The Heart of Women’s Health

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Topics

- Epidemiology
- Mechanism of disease
- Screening for disease: classic and newer risk factors and tests
- Guidelines for prevention of heart disease: the importance of lifestyle
- Diagnostic tests

The Numbers

- Heart disease is the most common cause of death in women in the US
  - 6 times breast cancer deaths
- About 398,000 cardiovascular deaths in women annually
  - One death per minute
  - 1 out of every 2.6 women will die of cardiovascular disease
- 8 MILLION women have diagnosis of heart disease
- Since 1984, more cardiovascular deaths in women than in men
- 64% of people with sudden cardiac death had no prior symptoms
- Younger women are affected too!
Heart Disease

• Problems with the arteries
• Problems with the valves
• Problems with the rhythm
• Problems with the heart muscle function (usually caused by one of the above)

Symptoms

• Chest pain: pressure, tightness, burning
• Shortness of breath
• Jaw, neck, arm, back pain
• Nausea/vomiting
• Sweating
• Fatigue, weakness, lightheadedness
• Trouble sleeping, uneasiness
Symptoms

- Why do women tend to delay care?
- Misinterpret symptoms
- Minimize symptoms
- Minimize perception of risk
- Competing obligations
- Don’t want to impose
- Embarrassment about symptoms

Women ARE different

- More women than men die of sudden cardiac death
- After a heart attack, female mortality is higher
- Pathophysiology seems to be different

Women ARE different

- Women with diabetes have higher risk heart disease and stroke compared with men who have diabetes
- Suboptimal treatment of women despite guidelines

What is a Heart Attack?

- [http://vimeo.com/10063636](http://vimeo.com/10063636)
Coronary Artery Occlusion From Eroded Plaque

Epicardial coronary arteries with occlusive macroscopic thrombus (A to C) due to plaque erosion. Longitudinal sections (A, B, and C) and transaxial sections from a different vessel (D, E, and F) show the deep lipid core is not exposed. Immunostains of the thrombus for platelet (CD61, B and E) and fibrin (C and F) components reveal that the typical thrombus frequently is a mixed platelet-fibrin mixture. Images are from patients not included in the study, but illustrate typical coronary thrombus in sudden death due to plaque erosion. CD61 immunostain shows platelets within the thrombus are diffusely scattered throughout (slender arrow in B); junction between thrombus and the arterial plaque (thick arrow in B). The 'cap' of this thrombus is very fibrin-rich (arrow in C).

Figure Legend:

Other Types of Heart Attacks

Coronary artery spasm

Spontaneous coronary artery dissection (SCAD)

Stress induced cardiomyopathy

What is a Heart Attack?

• Key role of inflammation
• Unstable plaque
• Triggering event
  • Spike in blood pressure
  • Fatty meal
  • Mental stress
  • Physical stress

Are You at Risk?

• Screening = detection of disease before it causes an event
• Diagnosis = confirmation of disease
Goal: prevent events

Are You at Risk?

- Classic cardiac risk factors:
  - High blood pressure (even if treated)
  - High cholesterol
  - Diabetes
  - Smoking
  - Family history of early heart disease
  - Age > 55
  - Obesity
  - Lack of exercise and poor exercise tolerance
  - Chronic kidney disease

Are You at Risk?

- Newer cardiac risk factors
  - Add to classic risk factors
  - Can further refine risk

Newer Screening Tools

- Coronary artery calcium scoring
- Advanced cholesterol testing
  - Lp(a), particle size/particle number
- Measures of inflammation (hs-CRP)
  - (hs-CRP naturally higher in women)
- Carotid artery thickness by ultrasound
Ultrasound of the Carotid Artery

Patient Characteristics and Conditions Associated with Increased or Decreased Levels of hsCRP

<table>
<thead>
<tr>
<th>Increased Levels</th>
<th>Decreased Levels</th>
</tr>
</thead>
<tbody>
<tr>
<td>Elevated blood pressure</td>
<td>Moderate alcohol consumption</td>
</tr>
<tr>
<td>Elevated body mass index</td>
<td>Increased activity/endurance exercise</td>
</tr>
<tr>
<td>Cigarette smoking</td>
<td>Weight loss</td>
</tr>
<tr>
<td>Metabolic syndrome/diabetes</td>
<td>Medications</td>
</tr>
<tr>
<td>Low HDL/high triglycerides</td>
<td></td>
</tr>
<tr>
<td>Estrogen/progestogen hormone use</td>
<td>Statins</td>
</tr>
<tr>
<td>Chronic infections (gingivitis, bronchitis)</td>
<td>Fibrates</td>
</tr>
<tr>
<td>Chronic inflammation (rheumatoid arthritis)</td>
<td>Niacin</td>
</tr>
</tbody>
</table>

hsCRP = high-sensitivity C-reactive protein; HDL = high-density lipoprotein cholesterol
Other Links to Heart Disease

