Chapter 45

Drugs for Disorders and Conditions of the Female Reproductive System

Hypothalamus and Pituitary Regulation of Female Reproductive System

- Hypothalamus secretes gonadotropin-releasing hormone (GnRH)
  - Stimulates pituitary to secrete follicle-stimulating hormone (FSH) and luteinizing hormone (LH)
- Pituitary hormones
  - Rising and falling levels create two interrelated cycles: ovarian and uterine

Estrogens Secreted by Ovarian Follicles

- Responsible for maturation of sex organs and secondary sex characteristics of female

Progestins Secreted by Corpus Luteum

- Prepare endometrium for implantation
- High progesterone and estrogen levels in final third of uterine cycle
  - Provide negative feedback to shut off GnRH, FSH, and LH secretion
Oral Contraceptives

- Used to prevent pregnancy
  - Most common use for female sex hormones
- Most are combination of estrogens and progestins
- Small doses prevent conception by blocking ovulation

Estrogen-Progestin Contraceptives

- Act by providing negative feedback to pituitary
  - Shuts down secretion of LH and FSH
- Three types: monophasic, biphasic, triphasic
- Progestin-only oral contraceptives (minipills)
  - Produce thick, viscous mucus at entrance to uterus
    - Discourages penetration by sperm

Emergency Contraception

- May be administered within 72 hours after unprotected sex
- Prevents implantation of fertilized egg
  - Plan B: levonorgestrel in two doses, 12 hours apart
  - Preven: combination of ethinyl estradiol and levonorgestrel

Emergency Contraception (continued)

- Other agents may be given to abort implanted embryo
  - Mifepristone (Mifeprex, RU-486)
  - Misoprostol (Cytotec)
Hormone Replacement Therapy (HRT)

• Estrogen-progestin combinations used during and after menopause
• Long-term use may have serious adverse effects
• Commonly used to treat unpleasant symptoms of menopause
• Prevents long-term consequences of estrogen loss

Hormone Replacement Therapy (continued)

• Women’s Health Initiative (WHI) suggested increased risks
  – Cardiac problems, stroke, cancer
  – HRT appears to prevent osteoporotic bone fractures
• Women now encouraged to discuss alternatives with health-care provider

Role of Hormones in Treatment of Cancer

• Used alone, estrogen increases risk of uterine cancer
  – Only considered appropriate for clients who have had hysterectomy
• High doses of estrogens sometimes used to treat prostate and breast cancer
  – Prostate cancer usually dependent on androgens for growth
  – Administration of estrogens will suppress androgen secretion

Role of Hormones in Treatment of Cancer (continued)

• Estrogen is antineoplastic hormone
  – Rarely used alone in cancer treatment
  – Used in combination with other agents for chemotherapy of cancer

Dysfunctional Uterine Bleeding

• Hemorrhaging that occurs on noncyclic basis or in abnormal amounts
• Health problem most frequently reported by women
  – Common reason for hysterectomy
• Often an imbalance between estrogen and progesterone

Dysfunctional Uterine Bleeding (continued)

• Estrogen causes proliferation of endometrium
• Progesterone limits and stabilizes endometrial growth
• Progestins are drugs of choice for treating uterine abnormalities
Oxytocics

- Natural hormones secreted by posterior pituitary
- Stimulate uterine contractions to induce labor
- Suckling stimulates release of oxytocin
  - Causes more milk ejection

Tocolytics

- Slow uterine contractions to delay labor
- Used in clients with premature labor

Treatment of Female Infertility

- Causes of female infertility are varied
  - Lack of ovulation, pelvic infection, physical obstruction of uterine tubes
- For infertility with an endocrine etiology, pharmacotherapy may be of value
  - Can occur at level of hypothalamus, pituitary, or ovary
  - Pharmacotherapy targeted to specific cause of dysfunction

Treatment of Female Infertility (continued)

- Clomiphene (Clomid, Serophene) is drug of choice for female infertility
  - Stimulates release of LH
  - Results in maturation of increased number of ovarian follicles
  - Rise in LH level sufficient to induce ovulation in 90% of treated women

