Chapter 46

Drugs for Disorders and Conditions of the Male Reproductive System

Pituitary Hormones

- Gonadatropin releasing hormone (GRH) from hypothalamus
- Follicle stimulating hormone (FSH)
  - Regulates sperm production
- Luteinizing hormone (LH)
  - Regulates production of testosterone

Testes Secrete Testosterone

- Androgen and primary hormone of male reproductive system
  - Contributes to growth, health, maintenance
  - Responsible for maturation of male sex organs
  - Responsible for secondary sex characteristics of men

Androgens

- Include testosterone and related hormones
  - Control many aspects of male reproductive function
- Used to treat hypogonadism in males
  - Primary hypogonadism due to testicular failure
  - Secondary due to lack of follicle stimulating hormone (FSH) or luteinizing hormone (LH)
Pharmacotherapy with Androgens

- Increases libido and corrects erectile dysfunction

Anabolic Steroids

- Testosterone-like compounds
- Frequently abused by athletes, even though illegal

Anabolic Steroids (continued)

- Can result in serious adverse effects with long-term use
  - Increased cholesterol levels, low sperm count, impotence
  - Menstrual irregularities and the appearance of male characteristics in women
  - Aggression, psychological dependence

Use of Androgens in Cancer Therapy

- Occasionally used palliatively to treat breast cancer
  - In combination with other antineoplastics
- Most prostate carcinomas are testosterone dependent.
- Should not be prescribed for older men unless prostate cancer ruled out

Use of Androgens in Cancer Therapy (continued)

- Clients with prostate carcinoma sometimes given GRH agonist
  - Reduce circulating testosterone levels

Male Infertility

- 30–40% of infertility problems caused by problems with male’s reproductive system
- Difficult to treat pharmacologically
  - Only 5% caused by endocrine problems
  - Treatment expensive; requires many injections
- Other means of conception explored
  - In vitro fertilization
  - Intrauterine insemination
Medications for Male Infertility

• Human chorionic gonadotropin (HCG): increases testosterone and sperm production
• Menotropin (Pergonal): mixture of follicle stimulating hormone (FSH) and luteinizing hormone (LH)
• Testolactone: for those exhibiting hypogonadism
• Antiestrogens (tamoxifen, clomiphene): to block negative feedback of estrogen

Erectile Dysfunction

• Common disorder associated with
  – Vascular diseases
  – Certain medications
    • Thiazide diuretics, beta blockers, selective serotonin reuptake inhibitors (SSRIs), antidepressants
  – Psychogenic causes
    • Depression, fatigue, guilt, fear of failure

Pharmacotherapy for Erectile Dysfunction

• May be successfully treated with phosphodiesterase-5 inhibitors
• Sildenafil (Viagra): does not cause erection; enhances it
• Vardenafil (Levitra): faster onset, slightly longer duration than Viagra
• Tadalafil (Cialis): acts within 30 minutes and lasts 24–36 hours

Role of the Nurse

• Monitor client’s condition
• Provide client education
• Obtain medical, surgical, drug history
• Assess lifestyle and dietary habits
• Obtain description of symptomology and current therapies

Androgen Therapy for Hypogonadism

• Assess impaired sexual functioning and diminished libido
• Note physical signs of decreased hormone production
  – Decreased or absent body hair, small testes, delayed signs of puberty
• Monitor emotional status
• Monitor lab results, especially liver enzymes

Androgen Therapy for Hypogonadism (continued)

• Monitor serum cholesterol, especially with history of MI or angina
  – Drug can increase this lab value
• Contraindications
  – Prostatic or male breast cancer, renal disease
  – Cardiac and liver dysfunction, hypercalcemia
  – Benign prostatic hyperplasia (BPH), hypertension
Androgen Therapy for Hypogonadism (continued)

• Use cautiously in prepubertal men, older adults, and men with acute intermittent porphyria
• Adverse reactions found to occur in women
  – Deepening of voice, facial hair growth, enlarged clitoris, irregular menses

Pharmacotherapy in Erectile Dysfunction Therapy

• Obtain physical exam and history
  – Impaired sexual function
  – Cardiovascular disease
  – Presence of emotional disturbances
• Monitor results of lab tests related to liver function

Pharmacotherapy in Erectile Dysfunction Therapy (continued)

