MEDICAL COMPLICATIONS

CARDIAC DISEASES

If no history – then may be diagnosed by finding a significant arrhythmia, cardiac enlargement on X-ray; cyanosis or clubbing, persistent jugular venous distention or a diastolic or presystolic murmur. Systolic murmurs may be functional.

Changes in the cardiovascular system:
Blood volume increases 50% by 30th week of gestation
Systemic vascular resistance decreases
Risk of both hypercoagulability and hemorrhage

General guidelines to treatment:
Counsel regarding: maternal morbidity and mortality; fetal morbidity; inheritance of cardiac defect; teratogenic effects of anticoagulant therapy
Bed rest
Antibiotic prophylaxis (not needed with porcine grafts)
Antenatal fetal surveillance - assure adequate maternal and fetal oxygenation
Cautious fluid infusion
Intrapartum invasive cardiac monitoring (C.O. fluctuates intrapartum and postpartum)
Epidural anesthesia; operative vaginal delivery

New York Heart Association Classification:
Class I — No limitation of physical activity (asymptomatic)
Class II — Slight limitation of physical activity
Class III — Marked limitation of physical activity
Class IV — Complete limitation of activity (symptomatic at rest)

Other adverse prognosticators include: PaO₂ < 60mmHg; hematocrit >65%; EKG changes; cardiomegaly; CHF.
Ideally the pt should be evaluated by a cardiologist prior to conception so that all possible steps can be taken to ensure adequate cardiac reserve.

EISENMENGER SYNDROME AND OTHER CONDITIONS WITH PULMONARY HTN.
---Low SVR -> right to left shunting -> pulmonary hypoperfusion -> hypoxemia
--- The maternal risk of death may be as high as 50%
--- Thromboembolism accounts for nearly half of deaths
--- Death commonly occurs in the postpartum period
--- Avoid hypotension

MARFAN SYNDROME
—Significant risk of aortic dissection during pregnancy.
—Pts with dilated aortic root in echocardiography are at greatest risk

MITRAL VALVE PROLAPSE
—Most common form of heart disease seen by obstetricians
—Most pts with MVP will have a systolic click, and no other abnormality on clinical exam, echocardiography will image the prolapse.
Such pt will have a safe and unaffected pregnancy
MITRAL STENOSIS
--- Most common Rheumatic Heart disease found in pregnancy.
--- The Inc in CO, (HR and Blood volume) impose a tremendous stress
--- Dyspnea is often present by 20 weeks gestation
--- Tachycardia causes decreased filling time and hypotension results
--- Need high normal PCWP

AORTIC STENOSIS
--- Rare complication in pregnancy.
--- Mortality rates as high as 17% have been reported
--- Avoid tachycardia, hypotension and fluid overload.
--- Need high PCWP
--- Risk of coronary and cerebral hypoperfusion
--- Frequently have ischemic heart disease

ISCHEMIC HEART DISEASE
--- Difficult to compensate in pregnancy
--- Nitrates safe in pregnancy
--- If MI; better if deliver after 2 weeks elapsed

MITRAL AND AORTIC INSUFFICIENCY
--- Tachycardia of pregnancy reduces opportunity for regurgitation and therefore is well tolerated
--- Preeclampsia may exacerbate

COARCTATION
--- Pre-coarctation aneurysms may rupture
--- Check for intercostal dilation

CONGENITAL LESIONS
VSD, ASD, PDA
--- Surgical Correction of these lesions is often performed in childhood.
--- Small defects are usually associated with a good pregnancy outcome.
--- In pts who develop pulmonary HTN, mortality of 50% has been reported.

ASTHMA
--- The most common obstructive pulmonary disease in pregnancy.
--- 18-28% improve
--- 35-42% exacerbate
--- 33-40% no change

Course of asthma in each pregnancy is often similar

Chronic Asthma: mild - <2 brief attacks / week
Treated with inhaled \( \beta_2 \)-agonist – bronchodilates within 5 minutes
Moderate - >2 attacks / week
Treated with inhaled corticosteroid (may cause oral candida, purpura, cataracts and dermal thinning) or cromolyn continuously (theophylline if nocturnal symptoms are present) and with \( \beta_2 \)-agonists intermittently
Severe – continuous symptoms
Treatment as above; may need oral corticosteroid; may cause hypothalamic-pituitary-axis suppression; need to administer IV hydrocortisone 100mg q8h x 24h when in labor.
- No increase in rate of fetal malformations in the asthmatic patient
- Antenatal fetal surveillance - assure adequate maternal and fetal oxygenation
- Encourage trigger avoidance
- CDC recommends yearly administration of influenza vaccine to all pts with chronic asthma. Killed vaccine that can be administered during pregnancy
- Incidence of preeclampsia is slightly higher
- PGE_2 not PGF_2\textalpha
- Acute asthma attacks are unusual during labor
- In labor epidural anesthesia is preferred for labor and cesarean section
  General anesthesia carries a risk of atelectasis and subsequent chest infection

