Reproductive Disorders and Sexually Transmitted Diseases

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Class 11 Objectives

- Upon completion of this lesson, the student will be able to
  - compare and contrast the causes of early and delayed puberty.
  - identify potential complications of infection and inflammation of the human reproductive system.
  - describe the different cancers of the reproductive system.
  - explain screening tools used in determining reproductive cancers.
  - describe the pathology underlying the common sexually transmitted disease processes.
  - identify populations that are at high risk for STDs.
  - state preventive measures for STDs.

2

Early Puberty

- Onset
  - Age 6 (black females), Age 7 (white females), Age 9 (males)
  - 5 times greater in girls then boys
  - 74% of female cases are idiopathic
- Three forms
  - Isosexual: premature development of appropriate characteristics
  - Heterosexual: child develops secondary sex characteristics of the opposite sex (evident at time of birth)
  - Incomplete: partial development of appropriate secondary sex characteristics (majority are obese)
- Causes:
  - Idiopathic (including familial), CNS abnormalities (tumors, trauma, hypothyroidism, infectious condition), congenital anomalies

3

Delayed Puberty

- Signs
  - Females: Absence of menarche within 5 years of thelarche or by 16 years of age.
  - Males: no signs of secondary sex characteristics by age 14.
  - More commonly seen in males vs. females
- Causes
  - Turner or Klinefelter syndrome?
  - Bilateral gonadal failure
  - Idiopathic: empty-scrotum or vanishing-testes syndrome
  - Autoimmune
  - Reversible: Marijuana use, severe obesity, anorexia, strenuous exercise
  - Irreversible: hypopituitarism, congenital CNS defects, malignant pituitary tumors, GnRH deficiency

4

Amenorrhea

- Absence of menstruation in a female of reproductive age
  - **Primary**: lack of menarche by age 14 w.o. secondary sex characteristics; or 16 regardless of secondary sex characteristics
    - **Congenital defects of gonadotropin production**
    - **Genetic disorders**
    - **Congenital CNS defects**
    - **Congenital anatomic malformations of reproductive system**
  - **Secondary:** ***absence of menstruation for 3 or more cycles or 6 months in women who have previously menstruated***
    - **Disease, dramatic weight loss, head injury or tumor**
- S & S
  - No menses, hirsutism, acne, vaginal atrophy, infertility, vasomotor flushes

5

Pelvic Inflammatory Disease (PID)

- A polymicrobial infection of mixed strains of bacteria and mycoplasma
  - Ascends from the infected cervix and can involve the uterus, fallopian tubes, or ovaries, and whole peritoneum (very serious)
  - > release of cytokines and eventual scarring occurs
- S&S
  - Sudden, severe abdominal pain with fever or no S & S
  - 1st sign of ascending infection is lower dull abdominal pain
  - May have more pain upon walking, jumping, and/or intercourse
  - Dysuria and irregular vaginal bleeding may be present

6

Other Inflammations and Infections

- Vaginitis: caused by sexually transmitted pathogens and *Candida albicans*
  - High incidence in the 10-24 year-old range
  - Predisposition is caused by changing the acidic pH of vagina
    - Douching, feminine products, > glycogen
- Cervicitis: inflammation of the cervix
  - Mucopurulent cervicitis: caused by one or more ST pathogens, *Trichomonas, gonorrhea, Chlamydia, Mycoplasma, Ureaplasma*
  - Oral antibiotic treatment for sexual partners

7

Cervical Cancer

- A malignant neoplasm of the cervix
  - Considered a STD
  - >Risk: early age intercourse; multiple partners
  - improved detection with Papinicolaou (PAP) smear
  - HPV is linked with cervical cancer incidence
  - implemented as an AIDS defining diagnosis
  - **Less related factors**: uncircumcised male partners; use of oral contraceptives; parity; family hx
- Early detection: treat with cryotherapy, conization, or laser
- Hysterectomy for more advanced cancer
- S&S: bleeding, discharge, foul odor

