Post-Menopausal Health and HRT

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Announcements

• Upcoming Office Hours: 1 Wellman Court
  – Friday – April 30 from 1-2pm
  – Wednesday – May 5 from 2-3 pm
  – Thursday – May 6 from 3-4 pm

• Final Review: Location TBA
  – Wednesday May 12 or Thursday May 13
    • Most Likely 3-6 pm
    • 2 Hours Organized Review
    • 1 Hour + for office hours and other questions
Symptoms of Menopause
- Hot Flashes
- Insomnia
- Confusion
- Cry at the drop of a hat

In an effort to test the symptoms scientifically...
Problems Associated With Menopause

- Hot Flashes
- Night Sweats
- Sleeplessness
- Vaginal Dryness
- Osteoporosis
- Cardiovascular Disease
- CNS
Menopausal Hormone Use

• Also referred to as:
  – Hormone Replacement Therapy (HRT)
  – Postmenopausal Hormone Use
  – Estrogen Replacement Therapy (ERT)
  – Conjugated Estrogen + Progestin Replacement Therapy (HT)

• Prescribed to treat some of the problems associated with menopause
Types of Hormones Used

- **Estrogens**
  - Used alone or in combination with progestin
  - Approximately doubles the level of menopausal estrogen
  - Optimal dose is the lowest dose to treat symptoms over the shortest duration

- **Progestins**
  - Initially used in conjunction with Estrogen to reduce risk of endometrial cancer
  - In 2002 the WHI stopped a trial using Estrogen + Progestin finding the risks outweighed the benefits
Risks of HT

• Estrogen + Progestin
  – Increases Risk of:
    • Breast Cancer
    • Heart Disease
    • Stroke
    • Blood Clots
    • Dementia
  – Decreased Risk of:
    • Hip Fractures (Osteoporosis)
    • Colon Cancer
Risks of ERT

- Estrogen Alone
  - Only given to women that have had a hysterectomy
    - E alone is a risk factor for endometrial cancer
  - Does not improve long-term health
    - Decreases risk of fractures (osteoporosis)
    - Increases risk of stroke
  - May increase risk of ovarian cancer
  - Does not significantly effect coronary heart disease
  - Does not significantly alter breast cancer incidence
Benefits of HRT

- Relieves Short-Term Symptoms of Menopause:
  - Hot Flashes
  - Sweats
  - Disturbed Sleep
- May also help prevent colon cancer and age-related vision loss
Estrogen Influence on Non-Reproductive Systems

- **Skeletal System**
  - Osteoporosis

- **Cardiovascular System**
  - Coronary Heart Disease vs. Stroke

- **Central Nervous System**
  - Anxiety/Depression
  - Memory and Cognitive Effects
Skeletal System

- Osteoporosis
  - Loss of bone mass and density leading to bones become fragile and susceptible to fractures
  - This process is accelerated following menopause due to low levels of estrogen
  - Bone mass reaches a peak at menarche but is continuously recycled throughout life through the interaction of many regulatory factors
  - Bone loss occurs when recycling process favors matrix breakdown over matrix formation
HRT and Osteoporosis

• Estrogen alone and estrogen with progestins have been shown to protect against osteoporosis
• Estrogen provides negative feedback on osteoblasts and diminishes the rate that the bone matrix is reabsorbed
• Estrogen and Progestin use shows a decreased risk for hip, spinal, and other fractures independent of sub-class (age, smoking, fracture history, etc.)
• Benefits require long-term use of hormones
Cardiovascular System

• At menopause:
  – Rate of myocardial infarction increases 3 fold
  – Cerebrovascular disease rises rapidly
  – Was thought that estrogen decline played a role in these increased risks
  – Thought that estrogen deficiency leads to decreased catabolism of LDL and decreased HDL production
  – Thought that estrogen plays role in protecting endothelial cell wall possibly protecting against thrombosis

• Thought that estrogen therapy would provide protection against coronary heart disease and possibly strokes
HRT and Heart Disease

• Recent findings from WHI show that taking HT increases a woman’s risk for heart disease, stroke, and pulmonary embolism

• U.S. Protective Task Force:
  – Women who have gone through menopause should not be given HT to prevent heart disease or treat other chronic conditions

• Currents studies on ERT show:
  – Increased risk of stroke by 39%
  – No significant change in occurrence of coronary heart disease
Central Nervous System

