Heart Disease in Women: Is it Really Different?

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Disclosures

- I have no financial interests to disclose ... I wish I did!
Are women more complicated than men?
Myth 1

Cardiovascular disease is mainly a disease of old men
We’ve Come a Long Way, Baby!

HEART DISEASE PREVENTION IN THE 1960's

- American Heart Association 1964: First Conference for Women on Heart Disease.
- Title: “Hearts and Husbands”
- Objective: Learn how to keep your husbands heart healthy.
- Conference for women only: 10,000 female participants to Portland, OR.

THANK YOU TO DR. NANNETTE WENGER
Why Focus on Women and Heart Disease?

Of the women who died in 2010, one in four women died from heart disease. It’s the #1 killer of women. It strikes at younger ages than most people think, and the risk rises in middle age.
Latest figures......

CVD Mortality in US Men and women 1979-2009

Go A S et al. Circulation 2013;127:e6-e245
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Myth 2:
WOMEN DON’T NEED TO WORRY ABOUT CARDIOVASCULAR DISEASE BEFORE MENOPAUSE
Relationship between early menopause and accelerated CVD?

Traditional Paradigm:
- Menopause
- Minimal or no CVD Risk → Increasing Risk of CVD

Alternative Paradigm:
- Increasing Risk of CVD → Menopause
Many Women Develop Conditions During the Reproductive Years that Contribute to CVD Risk in Later Life

CVD Mortality per 100,000 Women

Age

HTN – Hypertension
GDM – Gestational Diabetes
PCOS – Polycystic Ovary Syndrome

Source: Adapted from “CVD Prevention and the Primary Care Partnership”, Deborah Ehrenthal, MD, FACP
Among pts <50y, the mortality rate for women after MI was more than twice that for men.

Vaccarino et al. NEJM. 1999; 341: 217-225
Myth 3: Hormone replacement therapy is dangerous to the heart and should not be taken under any circumstances.
The Good and Bad of Estrogen Replacement

**The Good**
- Relief of menopausal symptoms
- Reduction in osteoporosis (bone thinning) and fractures
- Enhanced endothelial function (younger women)
- Improvement in lipid profile

**The Bad**
- Breast cancer risk
- Uterine cancer risk
- Prothrombotic effects
- Increased CRP
Women’s Health Initiative

16,608 Post-menopausal women aged 50-79 with an intact uterus

Estrogen + Progesterone

Placebo

Study stopped after mean follow-up of 5.6 years

Hormonal replacement associated with:
- Increased heart disease (29% ↑)
- Increased stroke (41% ↑)
- Increased blood clots
- Increased breast cancer (26% ↑)
- Reduced colon cancer
- Reduced hip fracture

Conclusion: HRT should not be used to prevent disease in healthy post-menopausal women.
Women’s Health Initiative: Estrogen Only Study

10,739 Post-menopausal women aged 50-79 with previous hysterectomy

Estrogen Only

Placebo

Study stopped after mean follow-up of 6.8 years

Estrogen replacement associated with:
- 9% reduction in heart disease
- 39% increase stroke
- 33% increase blood clots
- No change in cancer
- 39% reduction hip fracture
Women’s Health Initiative: Estrogen Only Study

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Risk of Coronary Heart Disease</th>
<th>Risk of Stroke</th>
</tr>
</thead>
<tbody>
<tr>
<td>50-59</td>
<td>37% reduction</td>
<td>11% reduction</td>
</tr>
<tr>
<td>60-69</td>
<td>6% reduction</td>
<td>62% increase</td>
</tr>
<tr>
<td>70-69</td>
<td>13% increase</td>
<td>21% increase</td>
</tr>
<tr>
<td>Overall</td>
<td>9% reduction</td>
<td>39% increase</td>
</tr>
</tbody>
</table>

Conclusion: In younger post-menopausal women post hysterectomy, estrogen alone may be beneficial.

Source: JAMA 2007;297:1477
Caveats...

- WHI population mean age = 63
  - Increased likelihood of preexisting CAD

- In healthy, young menopausal women, the absolute risk of an adverse event with HRT is VERY low

- Short-term therapy is probably safe for most patients
  - Short term = 6 months - 5 years
Contraindications/Cautions

- Personal history of breast cancer
- Personal history of CAD
- Personal history of VTE/PE
- Personal history of stroke

- Also caution in patients who are at risk for the above.
HRT for Secondary Prevention

From: Initiation of hormone replacement therapy after acute myocardial infarction is associated with more cardiac events during follow-up


Cumulative incidence of death/recurrent myocardial infarction/unstable angina requiring hospitalization during follow-up period by hormone replacement therapy use category.
Estrogen Replacement: The reality

- Estrogen therapy is reasonable for the relief of perimenopausal symptoms if started early and tapered after a few years.
- Estrogen administered transdermally may be less likely to increase risk of blot clots and stroke.
- Estrogen should not be given to reduce CVD risk (Class III recommendation).
Myth 4:

MOST WOMEN DO NOT EXPERIENCE CHEST PAIN DURING A HEART ATTACK – FATIGUE AND SHORTNESS OF BREATH ARE MUCH MORE COMMON.
Presentation in Men

- Typical angina – Pressure, fullness, squeezing discomfort in the center of chest.
- CP brought on with exertion and relieved with rest.
- CP lasts more than a few minutes.
- Radiation to the jaw or arm.
Presentation in Women

- Typical angina
- Atypical CP
- SOB
- Neck/Jaw Pain
- Back/Stomach/Abd pain
- Nausea
- Palpitations
- Weakness
- Fatigue
- Anxiety
The Facts

Further Challenges for Women with Heart Disease

- Delays in symptom recognition and treatment.
- Misdiagnosis
- Lower use of angiography, revascularization, ASA, Beta Blockers, Statins, ACE-I.
- Less counseling and risk factor control.
Mechanisms of Ischemia in Women (WISE Study)

- Higher prevalence of vasospastic angina and microvascular angina.

- Women undergoing angiography have more diffuse CAD throughout the arterial tree and less visually flow limiting stenosis.
  - Positive remodeling (vessel enlargement to accommodate plaque growth while lumen size is maintained) may be an anatomic explanation for absence of luminal narrowing on angiography.

- Endothelial dysfunction and diffuse CVD may explain less revascularization benefit, more adverse outcomes, and offers new treatment strategies.
Concealed Plaques Are Prevalent in Women With Chest Pain and Risk Factors But “Normal” Coronary Angiograms

WISE Study – 2004
Angiographically Normal RCA Angiogram and Corresponding RCA Intravascular Ultrasound (IVUS) in a Female Patient with Chest Pain

55% of WISE women had negative angiograms

80% of ‘negative’ angiograms demonstrated concealed plaques

Image From: Pepin, C. Cardiosource, 2005
Summary

- Cardiovascular disease is highly prevalent in women.
- Studies suggest that HRT should not be used with the thought of affecting CHD risk, but used for the women with early or surgical menopause and significant symptoms. For these women, several years of treatment (up to an age in the mid 50’s) is entirely appropriate and supported by the literature.
- Aggressive risk factor assessment and management are required to improve outcomes for women at risk for, or with CAD.
The End!

By Madeleine Jarbeau, age 7