with sudden IUFD, mostly at term.

Presentation

- It is most commonly present in the third trimester at around 32 weeks
- Itching can vary from mild to intense and persistent, affecting the whole body particularly the palms & soles.
- There is no rash.
- There may be associated dark urine, pale stool, steatorrhea & malaise.
- Hepatic transaminases are only mildly elevated. Bile acids may be elevated.

- differential diagnosis include:
- extrahepatic obstruction with gall stones
- acute & chronic viral hepatitis
- primary biliary cirrhosis
- chronic active hepatitis.
- Pre-eclampsia
- HELLP syndrome
- Acute fatty liver of pregnancy
- Sepsis
- Drug-induced hepatitis

- Investigations should include:
- LFT
- Serum Bile acids
- Full blood count
- Clotting profile
- Renal function
- serology for hepatitis A, B, C, Ebstien-Bar virus & cytomegalovirus
- liver autoantibodies (anti- mitochondrial antibodies, & anti-smooth muscle antibody).
- liver ultrasound & ultrasound for fetal growth & amniotic fluid

Complications:

- postpartum haemorrhage
- premature labour
- meconium-stained liquor
- fetal distress in labour
- intra-uterine death.

Management:

- Pruritus may be troublesome and is thought to result from elevated serum bile salts.
- Control of pruritis: a combination of antihistamines & emollients , if no response ursodeoxycholic acid used.
- Vitamin K (water soluble form) should be given to the mother from the time of diagnosis to reduce the risk of postpartum haemorrhage.

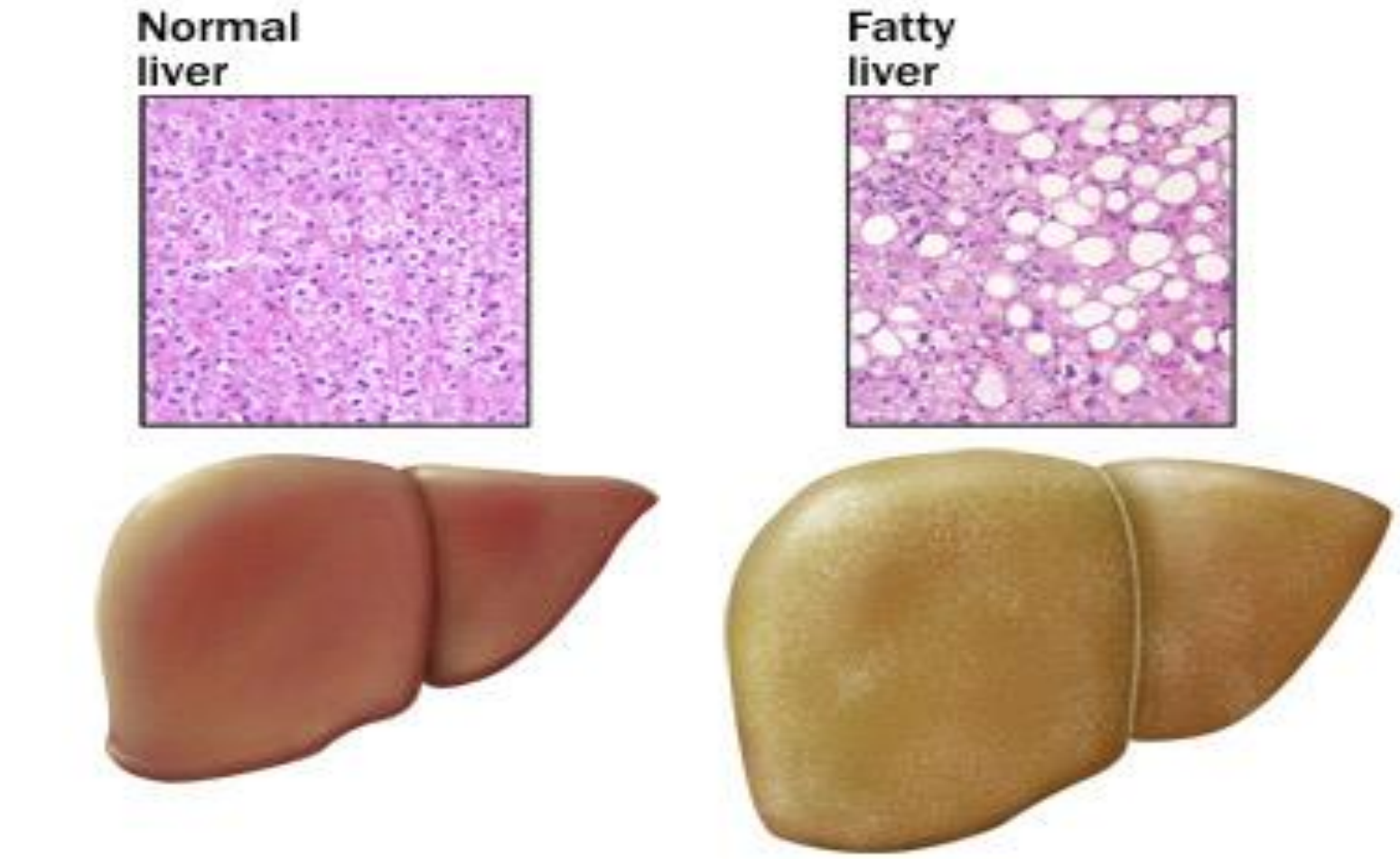
- LFT & clotting time should be monitored regularly.
- Fetal surveillance with CTG & ultrasound.
- delivery should be induced at 37-38 weeks.