• Psychological Effects of Menopause
  – Anxiety and mood swings are common symptoms associated with menopause
  – Thought that HRT can improve mood disorders associated with postmenopausal transition
  – Recent 3 year study showed no significant difference between placebo and HT in quality of life issues
    • May not be relevant to women experiencing severe symptoms
    • In these cases, HT may provide benefits
Central Nervous System

• Cognition and Memory
  – Was thought that estrogen influenced cognition and memory
  – Might be protective against neurodegenerative disease
  – May improve certain cognitive functions
    • Immediate and delayed recall
  – May improve acetylcholine dynamics to enhance learning and memory
Current CNS Studies

- WHI study shows HT (estrogen+progestin) doubled risk for developing dementia
  - This includes risk of Alzheimer’s Disease
- HT adversely affects cognitive function in women over 65
- HT does not protect against mild cognitive impairment
- NIA recommends that HT not be given to postmenopausal women to maintain cognitive function
- Report from WHI on ERT expected in next couple of weeks
Unexpected Consequences of HRT: Cancer

- Endometrial Cancer
  - Unopposed long-term estrogen exposure is a risk factor
  - Progestin was originally added to the HRT to alleviate this risk
  - HT risk for cancer is much less than ERT
  - Women who have undergone a hysterectomy generally given estrogen alone
HRT and Cancer

• Ovarian Cancer
  – Slight increased risk for estrogen alone
  – May be an increased risk with HT as well, but more studies need to be completed to be statistically significant
HRT and Breast Cancer

• WHI reported in 2002 that estrogen plus progestin increases the risk of invasive breast cancer by up to 26% over a 5 year study
• Recently released information of estrogen alone indicates no significant increase for breast cancer
• Other studies indicate that HT and ERT both increased associated risks
• HRT makes breast more dense thus making it more difficult to detect tumors
• Study also finds that within 5 years of stopping hormone use risk of cancer declines
Breast Cancer

- Most common cancer in women
  - Risk of Women Developing:
    - from age 30 to age 40 . . . 1 out of 252
    - from age 40 to age 50 . . . 1 out of 68
    - from age 50 to age 60 . . . 1 out of 35
    - from age 60 to age 70 . . . 1 out of 27
    - Ever . . . . . . . . . . . . . . 1 out of 8
Risk Factors

• Reduced # of full-term pregnancies
  – 1st full-term pregnancy before age of 20 reduces risk by 50%
• Increased age at 1st pregnancy
• Early menarche
• Later Menopause
• Post-menopausal obesity
• Hormone Replacement Therapy
• Alcohol in excess of 60g per day
Protective Factors Against Breast Cancer

- Young age at 1st full-term pregnancy
- Prolonged lactation following childbirth
- Exercise
Research On Campus

• Nandi Laboratory
  – Studies parity protection against breast cancer
    • Goal is to understand mechanism by which parity provides protection and thus be able to develop better strategies for prevention of breast cancer
  – Seeks to replicate protective environment through the use of exogenous hormones given over a short amount of time
  – Uses a Rat Model
Recent Results

- Short-term treatment with high pregnancy levels of estradiol with or without progesterone is highly effective in decreasing cancer incidence.
- Short-term treatments with natural or synthetic ovarian steroids are effective in long-term protection against induced carcinogenesis in rats.
Summary of HRT

• HT Risks
  – Heart Disease
  – Breast Cancer
  – Stroke
  – Blood Clots
  – Dementia

• ERT Risks
  – Stroke

• HRT Benefits
  – Improves risk of osteoporosis
  – Effective Treatment for:
    • Hot Flashes
    • Vaginal Discomfort

• Based on current findings:
  – HRT should only be used as short-term therapy with the lowest possible effective dose

• Do Not Take for:
  – Memory Loss
  – Heart Disease/Strokes
Resources

• National Heart, Lung, and Blood Institute Information Center
  Internet Address: http://www.nhlbi.nih.gov/health/women/index.htm
• National Institute on Aging
  Internet Address: http://www.nih.gov/nia/
• National Cancer Institute
  Internet Address: http://www.nci.nih.gov/
• National Center for Complementary and Alternative Medicine
  Internet Address: http://nccam.nih.gov/
• North American Menopause Society
  Internet Address: http://www.menopause.org/
• American College of Obstetricians and Gynecologists
  Internet Address: http://www.acog.org/
• The Hormone Foundation
  Internet Address: http://www.hormone.org/
• Women's Health Initiative (1-800-54-WOMEN)
  Internet Address: http://www.nhlbi.nih.gov/whi/index.html