Acute Asthma: Exacerbations of the disease are associated with respiratory tract infections and non compliance with medical regimens
Differential Diagnosis includes: pulmonary edema; pulmonary embolism; bronchitis; pneumonia; mechanical obstruction; cystic fibrosis

Evaluation: jugular venous distention; cyanosis; accessory muscle use; ambulation; sputum temperature; respiratory rate; FEV\textsubscript{1}; PEFR; ABG; leukocytosis

Therapy:
--- Oxygen
--- Beta sympathomimetic
  —may be administered as inhaled; oral; or subcutaneous preparations
  — Albuterol (aerosolized) and Terbutaline (oral and subQ) are commonly used.
  —Epinephrine ( alpha and beta agonist) can decrease uterine blood flow and thus decrease fetal oxygenation
--- If no improvement, FEV\textsubscript{1} or PEFR <40% of predicted by 1\textsuperscript{0} or <70% by 4\textsuperscript{0} or patient already on oral steroids consider hospitalization for corticosteroids
  — IV until improvement; then oral. Fetal adrenal suppression may occur (rare).

ACUTE ABDOMEN IN PREGNANCY

APPENDICITIS
—The most common acute surgical condition in pregnancy.
—Incidence of 1 in 2000 births.
—Same frequency in all trimester as well as the puerperium.
—Dx is delayed because clinical pictures masked by symptoms of pregnancy.
—Factors that confuse the dx:
  - N&V,
  — abdominal discomfort of early pregnancy,
  — upward displacement of the appendix by the enlarging uterus,
  — laxity of the abdominal wall,
  — round ligament spasm,
  — physiologic leukocytosis,
  — and elevated sed rate.

DX:
—S&S similar to those in the nonpregnant patient.
—Initial pain colicky , referred to the epigastrium or paraumbilical.
—First trimester pain localized in RLQ.
—After the 4th month of gestation , the appendix is displaced upward and laterally.
-Anorexia, N&V begins 1 to 2 hours after the onset of pain.
—Temp may be normal or moderately elevated, up to 1010F.
-leucocytosis and an increasing left shift.
-Xrays not helpful in making the dx.
DDX:
- Pyelonephritis
- Round ligament pain
  — torsion of ovarian cyst
- Degenerating myomata
- Pancreatitis
- Cholecystitis

MANAGEMENT:
- Appendectomy
  — If unruptured appendix: no antibiotics, drainage or tocolytics necessary.
  — If ruptured: multiple antibiotic therapy, drainage to prevent an abscess or peritonitis

ACUTE CHOLECYSTITIS
- More common in pregnancy
  — Incidence is 1 in 4,000 pregnancies

DX:
— Clinical picture no different from that in nonpregnant.
  --- Biliary colic, N&V, Fever, leucocytosis.
  — Ultrasound will detect stones or dilatation of the common bile duct. If stones and a positive Murphy’s: Cholecystitis.

Management:
- Medical management suffices in most cases.
  — Antibiotics, IV fluid, N suctioning, antispasmodic 1, analgesics with the expectation of recovery in 48 hrs or less.

** If common duct obstruction or pancreatitis develops, a cholecystectomy will be necessary and should not be delayed. There is considerable risk of preterm labor following the operative procedures.

PERINATAL INFECTIONS

GROUP B STEPTOCOCCUS
--- 1.8/1000; 5-20% mortality
--- Fetal infection incarries: 4% if risk factors; 0.5% without
--- With routine cultures, 26.7% of women will be treated; 86% prevention
--- With treatment based on risks; 18.3% treated; 68.8% prevention

VARICELLA
--- Highly contagious; incubation 11-21 days (mean 15)
--- Secondary viremia present 48 hrs prior to rash – infectious
--- Limb hypoplasia; scars; chorioretinitis; cataracts; cortical atrophy; and microcephaly
--- Infection only between 6-20 weeks and risk is low
--- Neonatal infection if baby born between two days prior to or 5 days after maternal rash
--- Need quarantine; placenta infectious as well
--- 10-30% develop pneumonia with a 40% mortality rate
--- Antiviral drugs within 72 hours
RUBELLA
— A moderately contagious, mild exanthematous illness caused by an RNA virus.
— Spread via nasopharyngeal secretions.
--- Characterized by fever, lymphadenopathy, and a transient erythematous rash.
— The virus can be isolated from the bloodstream and throat 7 to 10 days after exposure.
The rash starts on the face 16 to 18 days after exposure
— Serologic tests confirm the dx. Antibody level (IgG) is the most commonly used type of screening test.
--- 90% of population is seropositive
--- 80% of infections are prior to reaching reproductive age.
Primary maternal infection during early pregnancy may involve the embryo or fetus.
Pregnant women with confirmed rubella infections should be counseled regarding the types and risks of congenital anomalies.
Risk of anomalies from rubella:
   50% in the first month of gestation
   10% by the third month of gestation
   5% by the fifth month of gestation.