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
Oral Contraceptive Therapy

• Blood pressure should be monitored
• Assess vital signs frequently
• Monitor for symptoms of thrombophlebitis
• Oral contraceptives can mimic certain symptoms of pregnancy
  – Breast tenderness, nausea, bloating, chloasma
  – Reassure client that side effects do not indicate pregnancy

Oral Contraceptive Therapy (continued)

• May increase risk of breast cancer
  – Teach clients to perform breast self-exams
  – Provide information on routine mammogram schedules

Hormone Replacement Therapy

• Monitor client closely for signs and symptoms of thrombus or embolus
• Encourage client to report signs of depression, decreased libido
  – Also headache, fatigue, weight gain
• Controversy surrounds long-term use of these drugs
  – Imperative for women to be aware of current research

Hormone Replacement Therapy in Males

• Inform clients that secondary female characteristics may occur
  – Higher voice, sparse body hair, increased breast size
  – Impotence may also occur

Progestin Therapy

• Common side effects
  – Breakthrough bleeding, nausea
  – Abdominal cramps, dizziness
  – Edema, weight gain
• Monitor for amenorrhea; sudden, severe headache
  – Also for signs of pulmonary embolism: sudden severe chest pain, dyspnea
  – Report symptoms to health-care provider immediately

Progestin Therapy (continued)

• Can cause photosensitivity and phototoxicity
  – Monitor for pruritus, sensitivity to light, acne, rash, alopecia
  – Phototoxic reactions cause serious sunburn within 5 to 18 hours after sun exposure
Uterine Stimulant Therapy

- Frequently assess client in labor
  - Oxytocin increases frequency and force of uterine contractions
  - Discontinue infusion if fetal distress detected
  - Hypertensive crisis may occur if combined with local or regional anesthesia

- Assess for symptoms of water intoxication
  - Drowsiness, listlessness, headache
  - Confusion, anuria, weight gain
- Side effects of oxytocin
  - Anxiety, maternal dyspnea, hypotension or hypertension
  - Nausea, vomiting, neonatal jaundice
  - Maternal or fetal dysrhythmias

Oral Contraceptives, Estrogen-Progestin Combinations

- Prototype drug: ethinyl estradiol with norethindrone (Ortho-Novum 1/35)
- Mechanism of action: to inhibit release of FSH and LH, thus preventing ovulation
- Primary use: as contraceptive, for improvement in menstrual-cycle regularity, to decrease incidence of dysmenorrhea

- Adverse effects: edema, nausea, abdominal cramps
  - Dysmenorrhea, breast tenderness, fatigue
  - Skin rash, acne, headache, weight gain
  - Midcycle breakthrough bleeding, vaginal candidiasis
  - Photosensitivity, changes in urinary patterns
  - Serious cardiovascular side effects more common in smokers

Ethinyl Estradiol Animation

Click here to view an animation on the topic of ethinyl estradiol.

Hormone Replacement Therapy

- Prototype drug: conjugated estrogens (Premarin) and conjugated estrogens with medroxyprogesterone (Prempro)
- Mechanism of action: replacement for female sex hormones
  - To exert positive metabolic effects
    - Increase in bone density
    - Reduction in LDL cholesterol
### Hormone Replacement Therapy (continued)

- **Primary use:** for postmenopausal replacement therapy
  - Also to treat abnormal uterine bleeding due to hormonal imbalance

### Adverse effects:

- Nausea, fluid retention, edema
  - Also breast tenderness, abdominal cramps and bloating
  - Acute pancreatitis, appetite changes, acne
  - Mental depression, decreased libido, headache
  - Fatigue, nervousness, weight gain

### Drugs for Dysfunctional Uterine Bleeding—Progestins

- **Prototype drug:** medroxyprogesterone (Provera)
- **Mechanism of action:** inhibits effect of estrogen on uterus
  - Restores normal hormonal balance

### Primary use:

- to treat dysfunctional uterine bleeding, secondary amenorrhea, contraception
  - Medroxyprogesterone may also be given IM for palliation of metastatic uterine or renal carcinoma

### Adverse effects:

- Breakthrough bleeding, breast tenderness
- Weight gain, depression, hypertension
- Nausea, vomiting, dysmenorrhea and vaginal candidiasis
- Most serious side effect: increased risk for thromboembolic disease