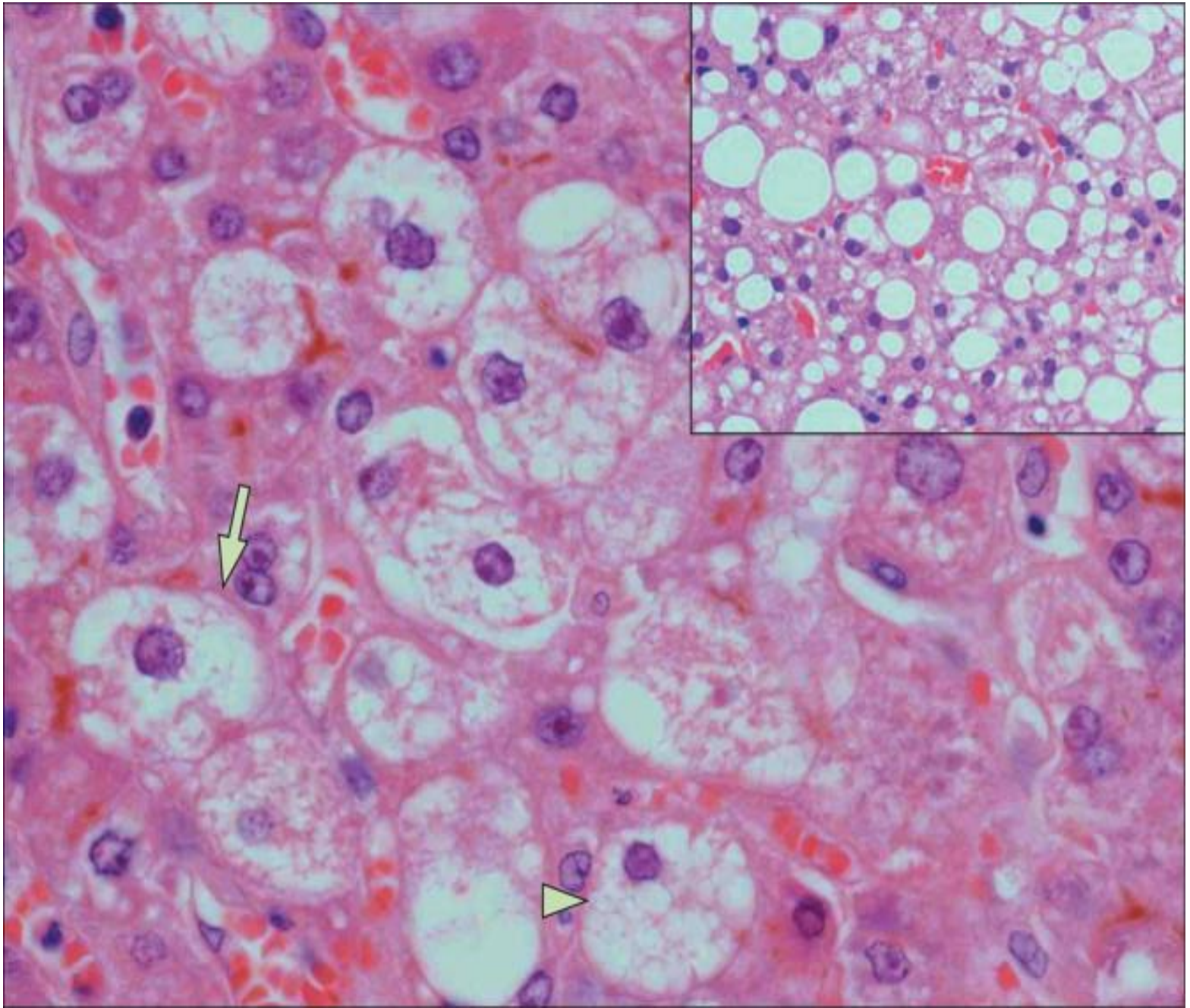
- Following delivery, LFT returns to normal. Should be monitored at 6 weeks postpartum
- Symptoms may recur with estrogen containing oral contraceptives which should be avoided.
- Recurrence in subsequent pregnancy is very high