• Obtain testosterone, prolactin, thyroxin levels
• Nocturnal penile tumescence and rigidity (NPTR) test may be ordered
• A blood-flow test used to determine if sufficient blood flow to penis
• Sildenafil, vardenafil, and tadalafil contraindicated with use of organic nitrates and alpha-adrenergic blockers

Drug Therapy with Antiprostatic Agents for BPH

• Assess for changes in urinary elimination
  – Urine retention, nocturia, dribbling
  – Difficulty starting urinary stream, frequency, urgency
• Monitor for hypotension (first-dose phenomenon) and throughout treatment
• Alpha-blockers should be used cautiously in clients with asthma or heart failure
  – Cause bradycardia and bronchoconstriction

Drug Therapy with Antiprostatic Agents for BPH (continued)

• Monitor emotional status of clients taking alpha-blockers
  – Depression common side effect
• May take 6–12 months of treatment before maximum benefit achieved
• Monitor for impotence, decreased volume of ejaculate, or decreased libido

Benign Prostatic Hyperplasia (BPH)

• Enlargement of prostate
• Obstructs urethra and decreases flow
• Not precursor to cancer
• Symptoms
  – Increased urinary frequency, urgency
  – Leakage, nocturia, decreased force
  – Incomplete emptying of bladder

Benign Prostatic Hyperplasia (BPH) (continued)
Benign Prostatic Hyperplasia (BPH) (continued)

- Aggravating factors
  - Alpha-adrenergic agonists, anticholinergics, testosterone
  - Caffeine, alcohol, fluids at bedtime

Pharmacotherapy of Static and Dynamic Components

- Static—relates to anatomical enlargement
- Dynamic—relates to excessive numbers of alpha-adrenergic receptors compressing urethra
- Severe disease requires surgery

Drug Options

- Alpha1-adrenergic blockers
  - Doxazosin (Cardura), terazosin (Hytrin), tamsulosin (Flomax)
- 5-alpha-reductase inhibitors
  - Finasteride (Proscar)

Androgens

- Prototype drug: testosterone base (Andro)
- Mechanism of action: stimulates RNA synthesis and protein metabolism
- Primary use: for treatment of hypogonadism in males
- Adverse effects: virilization
  - Salt and water often retained
    - Causes edema, liver damage, acne and skin irritation

Agents for Erectile Dysfunction — Phosphodiesterase-5 Inhibitor

- Prototype drug: sildenafil (Viagra)
- Mechanism of action: relieves smooth muscle in corpus cavernosum
  - Blocks enzyme phosphodiesterase-5
  - Allows increased blood flow into penis
- Primary use: to treat erectile dysfunction

Agents for Erectile Dysfunction — Phosphodiesterase-5 Inhibitor

- Adverse effects: most serious is hypotension
  - Headache, dizziness, flushing, rash
  - Nasal congestion, diarrhea, dyspepsia
  - UTI, chest pain, indigestion
  - Blurred vision, changes in color perception, priapism
Agents for Benign Prostatic Hyperplasia—5-alpha-reductase Inhibitor

- **Prototype drug:** finasteride (Proscar)
- **Mechanism of action:** inhibits 5-alpha-reductase
- **Primary use:** promotes shrinkage of enlarged prostates
  - Also prescribed to promote hair regrowth

Agents for Erectile Dysfunction

- **Sildenafil (Viagra):** inhibitor of enzyme phosphodiesterase-5
  - Revolutionized medical therapy of erectile dysfunction
- Alternative therapies prior to sildenafil
  - Rigid or inflatable penile prostheses implanted into corpora
  - Penile injections of drugs such as alprostadil (Caverject)
  - Alternative therapies rarely used today

Agents for Erectile Dysfunction (continued)

- **Two additional phosphodiesterase-5 inhibitors**
  - Vardenafil (Levitra) and tadalafil (Cialis)
  - Along with sildenafil, do not cause erection
  - Enhance erection caused by physical contact or other sexual stimuli

Androgens

- Include testosterone and related hormones
- Control many aspects of male reproductive function
- Used to treat hypogonadism and certain cancers
Agents for Benign Prostatic Hyperplasia

• Few drugs available for pharmacotherapy of BPH
• Drug therapy may relieve some early symptoms.
• Alpha1-adrenergic blockers drugs of choice for moderate symptoms
  – Relax smooth muscle in prostate gland, bladder neck, urethra
  • Eases urinary obstruction

