

Women and Heart Disease

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How is a woman's heart different?

- Lower ventricular pressure
- Higher ejection fractions
 - Resting higher
 - Exercise testing different (less increase than men)
 - Left ventricle dilates with stress
- Increased clotting-platelet activity greater
- Smaller blood vessels

Major Risk Factors

■ Diabetes

- Women with diabetes have greater risk of CAD than men with diabetes
- Women with diabetes have twice the risk of CAD as women without
- Insulin resistance also confers increased risk of CAD

Major Risk Factors

■ Hypertension

- Most powerful predictor of CAD and CVD
- Present in 60-80% women over 45

■ Lipids

- Low HDL more predictive of CAD than high LDL in women all ages

Major Risk Factors

■ Smoking

- 50% MI's in women attributed to tobacco
- Risk increases fivefold with 25 cigarettes a day
- Even small amount of cigarettes increase risk
- Risk starts to drop with stopping completely
 - Eventually reaches risk for women who have never smoked

Major Risk Factors

- Family History of Premature MI
 - First degree male relative over 55
 - First degree female relative over 65
 - Both increase risk

Risk Factors

■ Obesity

- Overall obesity a risk factor for females only
- Abdominal obesity risk factor for both
- Strong relationship between truncal obesity and insulin resistance

Risk Factors

- Sedentary lifestyles
 - Moderate exercise decreases risk in women of all ages
- Family history of heart disease
 - Maternal heart disease before 60 more predictive
 - Higher in Black Americans
- Previous history of infarction

Female Risk Factors

- Menopause
 - Blood vessels more friable
 - $<HDL >LDL$
 - Increased iron?
 - HRT?



Female Risk Factors

- Age greater than 55
- Premature menopause without ERT
- Family history of premature CHD
- Personal history of cardiac symptoms

Possible Female Risk Factors

- OCP
 - Does not increase risk in smokers under 30, or nonsmokers over 30
- Type A personality?
- Low education level?
- Cocaine use

Possible Female Risk Factors

■ C-reactive protein

- Marker of systemic inflammation
- Nurses Health Study- elevated levels were independent predictor for CAD even in women with normal lipids

Possible Female Risk Factors

- Lipoprotein (a)
 - Framingham Study
 - Strongly associated with atherosclerosis and CAD, especially in women

Symptoms Women Have with Heart Attacks

- Angina – most frequent first manifestation
 - Most likely to have pattern associated with stress, sleep and rest instead of physical exertion
- Prinzmetal angina (angina at rest) – rare in both men and women
- Women are more likely to have:
 - SOB
 - GI pain
 - Nausea
 - Fatigue

Symptoms of Heart Attack in Women

- Most common presenting symptom in men and women is chest pain



Gender Differences in Presentations

- Higher prevalence of ST-T abnormalities
- Vasospasm more common
- Sudden cardiac death:
 - More common in men than women
 - Still accounts for 37% CAD deaths in women
 - 67% all sudden cardiac death in women occurs in women without known history of CAD

Common Presentation

- Symptoms Men and Women Have
- Chest pain
- Dizziness
- Limb weakness
- Fainting
- “Cold sweat” more likely in men

Women are treated differently!

- 27% of deaths are under age 55
- Treated less aggressively
- Do not get thrombolytics
- Less surgery or other invasive procedures
- Occlude following percutaneous catheterization

Problems Diagnosing Women

- Report to ER later than men
- Nonclassical, “GI” symptoms
- Nondemanding, polite
- Denial

What can we do?

- Educate women and health care providers
- Research with female participants
- Standards of treatment for women
- Reimburse preventive strategies

What can we do?

- Appropriate (smaller) equipment
- Risk factor modification for women
- Appropriate screening
- Reduce time to treatment

CAD Classifications

■ Class I

- Asymptomatic
- No limitation of physical activity

■ Class II

- Slight limitation of physical activity
- Asymptomatic at rest
- Symptoms with heavy physical activity

CAD Classifications

■ Class III

- Considerable limitations of activity
- Asymptomatic at rest
- Symptomatic with minimal activity

■ Class IV

- Severe activity limitations
- Symptoms with minimal activity
- May have symptoms at rest

Assessment

Past Medical History

- Cardiac surgery or hospitalization
- Rheumatic fever
- Unexplained fever
- Swollen joints
- Inflammatory disease
- Chronic Illness

Assessment

Past Medical History

- Hypertension
- Bleeding disorders
- Hyperlipidemia
- Diabetes
- CAD
- Congenital heart defect

Assessment Family History

- Diabetes
- Heart disease
- Hyperlipidemia
- Hypertension
- Congenital heart defects
- Sudden unexplained death in young relatives

Assessment

Personal-Social History

- Employment
- Environmental hazards
- Emotional stress
- Tobacco
- Nutritional status
- Alcohol

Assessment

Personal-Social History

- Hypercholesterolemia
- Personality
- Relaxation activities
- Exercise
- Drug use
 - Amyl nitrate
 - Cocaine

Diagnosing Cardiac Disease in Women

- 1 out of 3 women may not have angiographic evidence
- Chest pain
 - Dysrhythmias
 - Mitral regurgitation
 - 4th heart sound (atrial gallop)
 - Basilar crackles

Testing

■ Resting EKG

- Good test for women
- ERT changes Q waves

■ Exercise EKG

- High false positive rate (ST depression)
- Not accurate with single vessel disease
- Strenuous for elderly
- Can not raise heart rate

Testing

■ Thallium Scan

- Fewer false positives than exercise EKG
- Still may be false positive because of breasts
- Expensive & radiation exposure

■ Radio-Nuclide Ventriculogram

- RBC labeled with technetium 99
- Little diagnostic value in women
- No EF increase at peak exercise

Testing

- Exercise Echocardiogram
 - 90% accurate
 - Detects single vessel disease
- Cardiac Catheterization
 - Gold standard
 - Men 10 times more likely to be tested
- Cardiac Enzymes
 - MI (more research needed)

Benign Heart Murmurs in Women

- Systolic
- Grade 1/6 or 2/6
- Short
- May be transmitted to carotids
- “Dub” is normal
- Heard best when supine

When do Benign Murmurs Occur?

- Anemia
- Exercise
- Pregnancy
- Thyrotoxicosis
- Fever
- Emotional disturbances

Malignant Murmurs (Refer)

- Chest pain
- SOB at rest or exertion
- RHD
- Congestive heart failure
 - Orthopnea
 - Paroxysmal nocturnal dyspnea
 - Pedal edema
 - Wheezing or coughing

Malignant Murmurs

- History of previous cardiac disease
- Growth failure
- Cyanosis
- Enlarged or irregular thyroid
- Hypertension
- Severe unexplained anemia (<27%)
- Polycythemia

Malignant Murmurs

- All diastolic murmurs
- III/VI or above
- Irregular heart rate or rhythm
- Bruit, heave, click, or tactile thrill
- Inspiratory basilar crackle or wheeze
- Edema
- Jugular vein distention
- Hepatomegaly

Malignant Murmurs

- Cardiomegaly
- Intensified by exercise or Valsalva
- Diminished femoral pulses
- Unequal BP in right or left arm
- Friction rub
- Fixed split S-2
- Paradoxical split



Image acknowledgments:

◆ **Black, McKay, Braude,
Jones, & Margesson (2002)**

*Obstetric and Gynecologic
Dermatology*

◆ **Pathguy.com**

◆ **Skinema.com**

◆ **Med.cornell.edu**

◆ **Medscape.com**

◆ **Virtualhospital.com**

◆ **Obgyn.net**

◆ **My friends**

◆ **My family**