Acute Fatty Liver of pregnancy:

- AFLP is closely related to pre-eclampsia (genetic defect in fatty acid oxidation).
- presents in the third trimester with abdominal pain, nausea, vomiting, anorexia & jaundice.

- aetiology is unknown but histologically perilobular fatty infiltration of liver cells is noted.





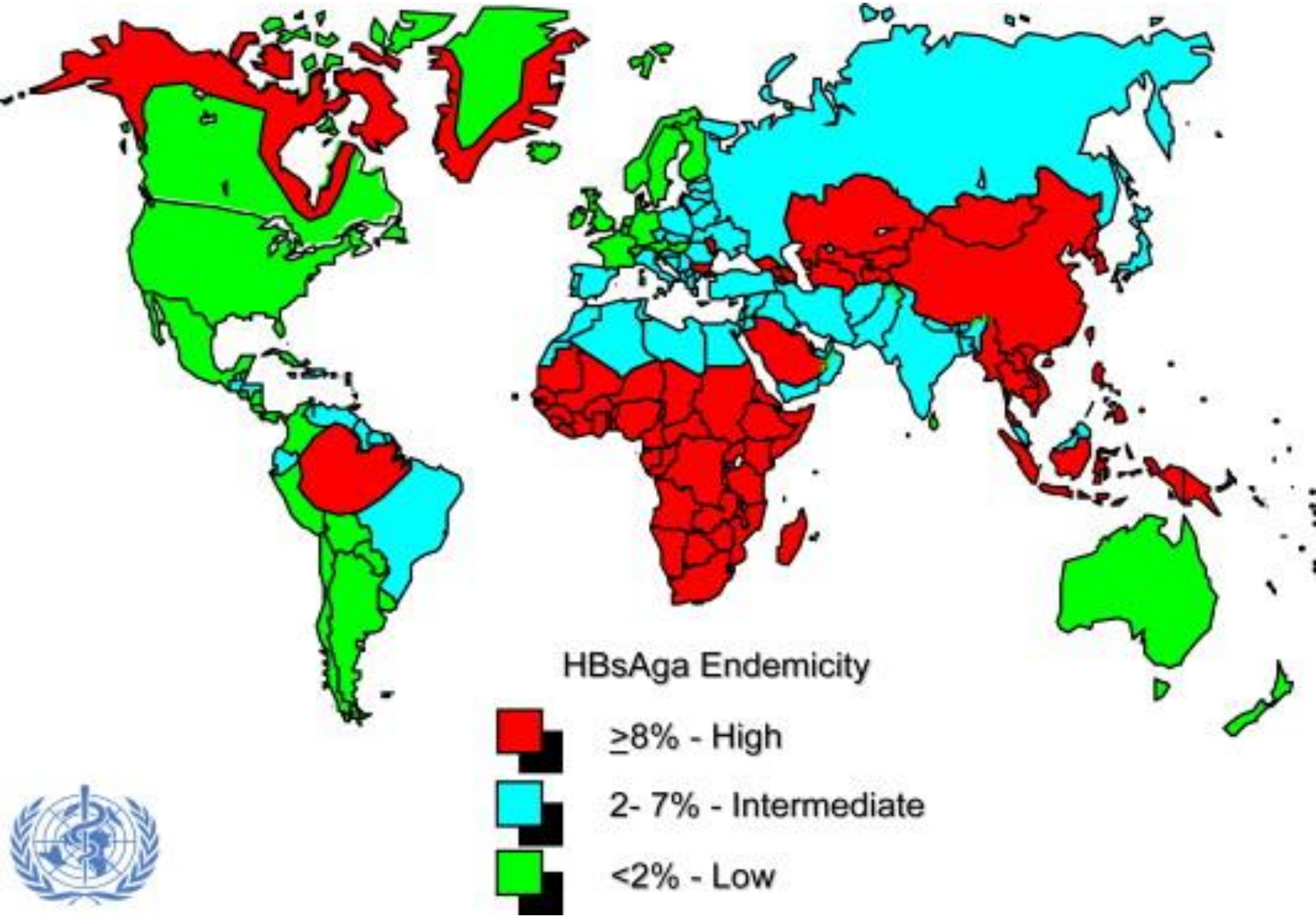
- Following the onset, there is a rapidly worsening cascade of problems.
- markedly deranged LFT, renal impairment, raised uric acid, raised white blood cells, hypoglycaemia & coagulopathy.
- Perinatal & maternal mortality & morbidity are increased. Maternal death result from hepatic encephalopathy or overwhelming haemorrhage.