Agents for Benign Prostatic Hyperplasia (continued)

• 5-alpha-reductase inhibitors offer alternative
  – Block enzyme in testosterone metabolic pathway
  • Eliminates hormonal signal for prostate growth

Clients Receiving Androgen Therapy

• Assessment
  – Obtain complete health history
  – Obtain lab results.
    • Renal-function tests, blood urea nitrogen (BUN), creatinine, PSA
  • Obtain drug history to determine possible drug interactions and allergies

Clients Receiving Androgen Therapy

• Nursing diagnoses
  – Disturbed body image, related to effects of decreased or increased hormone function
  – Sexual dysfunction, related to effects of drug therapy or decreased hormone function
  – Disturbed sleep pattern, related to effects of drug therapy
  – Deficient knowledge, related to disease process and drug therapy

Clients Receiving Androgen Therapy

• Planning—client will
  – Demonstrate improvement of underlying condition
  – Demonstrate ability to correctly self-administer drug
  – Demonstrate understanding of drug’s action

Clients Receiving Androgen Therapy

• Implementation
  – Monitor serum cholesterol and calcium levels
  – Monitor bone growth in children and adolescents
  – Monitor input, output, client weight
  – Monitor blood glucose, especially in clients with diabetes
  – Monitor proper self-administration
Clients Receiving Androgen Therapy

- **Evaluation**—client
  - Demonstrates improvement in condition
  - Demonstrates safe self-administration of drug
  - Accurately states drug’s action and side effects

Clients Receiving Finasteride

- **Assessment**
  - Obtain complete health history
  - Obtain drug history to determine possible drug interactions and allergies
  - Determine client’s partner’s pregnancy and breastfeeding status

Clients Receiving Finasteride

- **Nursing diagnoses**
  - Noncompliance, related to side effects of drug
  - Deficient knowledge, related to drug therapy
  - Sexual dysfunction, related to adverse reaction to drug therapy

Clients Receiving Finasteride

- **Planning**—client will
  - Experience decreased size of enlarged prostate gland
  - Demonstrate less frequency and urgency and greater urine stream
  - Demonstrate understanding of drug’s action

Clients Receiving Finasteride

- **Implementation**
  - Monitor urinary function
  - Monitor female partner for pregnancy
  - Monitor client’s commitment to medication regimen
  - Monitor for adverse reactions

Clients Receiving Finasteride

- **Evaluation**—client
  - Reports less frequency and urgency and greater force of urine stream
  - Exhibits decreased size of enlarged prostate gland
  - Demonstrates understanding of drug’s action
### Selected Androgens

**Table 46.1 Selected Androgens**

<table>
<thead>
<tr>
<th>Agent</th>
<th>Route of Administration</th>
<th>Dosage Range</th>
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<tbody>
<tr>
<td>Testosterone</td>
<td>IM, PO</td>
<td>50-200 mg</td>
</tr>
<tr>
<td>Mesterone</td>
<td>IM, PO</td>
<td>25-100 mg</td>
</tr>
<tr>
<td>Nandrolone</td>
<td>IM, PO</td>
<td>25-100 mg</td>
</tr>
</tbody>
</table>

### Agents for Erectile Dysfunction

**Table 46.2 Agents for Erectile Dysfunction**

<table>
<thead>
<tr>
<th>Agent</th>
<th>Route of Administration</th>
<th>Dosage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sildenafil</td>
<td>Oral</td>
<td>50 mg</td>
</tr>
<tr>
<td>Tadalafil</td>
<td>Oral</td>
<td>20 mg</td>
</tr>
<tr>
<td>Vardenafil</td>
<td>Oral</td>
<td>20 mg</td>
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</tbody>
</table>

### Agents for Benign Prostatic Hyperplasia

**Table 46.3 Agents for Benign Prostatic Hyperplasia**

<table>
<thead>
<tr>
<th>Agent</th>
<th>Route of Administration</th>
<th>Dosage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Finasteride</td>
<td>Oral, Topical</td>
<td>5 mg</td>
</tr>
<tr>
<td>Dutasterone</td>
<td>Oral, Topical</td>
<td>2 mg</td>
</tr>
<tr>
<td>Saw Palmetto</td>
<td>Oral</td>
<td>320 mg</td>
</tr>
<tr>
<td>Tamsulosin</td>
<td>Oral</td>
<td>4 mg</td>
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