8

Ovarian Cancer

- Malignant neoplasm originating from ovarian surface cells
  - unknown etiology: r/t a strong family history
  - Two major types: epithelial and germ-cell neoplasms
- S & S: *Silent disease*
  - vague abdominal pain; a possible palpable mass;distention; abnormal uterine bleeding; urinary tract obstruction; alatered bowel habits
  - serum testing for **CA-125** (a tumor marker)
- Treatment
  - **Total abdominal hysterectomy (TAH); resection; chemotherapy**

9

Vaginal Cancer

- A rare occurring cancer of the female reproductive system (0.2%)
  - 75-85% are squamous cell-type cancers
  - Mean age of invasive type = 55 years
  - Associated with HPV infection & sexual activity
  - Exposure to DES (nonsteroidal estrogen) in utero ?
  - Classifed as: Dysplasia, carcinoma in situ, or invasive carcinoma
    - See McCance, Table 22-4 (p. 729)
- Treatment
  - Upper vaginectomy, laser ablation, chemotherapy, hysterectomy

10

Fibrocystic Changes of the Breast

- Includes benign breast changes:
  - cyst formation: form within lobular or subareola areas
  - ductal hyperplasia : dilation of the ductal system
  - fibrosis: may result as an inflammatory response to cysts
- Occurs in 10% of women < 21 years old
- Clinical manifestations:
  - breast pain (" mastalgia") is most common 4 -7 days into the luteal phase of the cycle
  - tender firm masses in the upper outer quadrant
  - **Evaluation: breast biopsy, mammography, sonography**
  - **Treatment: relieve symptoms, drain cysts, Danazol**

11

Breast Cancer

- A malignant neoplasm arising from one of several tissue types within the breast
  - Most common cancer in females
  - Leading cause of death for females 40-44 years of age
  - An > incidence r/t improved screening & > aging population
  - Rare in those younger than age 25
- Risk factors: see McCance (Table 22-13, p. 763)
  - Hormones, genetics, early menarche, late menopause, HRT
  - Race, Nullip or late first child, obesity, ETOH abuse

12

Breast Cancer

- BRCA1 gene confers with > risk of breast cancer
  - BRCA1 gene is autosomal dominant
    - Women with BRCA1 gene have an 85% lifetime risk of developing breast cancer
    - BRCA1 gene is present in 30 % of women who develop breast cancer before age 45

13

Breast Cancer

- Clinical manifestations:
  - Ductal cancer may not present as a mass, but as bloody discharge from the nipple on the affected side
  - Unilateral edema (orange peel texture) of overlying skin; fixation of breast with position change; retraction of the nipple
  - Bone metastasis is painful; pathological fractures?
- Prevention: BSE & Mammography
- Tx: depends on tumor stage; Age; tx preference
- Stage 1 & 2: breast conserving surgery (e.g. lumpectomy) followed by radiation (plus Tamoxifen or chemo for + nodes)
- See McCance, Box 22-18 (p. 772) for staging of breast cancer

14

Male Breast Disorders

- Gynecomastia
  - **Overdevelopment of breast tissue in a male**
  - **Evaluation: physical exam**
  - **It accounts for 85% of the masses that develop**
    - Watch out for unilateral: evaluate for malignancy
    - Adolesence and men > 50
    - Estrogen therapy
      - **Sex-change operation or for prostatic carcinoma**

15

Testicular Torsion

- *An acute ischemic injury of the testis d/t its rotation around the vascular pedicle of the spermatic cord*
- Epidemiology: 1:160 males
  - at risk: neonates & adolescents
- Etiology:
  - **Neonates:** maldeveloped tunica vaginalis membrane
  - **Puberty** : incomplete attachment of the testis & spermatic fascia to the scrotal wall
  - *Diagnostic testing: urinalysis, color Doppler ultrasonography*
  - *Surgical emergency*
    - *Untwisting of spermatic cord & anchor both testes in the scrotum*