Management:

- Relies on early diagnosis.
- intensive care unit & multidisciplinary team.
- Delivery should be expedited, this will be by CS under GA, following correction of hypoglycaemia or coagulopathy with 50% dextrose, vitamin K , fresh frozen plasma & platelets.
- Management after delivery is conservative. Referral to liver unit is indicated if liver function still abnormal or there are features of hepatic encephalopathy.

Viral Hepatitis & Pregnancy:

- most common cause of jaundice in pregnancy .
- None of the hepatitis viruses are known to be teratogenic .
- The course of most viral hepatitis infections is unaltered by pregnancy except with hepatitis E which exhibit markedly increased fatality rates.


HBsAga Endemicity
≥8% - High
2- 7% - Intermediate
<2% - Low

Treatment:

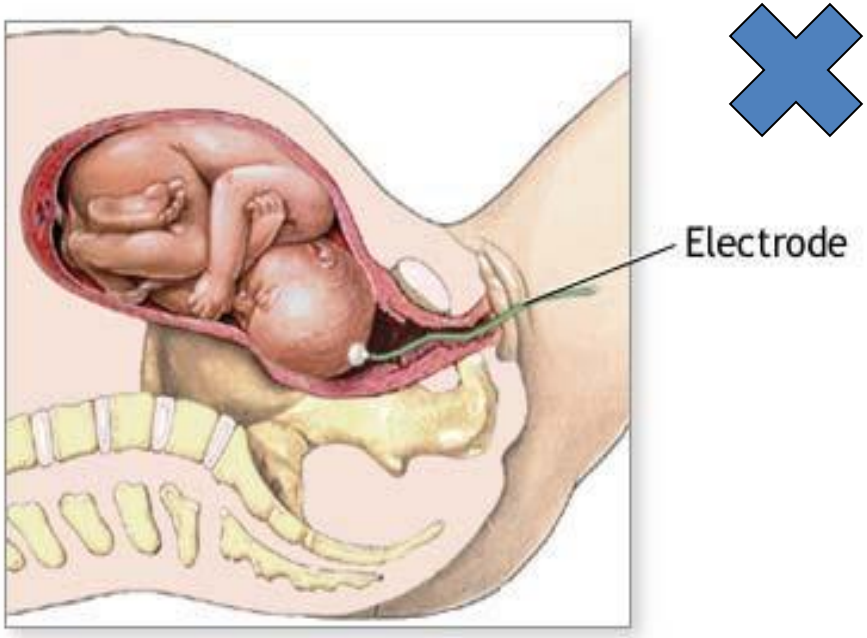
- may benefit from pharmacologic therapy for chronic HBV and chronic HCV infections.
- Interferon does not have an adverse effect on the embryo or fetus while the use of ribavirin during pregnancy is contraindicated.
- **Post-exposure Prophylaxis** for Susceptible Pregnant Women: HBV immunoglobulin, HAV vaccine, and HBV vaccine are approved for use during pregnancy.

