Obstetric Emergencies and Resuscitation

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Remember!

- Pregnancy—the presence of two persons (or more!)

- We look after both, a mother and a fetus
Physiological changes in pregnancy

**General:** size-large/obese patient with breast hypertrophy, oedema present, high oxygen demand, difficult venous access, difficult intubation-fat neck, splinting of shoulders, high standing diaphragm
Physiological changes in pregnancy

- **Cardiovascular changes:**
  - blood volume (50%)
  - RBC (20%)
  - hypercoaguuable status
  - heart rate (+15-20/min),
  - cardiac output (40%)

- ! Aorto-caval compression by enlarged gravid uterus - necessity of special manoeuvres
Physiological changes in pregnancy

- **Respiratory changes**: increase in minute volume (40%), increase in respiratory rate (15%), increase in functional residual capacity and residual volume, increased oxygen consumption
Physiological changes in pregnancy

- **Gastrointestinal changes:**
  - Increased gastric acid secretion
  - Low gastric pH
  - Lower oesophageal tone—hence reflux
  - Mendelson’s syndrome—inhalation of gastric contents

  ! Increased risk of aspiration!
  Neccessity of use antacids-
  $\text{H}_2$-receptor antagonists (eg. Ranitidine)
General approach to pregnant

Medical/obstetric history:
- Mother age
- Mother chronic conditions
- Obstetric past history

**gravidity** - number of pregnancies including the current one

**parity** - number of births beyond 24 weeks gestation

- Gestational age/confirmation of pregnancy

**LMP** - last menstrual period

Naegele’s rule:

$$\text{EDD} = \frac{\text{Date of LMP} + 1\text{ year} + 7\text{ days}}{3 \text{ months}}$$
Physical examination

- GCS-consciousness status

- Respiratory system:
  - ✓ RR
  - ✓ Breath sounds
  - ✓ Findings on percussion
Physical examination

- Circulatory system:
  - ✔ HR
  - ✔ BP
  - ✔ CRT
  - ✔ HS-murmurs
  - ✔ Presence of oedemas
Abdominal examination:
- Inspection - scars, abnormal masses, asymmetry, size of the uterus,
- **SFH** - fundo-symphysial height
  SFH in centimeters +/- 2 cm = gestational age in weeks
- Look for: tenderness, rebound, renal angles tenderness
- Auscultation - with portable Doppler U/S/S probe to detect fetal heart beats
Obstetrical symptoms

**Physiological:**
- Nausea/vomiting
- Frequency of micturition
- Heartburn, gastro-oesophageal reflux
- Constipation
- Backache (due to action of progesterone-relaxation and softening of tendons/ligaments)
- Lower abdominal pain/groin pain (pulling of the round ligament by enlarging uterus)
- Headaches-common, mild
- Calfs pains (muscle spasm, venous stasis)-usually at nights

**Pathological:**
- Hyperemesis gravidarum+electrolytes imbalance-*hydatiform mola, pre-eclampsia*
- Less frequency, burning sensation, abnormal dipstick urine test (proteinuria)-*infection, pre-eclampsia*
- Prolonged no BO, no flatus passed, abdominal distention and tenderness!-*bowel obstruction*
- Sudden onset, persistent!-*aortic aneurysm*
- Sudden, persistent!-*placenta praevia, placental abruption*
- Sudden, severe, persistent!-*pre-eclampsia, SAH*
- Severe, unilateral, not relieved on massage, rest, limb elevation-*DVT*
Obstetrical symptoms

Physiological:
- Vaginal discharge (clear, not stained)
- Braxton-Hicks contractions (after 20 weeks of gestation) start from the top-downwardly, last 30-60secs
- Feeling of fetal movements: primigravidas-19-20 weeks multigravidas-17 weeks
- Breathlessness (due to splinting of diaphragm and less lung capacity)
- Itchy abdomen
- Weight gain (up to 30%)

Pathological:
- Offensive, coloured, odoured, pruritus, blood-stained, watery-infection, amniotic fluid leakage
- If more frequent (>4x hour), accompanied by abdominal-or backache, vaginal bleeding or discharge—threatened labour
- Absence of fetal movements after 20 weeks of gestation— intrauterine death
- Breathlessness with rapid pulse, rapid breathing, chest pain!—pulmonary embolus
- Generalized itchiness and persistent—cholestasis
- >30%-DM, hypertension, thromboembolism, renal failure
Obstetric emergencies
Miscarriage

