ANDROPAUSE: NOT JUST "MAN" OPAUSE

Tammy Hadfield, MSN, WHNP-BC
American Board of Anti-Aging Health Diplomat

Preliminary Presentation

All slides subject to change

Aging Hormones

Women have set hormonal events in our lives

- Menarche
- Perimenopause
- Menopause
- Postmenopause

Men are rarely viewed as being hormonal

Aging Hormones

- Women experience vasomotor symptoms, emotional instability, body aches, and lower sexual desire as a result of menopausal changes
- Martial stress can arise
- Second highest rate of divorce is during the menopausal years

Aging Hormones

- Typically, men do not experience the decline of their hormones as dramatically as women
- However, a man's hormones do fluctuate throughout his aging process

Metabolism of Steroids

Male Hormonal Changes….

The Mid-Life Crisis

Andropause [anˈdrəpôs]

- a change of life for males that may be expressed in terms of a career change, divorce, or reordering of life. It is associated with a decline in androgen levels that occurs in men during their late 40s or early 50s.
- Mosby's Medical Dictionary, 8th Edition, 2009.

Andropause Symptoms

- Excess weight, especially abdominal obesity
- Decreased muscle mass
- Low mood, depression
- Fatigue
- Irritability
- Loss of sex drive
- Joint aches and pains
- Inability to maintain or achieve an erection
- Dry skin
- Osteoporosis
- Loss of initiative
- Lack of mental firmness
- Insomnia

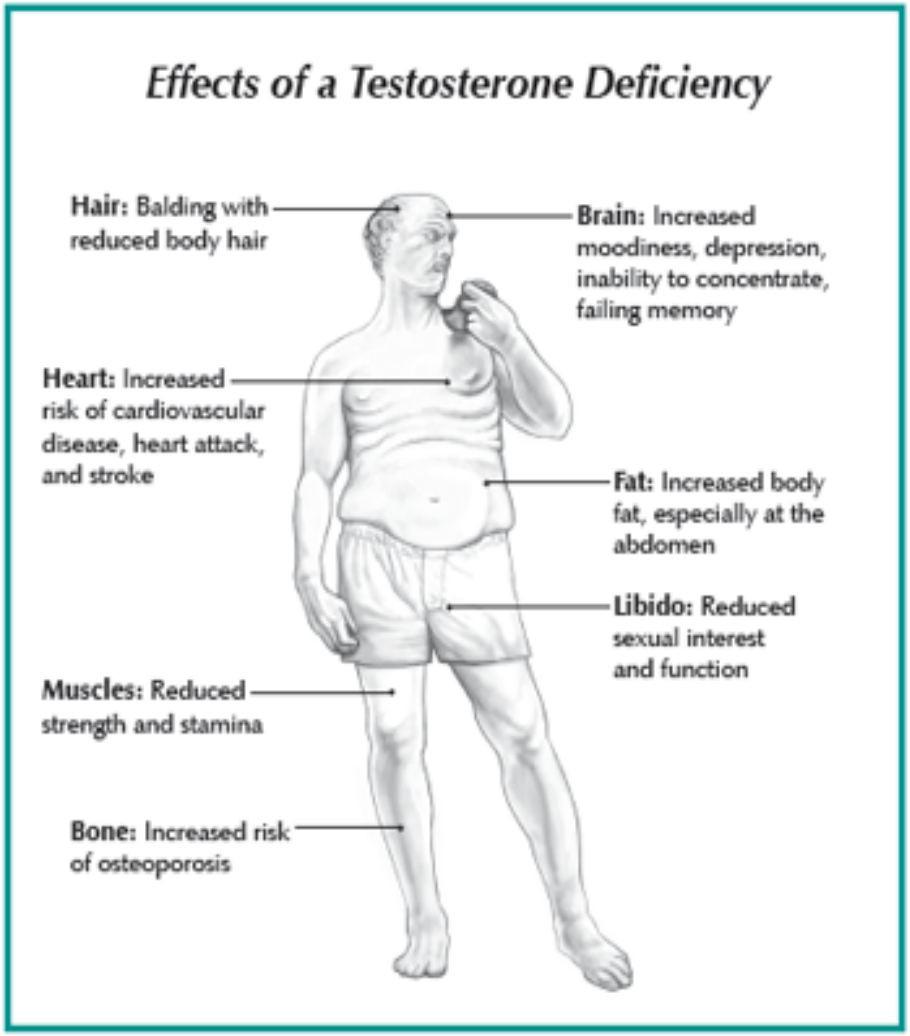
Cardiovascular Effects of Andropause

- Elevated blood pressure
- Increased insulin levels
- Increased cholesterol and triglycerides
- Diminished coronary artery elasticity
- Weakening of the heart muscle
- Increased abdominal fat leading to increased risk of heart attack

Mental Effects of Andropause

- Moodiness
- Emotional
- Touchiness/ irritability
- Great timidity
- Inner unrest
- Reduced interest in surroundings
- Loss of ability to concentrate
- Memory loss
- Reduced intellectual agility
- Passive attitudes
- Weak feeling
- General fatigue
- Hypochondria
- Anti-Social

Andropause



- Overview of typical presentation

Physical Signs of Testosterone Deficiency

- Pale skin tone
- Older than years
- Lack of muscle tone
- Abdominal obesity
- Dry eyes
- Gynecomastia
- Loss of body hair
- Male pattern baldness

