Go Red for Women

Special considerations for women with heart disease

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Disclosures

- I have no financial disclosures related to this presentation.

Pregnancy and Heart disease

Objectives

- Understanding the cardiac contraindications to pregnancy
- Medication considerations specific to women
- Congenital heart disease and women.

Why talk about pregnancy?

- Risk of cardiovascular disease in pregnancy is increasing due to increased maternal age in the western world – mean age at first birth is 28.8-31.2 years
- Increasing number of women with congenital heart disease are reaching childbearing age.
- Pregnancy in late reproductive years (40-50) are often complicated by diabetes, obesity and hypertension.
- Maternal heart disease is a major cause of maternal death in pregnancy.

Physiology of pregnancy

- Plasma volume increases. Most occurs within the first trimester and by 32 weeks has increased to 40-50% above baseline.
- Cardiac output increases due to increased stroke volume and heart rate.
- Dilation of cardiac chambers.
- Systemic and pulmonary vascular resistance decrease.
- Increased risk of thromboembolic disease due to hypercoagulability state.

Pregnancy and Heart Disease

- Women with known cardiac or aortic disease require pre-pregnancy counselling.
- Evaluation includes:
  - ECG
  - Echocardiogram
  - Exercise stress test
  - CT or MRI imaging of the aorta if there is a history of aortic pathology.

  - Women with a physiological exercise capacity able to achieve >80% of their maximum predicted heart rate are generally associated with good outcomes

Which women are low risk?

- Mild pulmonary stenosis
- Patent ductus arteriosus (PDA)
- Mitral valve prolapse
- Successfully repaired simple ASD, VSD, anomalous pulmonary venous drainage
- Isolated premature atrial contractions
- Isolated premature ventricular contractions

No detectable increased risk of maternal mortality- cardiac event rate is 2.5-5%

Which women are high risk?

- Moderate to severely depressed LVEF (<45%)
- Previous peripartum cardiomyopathy (even if LVEF has improved)
- Mechanical valve prosthesis
- Systemic right ventricle (L-transposition of the great vessels- physiologically “corrected” transposition)
- Fontan Circulation (Adult with a single ventricle- venous circulation is rerouted to bypass the right heart)
- Unrepaired cyanotic heart disease
- Moderate to severe mitral stenosis
- Severe aortic stenosis

High risk conditions continued

- Moderate to severe aortic dilation
  - Marfan syndrome with aortic diameter > 45 mm
  - Bicuspid aortic valve with aortic diameter > 50 mm
  - Turner syndrome
  - Tetralogy of Fallot
  - Vascular Ehlers-Danlos
- Severe co-arctation of the aorta
- Ventricular tachycardia

Significantly increased risk of maternal mortality or severe morbidity

>19%.

Contraception

- Ethinyl estradiol (184 types) containing contraceptives have the greatest risk of thromboembolism and are not and advised with women with a high risk of thromboembolic disease.
  - Ethinyl estradiol is contraindicated in the setting of pre-existing hypertension.
- Progestin (9 types) only contraceptives are an alternative they have little or no impact on coagulation factors, blood pressure and lipid levels.
- Levonorgestrel based implants or intrauterine devices are the safest and most effective contraceptives.
- Barrier methods are also an option, but can be unreliable.
- Sterilization by tubal ligation or vasectomy of the male also not unreasonable.

Treatment of hypertension in pregnancy

- Goal BP in pregnancy <140/90
- Only trial of treatment of hypertension in pregnancy with infant follow-up is methyldopa. The study was performed 40 years ago.
- Non-pharmacologic treatment is always the right thing to do - dietary and lifestyle interventions.
- Labetalol, oral methyldopa and nifedipine are recommended.
- ACE inhibitors, angiotensin receptor blockers and direct renin-inhibitors are contraindicated.
- Hydralazine is associated with perinatal adverse effects
- Atenolol is contraindicated in pregnancy and lactation.

Anticoagulation

- Vitamin K antagonist is recommended in the 2nd and third trimesters until 36 weeks gestation at low doses < 5 mg day
- Low molecular weight heparin is recommended for prevention of venous thromboembolism until near delivery.
- Conversion to unfractionated heparin is recommended 36 hours prior to delivery.
- Inadequate data is available for the novel anticoagulants – they are contraindicated
  - apixaban, rivaroxaban, edoxaban have all been shown to be excreted in breast milk in animal studies. Apixaban, dabigatran and rivaroxaban cross the placenta.

What is ideal cardiovascular health?

- Total cholesterol 200 mg/dL (untreated)
- BP 120/80 mm Hg (untreated)
- Fasting blood glucose 100 mg/dL (untreated)
- Body mass index <25 kg/m2
- Abstinence from smoking
- Physical activity at goal for adults 20 y of age or older:
- 150 min/wk moderate intensity, 75 min/wk
- vigorous intensity, or combination
- Healthy (DASH-like, low sodium) diet

References

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Thank You!