### Uterine Stimulant—Oxytocics

- **Prototype drug:** oxytocin (Pitocin, Syntocinon)
- **Mechanism of action:** to induce labor by increasing frequency and force of uterine contractions
- **Primary use:** as drug of choice for inducing labor
Uterine Stimulant—Oxytocics (continued)

- **Adverse effects:** complications in fetus include dysrhythmias or intracranial hemorrhage
  - Serious complications in mother may include uterine rupture, seizures, coma

Selected Oral Contraceptives

- Used to prevent pregnancy
- Commonly referred to as "the pill"
- Most are combination of estrogens and progestins
- Prevent fertilization by inhibiting ovulation

Agents for Emergency Contraception and Pharmacologic Abortion

- Emergency contraception
  - Prevention of implantation of fertilized ovum following unprotected intercourse
- Pharmacological abortion
  - Removal of embryo by use of drugs after implantation has occurred
- Goal: to provide immediate prevention or safe termination of pregnancy

Selected Estrogens and Progestins

- Hormone replacement therapy (HRT)
  - For treatment of unpleasant symptoms of menopause
  - To prevent long-term consequences of estrogen loss

Selected Estrogens and Progestins (continued)

- Dysfunctional uterine bleeding
  - Bleeding occurs on noncyclic basis or in abnormal amounts
  - Health problem most frequently reported by women
  - Common reason for hysterectomy
  - Progestins are drugs of choice for treating uterine abnormalities

Uterine Stimulants and Relaxants

- Oxytocics: *stimulate* uterine contractions to induce labor
- Tocolytics: *inhibit* uterine contractions during premature labor
Agents for Female Infertility

- Infertility: inability to become pregnant after one year of frequent, unprotected intercourse
- Common disorder, with 25% of couples experiencing difficulty
- Estimated that females contribute to approximately 60% of infertility disorders

Oral Contraceptive Therapy

- Assessment
  - Obtain complete health history, including cigarette smoking
  - Obtain drug history to determine possible drug interactions and allergies
  - Assess cardiovascular status
  - Determine if client is pregnant or lactating

Oral Contraceptive Therapy

- Nursing diagnoses
  - Deficient knowledge, related to drug therapy
  - Nausea, related to side effects of drug
  - Noncompliance, related to medication regimen

Oral Contraceptive Therapy

- Planning—client will
  - Report effective birth control
  - Demonstrate understanding of drug’s action
  - Take medication exactly as ordered to prevent pregnancy
  - Immediately report symptoms of thrombophlebitis, difficulty breathing, visual disturbances, severe headache

Oral Contraceptive Therapy

- Implementation
  - Monitor for development of breast or other estrogen-dependent tumors
  - Monitor for thrombophlebitis or other thromboembolic disease
  - Monitor for cardiac disorders and hypertension.
  - Encourage client not to smoke
  - Monitor blood- and urine-glucose levels

Oral Contraceptive Therapy (continued)

- Implementation (continued)
  - Monitor client’s knowledge level of proper administration
  - Encourage compliance with follow-up treatment
Oral Contraceptive Therapy

• Evaluation—client
  – Experiences effective birth control
  – Accurately states drug’s actions and side effects
  – Demonstrates accurate administration of drug
  – Accurately states signs and symptoms to be reported

Hormone Replacement Therapy

• Assessment
  – Obtain complete health history
    • Personal or familial history of breast cancer, gallbladder disease, diabetes mellitus, liver or kidney disease
    • Obtain drug history for possible drug interactions, allergies
    • Assess cardiovascular status
    • Determine if client is pregnant or lactating

• Nursing Diagnoses
  – Excess fluid volume, related to edema secondary to side effect of drug
  – Impaired tissue perfusion, related to development of thrombophlebitis, pulmonary or cerebral embolism

• Planning—client will
  – Report relief from symptoms of menopause
  – Demonstrate understanding of drug’s action
  – Immediately report effects
  – Symptoms of thrombophlebitis, difficulty breathing
  – Visual disturbances, severe headache, seizure activity