Testosterone Deficiency

- Pale, dry glans penis
- Loose scrotal skin
- Cellulite
- Poor memory
- Hypotonic, lax testicles
- Irritable behavior

Causes of Andropause

Aging

Other Causes of Low Testosterone

- Lack of exercise
- Insomnia
- Obesity
- Stress
- Low FSH
- Nutritional issues
- Elevated estrogen

Insomnia

- Decreases production of growth hormone, affecting the hormonal cascade
  - Consider shift workers

Obesity

- Fat tissue is rich in enzyme aromatase that inactivates male hormones by converting testosterone to estradiol
- Causes men to hot flush, feel emotional and develop gynecomastia

Nutritional Issues

- Alcohol
- Caffeine
- Sugar
- Milk
- Cereal fiber

Stress

- Taxes the adrenal glands
- Decreases the production of DHEA Sulfate, which is the precursor to testosterone

Hormone Cascade

Causes of Elevated Estrogen in Men

- Age-related increase in aromatase activity
- Changes in liver function
- Obesity
- Alcohol abuse
- Zinc Deficiency
- Ingestion of estrogen-enhanced foods or environmental substances

Estrogen in Men

- Most men do not have just one estrogen-enhancing influence
- Changes in liver function can effect the body's built-in mechanism for elimination of estrogen
- Elevated estrogen can trick the brain into thinking the supply of testosterone is adequate, slowing down the natural production of testosterone

Estrogen in Men

- Increased levels can increase the risk of stroke and heart attack

Environmental Estrogen

- Drinking water
- Hormones in meat and dairy products (genetically modified feed as well)
- BPA in plastics mimic estrogen
- HPTE, metabolite of the pesticide methoxychlor

Evaluation of Andropause

It's not just about testosterone

Andropause/Testosterone Deficiency

- Physical Examination

Laboratory Evaluation

- Testosterone, free and total
- DHEA-SO4
- PSA, total
- Estradiol
- Estrone
- DHT
- Thyroid panel
- Vitamin D 25-OH
- Zinc
- Ferritin
- CBC
- LH/FSH
- SHBG

Testosterone

- During fetal development, testosterone and DHT are necessary for internal and external male genitalia formation
- During puberty, testosterone deepens the voice, promotes body hair growth, stimulates sexual behavior, and initiates sperm production
- During adulthood, testosterone is vital to maintain muscle mass and strength, promote normal hair growth, promote bone mass, produce sperm, and facilitate the sex drive

Laboratory Values

- Significant difference “normal” and “optimal”
- Laboratory values for testosterone on based on a seventeen to seventy year old
- Consider optimizing the male patient’s testosterone if symptomatic

Laboratory Values

Normal

- Testosterone, total
  - 300-1000ng/dL
- Testosterone, free
  - 5-25ng/dL
- DHT
  - 30-100ng/dL

Optimal

- Testosterone, total
  - ~700ng/dL
- Testosterone, free
  - 25-35ng/dL
- DHT
  - ~70ng/dL

Laboratory Values

Normal

- DHEA-Sulfate
  - 35-44yrs
    88.9-427µg/dL
  - 45-54yrs
    44.3-331µg/dL
  - 55-64yrs
    51.7-295µg/dL
  - 65-74yrs
    33.6-249µg/dL

Optimal

- DHEA-Sulfate
  - ~300-400µg/dL

Laboratory Values

Normal

- Estradiol
  - 10-45pg/mL
- Estrone
  - 20-60pg/mL
- PSA, Total
  - 0.0-4.0ng/mL
- Ferritin
  - 22-322ng/mL

Optimal

- Estradiol
  - ~25pg/mL
- Estrone
  - 30-60pg/mL
- PSA, Total
  - <4.0ng/mL
- Ferritin
  - >90ng/mL

Laboratory Values

Normal

- TSH
- Free T4
- Free T3
- Vitamin D
  - 30-150ng/mL
- Zinc
  - 70-100µg/dL

Optimal

- TSH
- Free T4
- Free T3
- Vitamin D
  - >80ng/mL
- Zinc
  - >90µg/dL

Laboratory Values

Normal

- FSH
  - 1-8mIU/mL
- LH
  - 2-12mIU/mL
- SHBG
  - 1.9-5.1mg/L

Optimal

- FSH
  - 2mIU/mL
- LH
  - 3mIU/mL
- SHBG
  - 2.3-2.8mg/L

Treatment Options

Correct the environment

Correct the deficiency

Environmental Issues

- Resolve insomnia
- Reduce stress
- Promote testosterone building activities
- Loss weight
- Change diet

Testosterone Cypionate

- 100mg IM Q5-7days
  - Physiologically stable levels
  - Easy self injection
  - Less DHT conversion than topical application
  - No transference to partner or family

Oral Methyltestosterone

- Hepatotoxic

Subcutaneous Pellets

- Minor surgical procedure
- Can last up to 6-8 months
- Compounded pellets less stable

Transdermal Testosterone

- Steady state after 24 hours
- Well absorbed by most men
- Can have more DHT conversion due to 5-alpha reductase in hair follicles

Transdermal Testosterone

- Commercially available testosterone gels
- Compounded testosterone available in any dosaging
  - Titrate to optimal serum levels
  - Can combine with aromatase inhibitors

Transdermal Precautions

- Avoid the scrotum areas as it increases DHT
- Avoid contact with females and children after application
- Can increase hair growth in area of application
- Some men do not absorb well