**CATARACTS, PATENT DUCTUS ARTERIOSUS AND DEAFNESS**
The most common abnormalities associated with congenital rubella syndrome.
Deafness is common even after 2nd trimester exposure prior to 20 weeks
— The clinical dx of rubella is often difficult because it resembles other exanthems.

Rubella vaccines contain live attenuated virus. After vaccination, about 95% of susceptible individuals develops antibodies, which provide long term protection.

Rubella susceptible women of child bearing age should be vaccinated and it is recommended that they avoid pregnancy for 90 days after immunization.

The postpartum period is an excellent time for immunization susceptible women. Newly vaccinated women may breastfeed without fear of adverse effect to the newborn.

CYTOMEGALOVIRUS
— The most commonly isolated virus of the female genital tract.
— It is found in approximately 4-13% of pregnant women.
— 90% of reproductive age adults have serologic evidence of CMV. Most of the infections are subclinical;
   — CMV may be transmitted in utero to the fetus and is recognized as the most common congenital infection in the U.S., occurring in .2 to 2% of neonates.
     — 5 to 10% of those affected develop neurologic sequelae.

CONGENITAL CMV INFECTION
— May follow either maternal primary or recurrent infections.
— Primary infection more dangerous to the fetus than recurrent infection.
   **Following Primary maternal infection—-40% of newborns are infected. Recurrent infection—-<10% of infected newborns.**

FEATURES ARE: HEPATOSPLENOMEGALY THROMBOCYTOPENIA, MICROCEPHALY
DEAFNESS, CHORIORETINITIS, OPTIC ATROPHY, AND PERIVENTRICULAR
CALCIFICATIONS

DX: By serologic tests such as ELISA of indirect hemagglutination
RX: No satisfactory treatment for CMV infection.
TOXOPLASMOSIS
Protozoan infection
--- 1/3 of women are seropositive
--- Complicates 0.1-0.5% of pregnancies
--- Acquired by eating infected meat or by inhaling oocysts from cats
--- chorioretinitis, hydrocephaly, microcephaly, intracerebral calcifications
--- asymptomatic at birth
--- More transmittable later in pregnancy 59% in 3rd vs. 9% in 1st trimester
--- Infection is more serious earlier (2/3 severe sequelae)
--- PCR on amniotic fluid can diagnosis infection
--- pyrimethamine and sulfonamides may ameliorate sequelae

PARVOVIRUS
--- Erythema infectiosum – fifth disease
--- Respiratory secretions and hand-to-mouth transmission
--- Of exposed - 5% infected -> 20% fetal infection -> <10% death

SUBSTANCE ABUSE
--- Prevalence of 10-20%. Associated risk of malnutrition and STD’s
Signs include: sedation, inebriation, euphoria, agitation, disorientation, dilated or constricted pupils, track marks, inflamed mucosa, increased pulse and blood pressure, nystagmus, hallucinations, unusual infections (atypical pneumonia, endocarditis, HIV), malnutrition
--- T-ACE questions

ALCOHOL
Fetal alcohol syndrome is the most common identified cause of mental retardation ~1/1000.
--- Growth retardation, CNS abnormalities, and abnormal facies
--- May see cardiac anomalies, i.e. VSD
--- 1-2 oz alcohol – 10% risk; >3oz – 30-50% risk
--- Neonatal jitters

TOBACCO
--- Spontaneous abortions, abruptio placentae, PPROM, preterm delivery, IUGR
--- Quit before 16 wks gest

COCAINE
--- Blocks reuptake of norepinephrine and dopamine
--- Vasoconstriction -> hypertension -> ischemia -> infarction
--- Microcephaly, limb reduction, neurobehavioral abnormalities, SIDS, as well as the adversities seen with tobacco

HEROINE
--- Neonatal withdrawal
--- High rate of HIV and hepatitis

MARIJUANA, LSD
--- No known deleterious effects

AMPHEMATINES
--- Similar to tobacco