Vertical Transmition:

- HAV is not transmitted to the fetus in utero but may be transmitted to the neonate during delivery or during the postpartum period (fecal-oral route .
- The risk of HBV vertical transmission is 10 % in mothers with negative HBeAg and positive HBsAb while it is 90% in those with positive HBeAg. Neonatal HBV infection increase with increasing gestation.
- Universal screening of pregnant women for HBsAg is performed to reduce perinatal transmission of hepatitis B virus.

- Neonatal prophylaxis: Infants of HBsAg-positive mothers should receive hepatitis B immune globulin immunoprophylaxis at birth and hepatitis B vaccine at one week, one month and six months after birth .
- This regimen reduces the incidence of hepatitis B virus vertical transmission to zero to 3%.

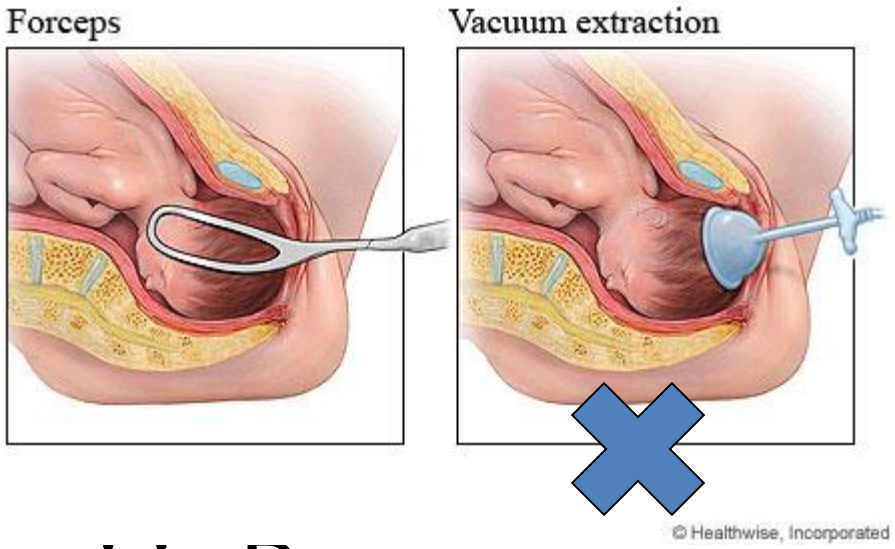
- Delivery by cesarean section is not recommended.
- Intrapartum fetal scalp electrode & fetal blood sampling should be avoided.



Internal fetal monitoring

A.D.A.M.

- If instrumental delivery is needed, forceps rather than ventouse is appropriate.



- With appropriate hepatitis B immunoprophylaxis, breast-feeding poses no additional risk for maternal to child transmission