• Implementation
  – Monitor for thromboembolic disease
  – Monitor for abnormal uterine bleeding
  – Monitor breast health
  – Monitor for vision changes

(continued)

• Encourage client not to smoke
• Encourage client to avoid caffeine
• Monitor glucose levels
• Monitor for seizure activity
• Monitor client’s understanding and proper self-administration
Hormone Replacement Therapy

- **Evaluation—client**
  - Verbalizes relief of unpleasant symptoms of menopause
  - Accurately states drug’s action and side effects
  - Accurately states signs and symptoms to be reported

Oxytocin Therapy

- **Assessment**
  - Obtain complete health history.
    - Include past and present gynecologic, obstetric history
    - Obtain drug history to determine possible drug interactions, allergies

Oxytocin Therapy

- **Nursing Diagnoses**
  - Excess fluid volume, related to water intoxication due to antidiuretic hormone effects
  - Risk of injury to fetus, related to strong uterine contractions

Oxytocin Therapy

- **Planning—client will**
  - Report increase in force and frequency of uterine contractions
  - Report letdown of milk for breast-feeding
  - Demonstrate understanding of drug’s action
  - Immediately report side effects
    - Listlessness, headache, confusion
    - Anuria, hypotension, nausea, vomiting, weight gain

Oxytocin Therapy

- **Implementation**
  - Monitor fetal heart rate
  - Monitor maternal status
    - Vital signs and frequency, duration
    - Intensity of contractions
  - Monitor fluid balance
  - Monitor for postpartum/postabortion hemorrhage
  - Monitor lactation status

Oxytocin Therapy (continued)

- **Evaluation—client**
  - Reports increase in force and frequency of contractions
  - Reports letdown of milk for breast-feeding
  - Accurately states drug’s action and side effects
  - Accurately states signs and symptoms to be reported
### Table 45.3 Emergency Contraception and Pharmacological Abortion

<table>
<thead>
<tr>
<th>Drug Name</th>
<th>Dose</th>
<th>Route</th>
<th>Effect</th>
</tr>
</thead>
<tbody>
<tr>
<td>Levonorgestrel</td>
<td>0.75 mg</td>
<td>Oral</td>
<td>Progestin-like effect</td>
</tr>
<tr>
<td>Copper intrauterine device</td>
<td></td>
<td></td>
<td>Prevents pregnancy</td>
</tr>
</tbody>
</table>

### Table 45.5 Selected Estrogens and Progestins

<table>
<thead>
<tr>
<th>Drug Name</th>
<th>Dose</th>
<th>Route</th>
<th>Effect</th>
</tr>
</thead>
<tbody>
<tr>
<td>Estriol</td>
<td>10-40 mg</td>
<td>Oral</td>
<td>Estrogen-like effect</td>
</tr>
<tr>
<td>Progestin</td>
<td>5-20 mg</td>
<td>Oral</td>
<td>Progestin-like effect</td>
</tr>
</tbody>
</table>

### Table 45.6 Uterine Stimulants and Relaxants

<table>
<thead>
<tr>
<th>Drug Name</th>
<th>Dose</th>
<th>Route</th>
<th>Effect</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mifepristone</td>
<td>600 mg</td>
<td>Oral</td>
<td>Induces abortion</td>
</tr>
<tr>
<td>Misoprostol</td>
<td>500 mcg</td>
<td>Oral or vaginal</td>
<td>Prostaglandin effect</td>
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</tbody>
</table>

### Table 45.7 Agents for Female Infertility

<table>
<thead>
<tr>
<th>Drug Name</th>
<th>Dose</th>
<th>Route</th>
<th>Effect</th>
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</thead>
<tbody>
<tr>
<td>Clomiphene citrate</td>
<td>50-150 mg</td>
<td>Oral</td>
<td>Induces ovulation</td>
</tr>
<tr>
<td>Gonadotropins</td>
<td></td>
<td></td>
<td>Used in in vitro fertilization (IVF)</td>
</tr>
</tbody>
</table>

Pharmacology for Nurses: A Pathophysiologic Approach 2nd Ed.
Michael Patrick Adams, Leland Norman Holland, Jr., and Paula Manuel Bostwick
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