(15% of all pregnancies, up to 22 weeks)

Types:
- early/late
- Threatened
- Missed
- Incomplete/complete
- Septic
- ‘empty egg’
- Recurrent (1% of all women)

Treatment - D&C, antibiotic if required
Ectopic pregnancy

(11,5:1000, 4% maternal deaths)

Symptoms:

- Amenorrhea
- Irregular vaginal bleeding
- Abdominal pains/distension
- Shoulder tip/scapula pains
- Syncope
- Diarrhoea
- Cervical excitation
- Adnexal mass on internal examination
Ectopic pregnancy

Types:
- Tubal
- Ovarian
- Cervical
- Corneal
- Intramural
- Intra-abdominal

Diagnosis:
- U/S/S-adnexal mass, peri-adnexal fluid, absence of fetal sac intrauterine (might be decidual ring!), presence of free fluid in peritoneal cavity
- $\beta$hCG-within 48h should double in normal viable, intrauterine pregnancy, in 80% of ectopics the rise is suboptimal
- Laparoscopy-definitive diagnosis and treatment

Treatment: laparoscopy, laparotomy
Symptoms:
- Vaginal bleeding-100%
- Large for dates uterus-50%
- Anaemia-20%
- General malfunction
- Hyperemesis gravidarum-20%
- \( \beta hCG \)-very high
- U/S/S- ‘snowstorm’ apperance of the uterine contents with absence of a fetus, bilateral ovarian lutein cysts (due to high \( \beta hCG \))

Treatment: surgical evaluation, histological confirmation to exclude malignant trophoblastic disease, barrier contraception methods for a year after!
# Placenta praevia (PP)

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<th>Types</th>
<th>low-lying</th>
<th>marginal</th>
<th>complete</th>
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**Risks:**
- Maternal: massive haemorrhage, air embolism, postpartum sepsis
- Fetal: IUGR, congenital malformation, malpresentation, fetal anaemia, cord complications

**Symptoms:**
- Unprovoked, painless vaginal bleeding or bleeding after intercourse
- Malpresentation is common
- Uterus is soft and non-tender

**Diagnosis:** U/S/S

**Treatment:** according to the gestational age-steroids, blood transfusion, c/s or natural labour
Placental abruption

With intrauterine haematoma

With vaginal bleeding

Risks:
- **Maternal**: coagulopathy-DIC, hypovolaemic shock, acute renal failure, post-partum haemorrhage, feto-maternal haemorrhage
- **Fetal**: IUGR, pre-term delivery-fetus immaturity, anaemia, coagulopathy

Symptoms:
- Sudden, severe abdominal pain
- +/-vaginal bleeding
- Uterine tenderness, tightness
- Sciatic pain
- Signs of shock
- Fetal distress/death

Treatment:
- Immediate delivery + resuscitation
When happens:
- Within c/s scars
- With excessive use of oxytocin
- In obstructed labour-malpresentation (transverse lie, fetus hydrocephalus
- Corneal pregnancy
- Congenital uterine defects
- In high parity
- Following trauma

Symptoms:
- Uterine tenderness
- Vaginal bleeding
- Abdominal pain released when contractions stop
- Loss of fetal movements
- Signs of shock

Treatment: laparotomy, hysterectomy if needed
Post-partum haemorrhage (PPH)

Causes:
- Uterine atony
- Coagulopathy (DIC)
- Retained placenta
- Morbidly adherent placenta
- Uterine inversion
- Injuries to the genital tract (cervical, vaginal lacerations)

Treatment:
- Fluid-blood resuscitation
- Manual manoeuvres
- Surgical treatment-hysterectomy?
Seizures in pregnancy

Origin of seizures:
1) Eclampsia
2) Epilepsy
3) Tetany in pregnancy
1) Eclampsia

Eclampsia is uniquely a disease of pregnancy and is only definitely treated by emptying the uterus

- High blood pressure >140/90mmHg
- Proteinuria >300mg/24h
- Tissue oedemas
- Seizures (grand-mal-tonic/clonic)
- Headaches
- Visual disturbances (pre-convulsions aura)
- Nausea/vomiting
- General malaise
- Respiratory and multi-organ failure (brain, liver, kidneys, coagulopathy, circulatory system)
1) Eclampsia
1) Eclampsia