Abnormal liver function tests in pregnancy

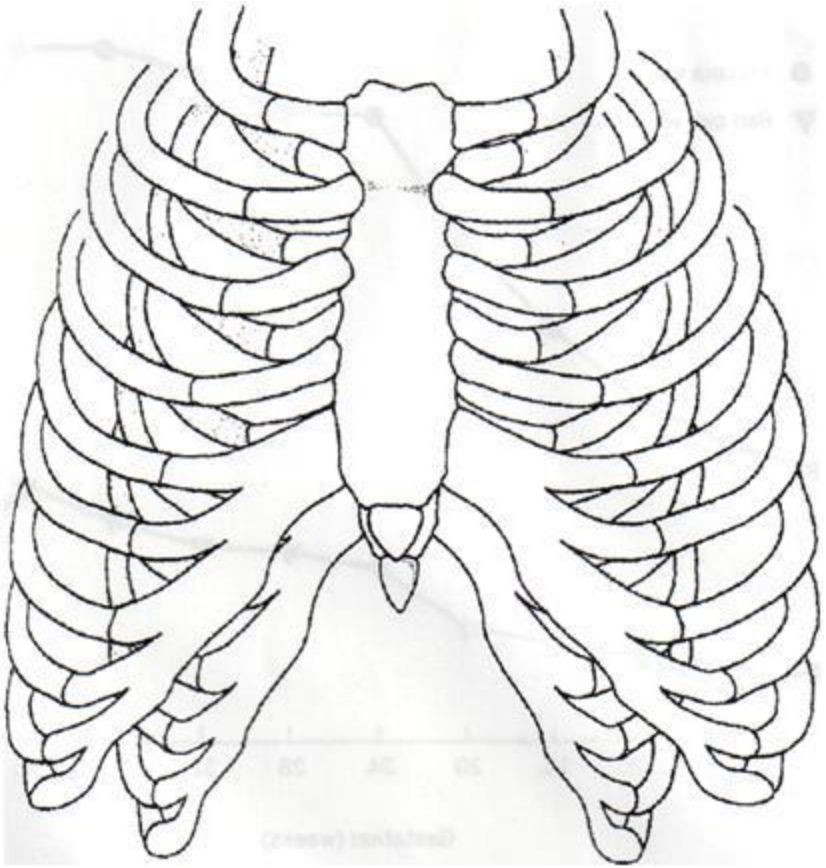
Differential diagnosis:	Investigation:
• Hyperemesis gravidarum	• UEC
• Acute viral hepatitis	• HAV, HBV, HCV, EBV, CMV, HSV, (HEV) etc
• Preexisting liver disorders	• Autoimmune serology • Chronic HCV, HBV • Past history/antenatal LFTs • US–structural changes • History of alcohol/insulin resistance
• Cholelithiasis • Cholestasis of pregnancy • Liver involvement in pre-eclampsia • HELLP	• Upper abdominal US • Bile acids/no RUQ pain • Pre-eclampsia features–transaminase rise to fivefold • Microangiopathic haemolytic anaemia/thrombocytopaenia/pre-eclampsia features
• AFLP • Liver haematoma	• Encephalopathy/DIC/low BSL • US or CT liver. Large rise in transaminases
• Budd-Chiari syndrome	• Doppler ultrasound/ascites