• Low Vitamin D
• Obstructive Sleep Apnea
• Polycystic Ovarian Disease
• Autoimmune (rheumatoid arthritis and lupus)
• Other vascular disorders:
  • Raynaud’s, migraine

Other Link to Heart Disease

• Gout
• History of pregnancy complications: high blood pressure, pre-eclampsia, gestational diabetes
• Breast cancer history

Who Should be Screened?

• Every woman should know her numbers!
• All women should be asked about classic risk factors
• “In the middle” women could consider additional screening
• We ALL need to focus on primary prevention

Primary prevention

• Modifying risk before something happens
Know those numbers

- Blood pressure 120/80
- LDL cholesterol <100
- HDL cholesterol > 50
- Triglycerides < 150
- Non HDL cholesterol <130
- BMI 18.5-24.9 (kg/m2)
- Waist < 35 inches
- Diabetes: hemoglobin A1C <7%

Our bodies are meant to exercise

- Check with your doctor . . .
- Then go for it! At least 30 minutes of moderate activity MOST days of the week
- Some is better than none
- More is better than less

What about Hormones?

- Naturally occurring hormones are protective
- Menopause: metabolic changes including decreased HDL
- Women’s Health Initiative (2002)
What about Hormones

- Concerns: increased risk heart attack, stroke, blood clots, breast cancer
- For symptoms only (ages 50-59)
- Lowest dose possible
- Shortest time possible ( <5 years)
- Do not use if cardiac event
- Patch preparations and plant-derived compounds may carry less risk
Diet Evidence: Benefits of Fruits and Vegetables

Nurses’ Health Study and Health Professional’s Follow-up Study
126,399 persons followed for 8-14 years to assess the relationship between fruit and vegetable intake and adverse CV outcomes*

Increased fruit and vegetable intake reduces CV risk

Focus on ENHANCEMENT (not deprivation)
Create good habits

Read food labels

- Avoid TRANS-fats
  - “partially hydrogenated” is bad
- Avoid/limit SATURATED fats
  - Animal fats: butter, red meat, whole fat dairy
- Look for:
  - < 8 grams sugar
  - High fiber
  - Low sodium

Omega 3 Fatty Acids—an important fish tale

- Eat “fatty” fish (5-6 oz per week)
  - Salmon, mackerel, herring, tuna, sardines
- Consider fish oil supplements (mercury free)
  - 500-4000 mg EPA and DHA if high triglycerides
- ALA acids for vegetarians
  - Almonds, walnuts, canola oil, flaxseed, soybean oil
- Monounsaturated fats:
  - olive oil, nuts, avocados
Supplemental Information

- A varied diet rich in lean protein, good fats, and vegetables is the best defense
- Consider a multivitamin
- Vitamin D3
- Calcium: 700-1000 mg daily from food sources
- Vitamin E, high dose Vitamin C, beta carotene, and folate no clear benefit
  - Folate is important for women who are pregnant or may become pregnant

Visit Your Dentist

And your heart will be happy
Less Stress = Big Plus

Heart attacks are less frequent in the summer.

UptoDate
For some women . . .

- Statins and other cholesterol medications
- Blood pressure medicines
- Diabetes medicines
- Aspirin
  - High risk women: 75-325 mg daily
  - Low risk: over age 65 consider aspirin if low bleeding risk

Diagnostic Tests

- Stress tests
- Cardiac catheterization (angiogram)
- Noninvasive angiogram

Noninvasive Coronary Angiogram
If you have heart disease

- Keep working on your risk factors!
  - Lifestyle change as important as medications
- Regular follow up with your doctor
- Cardiac rehabilitation programs -- great confidence builders

In Summary

- We can all be part of the solution, starting with taking care of ourselves
- Education and sharing knowledge
- Efforts to expand care to include women, especially racial and ethnic minorities

Resources

- Your primary health care professional
- www.womensheart.org
- www.americanheart.org
- www.nhbli.nih.gov/health/hearttruth
- http://scadalliance.org
- Younger Next Year by Henry Lodge, MD and Chris Crowley
- Eat to Live by Joel Furburn, MD