- Treatment:
  "delivery is the only cure!"
  - Anti-convulsions therapy: 10% MgSO$_4$ (magnesium sulphate), 4g over 5-10 mins, then 1g/h i.v.
  - Anti-hypertensive therapy: Methyldopa, Labetalol, or Nifendipine, Hydralazine
  - Monitoring: BP (every 15 mins), CVP, fluid balance, chest X-ray
  - $O_2$
  - ITU admission at least up to 48h post-delivery (pick of recurrent hypertension-1 week post-delivery)
2) Epilepsy

- Complicates 1 in 200 pregnancies
- Family and past history-vital
- Important to control seizures (to avoid brain and placenta hypoxia)
- Metabolism of antiepileptic drugs is changed, those have teratogenic effects
- Antiepileptics should be kept in possibly minimal dose
- Monotherapy is preferable
- More frequent check of fetal well-being
- Prophylactic administration of vitamin K and folic acid
3) Tetany of gravidity

- Usually caused by a dietary or calcium absorption failure
- May result in seizures
- Treatment – rapid recovery after calcium supplementation
Vena Cava Inferior Compression Syndrom
(Aorto-Caval Compression)

- Due to compression of a large, gravid uterus on vena cava inferior +/- aorta and effects in decreased venous blood return to the heart
- May cause:
  - Breathlessness
  - Pale skin
  - hypotension
  - Syncope
  - Loss of consciousness
Vena Cava Inferior Compression Syndrom (Aorto-Caval Compression)

How to prevent/treat:
- Never lie the pregnant flat on her back!
- If it happens-use left lateral tilt or wedge/pillow under right flank, give O₂
Amniotic Fluid Embolism (AFE)

- 1:20,000-8,000 deliveries, 60-70% mortality!
- Occurs in antenatal period, women in labour, after vaginal delivery, caesarean section, TOP, but also can complicate amniocentesis
- Pathophysiology involves anaphylactic reaction
Amniotic Fluid Embolism (AFE)

Symptoms:
- Collapse
- Hypotension
- Hypoxia
- Cyanosis
- Cardiopulmonary arrest
- Neurological sequelae, including seizures
  Therefore, outcome very poorly, high mortality, even if survive, only 15% remain neurologically intact (result of hypoxia)!

➢ Treatment: resuscitation, delivery, if survived-ITU admission
General conditions affecting pregnancy:

- Appendicitis (1:1000-1500 pregnancies)
- Renal colic
- Hepatic colic-cholestasis!
- Ovarian torsion
- Uterine fibroids
- Ovarian large cysts
- Sub-arachnoid Haemorrhage (SAH)
- Diabetic comas
- Asthma
- Heart conditions
- Drug poisoning
- Injuries

In all medical conditions in pregnancy, the treatment plan should involve a medical/surgical specialist together with an obstetrician! Only holistic, multi-disciplinary care provide the best treatment to both, mother and a fetus!
Resuscitation during pregnancy

- Modified A, B, C, D, E..rule
- Differences to rule A, B:
  - To avoid risk of aspiration:
    - Active oxygenation should be avoided
    - Cricoid pressure applied prior to intubation
    - Anti-Trendelenburg position
    - Suction ready
    - Early intubation performed, difficult intubation - large neck
    - Use of extra support under shoulders/neck (large patient)
    - Use of laryngeal mask (LMA) if unable intubate
Resuscitation during pregnancy

- Differences to rule C:
  - As early as possible use of **left lateral tilt/wedge/pillow** under right flank/manual lateral displacement of uterus
Resuscitation during pregnancy

- Chest compressions as normally 30:2 (but difficult due to breast hypertrophy, splinting of diaphragm, unable to see chest movements)
- Early surgical/obstetrical intervention-after 5 minutes of unsuccessful CPR, emergency c/s should be performed to rescue a baby!
Resuscitation during pregnancy

- Difficulties in placing defibrillator paddle on the chest, therefore adhesive electrodes should be used.
- If cardiac arrest effects from toxicity of used Magnesium Sulphate, calcium chloride should be given.
- If tachyarrhythmia occurs after administration of anaesthetic drugs eg. bupivacaine, it can be treated with cardioversion or infusion of bretylium rather than lidocaine use.
Thank you 😊