16

Testicular Torsion

- Pathophysiology:
  - twisting of spermatic cord leads to venous occlusion & results in ischemia
  - irreversible damage in hours (medical emergency)
- S&S:
  - acute onset of pain; N & V; edema, ecchymosis & elevated affected side
  - twisted cord may be actually palpated
- Treatment
  - manual detorsion before surgery
  - surgical fixation = orchiopexy
  - nonviable testes = orchiectomy

17

Testicular Cancer

- Malignant neoplasms of testicular tissue or germ cells
- Epidemiology: 1% of all male cancers
  - leading cause of death d/t illness in males (15-35 yrs.)
  - > incidence in white males (4 times > than AA)
- Etiology: unknown
- Pathophysiology: 90% rise from germ cells
  - least malignant form is the *seminoma*
- Symptoms: painless small nodule in the front or on the side of the scrotum
- Evaluation
  - *Physical exam, ultrasonography, tumor markers*

18

Testicular Cancer

- Prevention & Treatment:
  - Early detection: self-examination
  - Orchiectomy: surgical removal of testis
  - Chemotherapy or radiation therapy
  - Seminomas are very responsive to radiation tx
  - More than 95% cure rate for seminomas limited to the testes

19

Benign Prostatic Hypertrophy

- A nonmalignant enlarged prostate gland d/t excessive growth of glandular prostatic tissue
  - directly related to age (50% incidence of men > 50 years)
  - hypothesized to be an age-related imbalance in androgenic stimulation of the gland
  - prostatic enlargement compresses bladder neck & obstructs the urine flow
- **S & S**: hesitancy & intermittency of voiding; straining to void; "dribbling" of urine
- Or an > sympathetic stimulation of smooth muscle of urethra & bladder neck
- **S &S**: urgency to void, incomplete emptying; overflow incontinence

20

Prostatic Cancer

- A malignant neoplasm of the prostate gland
  - Most common cancer in nonsmoking men
  - Second leading cause of cancer death in men
  - African American have the highest mortality rate
  - 80% of cases are > 65 years old
  - > in money has been recently ear marked fo prostate cancer research ($420 million in 2003)
- Detection
  - Digital Rectal Exam: limited in its ability to detect cancer
  - Prostatic-Specific Antigen: a blood test measuring PSA enzymes

21

Sexually Transmitted Diseases

- **Gonorrhea**
  - Caused by gonococci *(Neisseria gonorrhoeae)*
  - Female: 50-80% chance of development from an infected male partner
  - Male: 20-30% chance of development from an infected female partner
- S & S
  - Purulent drainage from a Bartholin gland in a female
  - Urethritis and dysuria in males
- Treatment
  - Two resistant strains have been identified
    - PPNG & TRNG
  - See McCance Box 23-1, p. 785 for CDC treatment recommendations

22

Sexually Transmitted Diseases

- **Syphillis**
  - **Local and systemic manifestations are presented**
  - **Facilitates the transmission of HIV**
- Four stages
  1) **Local invasion**
  2) **Blood borne to all major organs**
  3) **Silent: no clinical symptoms**
  4) **Heart, brain, and bone deterioration**
  - **See McCance Figure 23-3, p. 786, 787**

23

Sexually Transmitted Diseases

- Chlamydial infections
  - Gram negative *C.trachomatis* bacterium
  - Lacks the ability to reproduce independently
  - Leading cause of preventible infertility & ectopic pregnancy
  - Most common STI in the US: affects 3 million annually
  - 75% of infected women are asymptomatic
- Genital herpes
  - Transmission: intimate contact
  - Vesicle formation at the site- painful
  - HSV 1 and 2 cannot be distinguished by appearance
  - HSV 2 is associated with recurrent infections
  - Newborns: can > risk of seizures with a mortality rate of 50%

24

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25