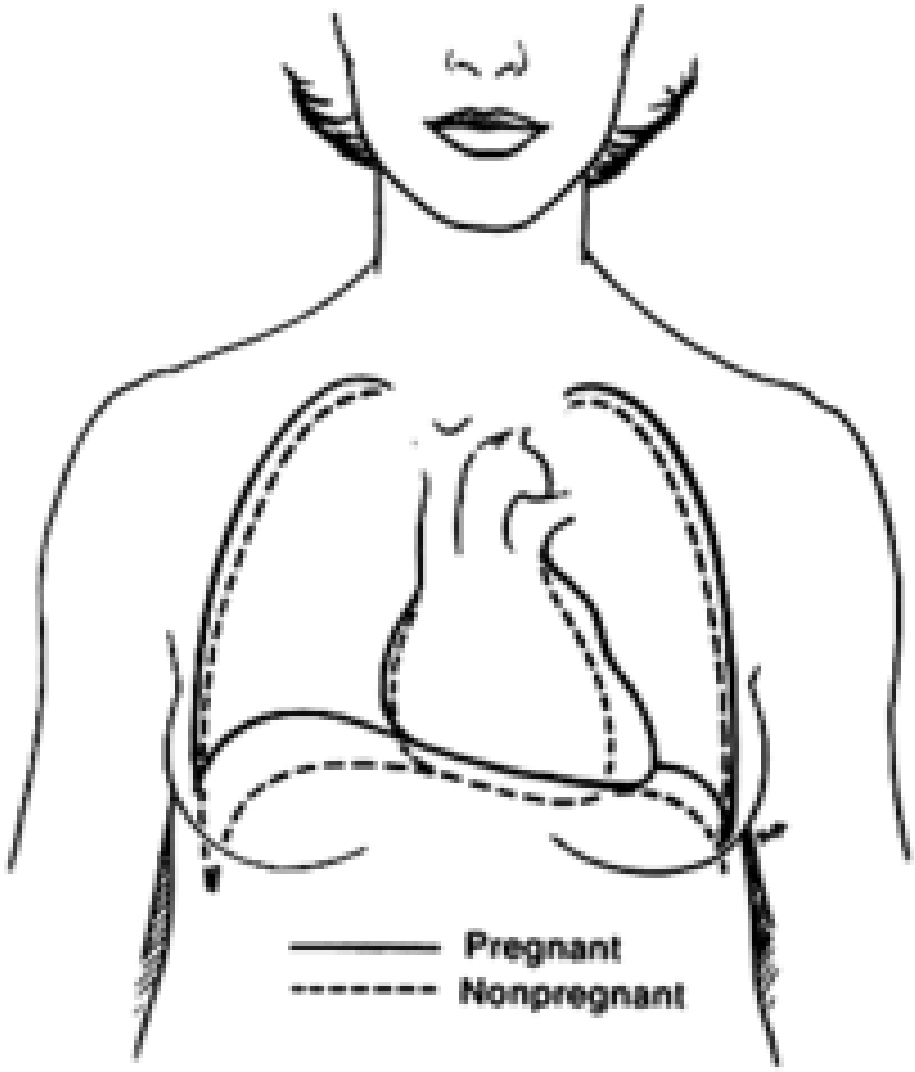
Asthma in Pregnancy

Physiological changes in pregnancy

- Dyspnea is experienced by approximately half of all pregnant women by 20 weeks gestation because of high progesterone levels which acts via the Hypothalamus to increase respiratory drive.

- Anatomically, the lower chest wall circumference increases by 5-7 cm, the diaphragm is elevated 4-5 cm by term & the costal angle widens. These changes occur due to the pressure from the expanding uterus & the relaxation of thoracic ligaments.




Pregnant
Nonpregnant

Asthma in Pregnancy

- The prevalence of asthma in pregnancy is about 3 –12 per cent.

Effect of pregnancy on asthma severity:

- asthma remains stable in one-third of women, worsens in another third and improves in the remaining third.
- most episodes occur between 24 and 36 weeks of pregnancy

- The potential benefit of pregnancy-induced immune system modulation & progesterone-mediated bronchodilatation may be opposed by the reluctance of patient & physician to treat asthma for the fear of harming the fetus through drug exposure.

The effect of asthma on pregnancy:

- Severe & poorly controlled asthma have a detrimental effect on pregnancy including:
- intrauterine growth restriction
- hypertensive disorders
- preterm labour
- intrauterine fetal death.

- Labour and delivery : are not usually affected by asthma and attacks are uncommon in labour.

- Postpartum, there is no increased risk of exacerbations and those whose asthma deteriorated during pregnancy have usually returned to pre-pregnancy levels by three months after birth.

Management of asthma in pregnancy:

- Same as in non-pregnant patient. Prevention is the key & known triggers of exacerbations should be avoided .

- Short-acting & long-acting beta2-agonists, inhaled steroids & theophylline can be used in pregnancy. These drugs will suffice for mild to moderate asthmatics

- Epinephrine should be avoided in the pregnant patient. it can lead to possible congenital malformations, fetal tachycardia, and vasoconstriction of the uteroplacental circulation

- Women with more severe asthma who have stabilized on leukotriene receptor antagonist may continue them through out pregnancy.

- Prednisolone is the oral steroid of choice in pregnancy, as 88 % of it is metabolized by the placenta, limiting fetal exposure.

The teratogenic risk & possible harmful fetal effects of maternal steroid treatment remain an area of controversy.

Managing pregnancy in asthmatic patients:

- Well-controlled mild to moderate asthmatics will have a normal out come with standard antenatal care. For those with poorly controlled or severe asthma , care should be multidisciplinary.
- Baseline investigations, such as peak flow measurements should be obtained at booking.
- Medical treatment should be optimized, with repeated reassurance about the use of necessary drugs in pregnancy.
- Women taking Prednisolone should be screened for glucose intolerance

Labour & delivery:

- Parenteral steroid cover may be needed for those who are on regular steroids
- regular medications should be continued throughout labour .
- bronchoconstrictors, such as ergometrine or prostaglandin F2α, should be avoided.
- Adequate hydration is important.
- regional anaesthesia favoured over general, to decrease the risk of bronchospasm, provide adequate pain relief and to reduce oxygen consumption and minute ventilation.

- **Breast feeding** is not contraindicated with any of the medications used although high-dose oral steroid use (≥ 40 mg per day)carries a risk of neonatal adrenal suppression