Definition, etiopathogenesis, clinical manifestations, nonpharmacological and pharmacological management of the diseases associated with Anti-microbial Resistance

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Polycystic Ovary Syndrome (PCOS)

Definition:

- Polycystic Ovary Syndrome (PCOS) is a multifactorial endocrine disorder affecting reproductive-aged women, characterized by hyperandrogenism, ovulatory dysfunction, and polycystic ovaries.
- It is the most common cause of anovulatory infertility.

Etiopathogenesis:

PCOS has a complex, multifactorial etiology:

A. Hormonal Imbalance:

- Increased **LH:FSH ratio (>2:1)**
- **Hyperandrogenism** from ovaries and adrenals → hirsutism, acne
- **Insulin resistance** → hyperinsulinemia promotes androgen production and reduces SHBG

B. Genetic and Environmental Factors:

- Strong familial pattern
- Obesity exacerbates insulin resistance and symptoms

C. Ovarian Morphology:

- Multiple immature follicles (arrested development) → polycystic appearance
- Absence of dominant follicle → anovulation

Diagnostic Criteria (Rotterdam criteria – 2 out of 3):

1. Oligo/anovulation
2. Clinical/biochemical signs of hyperandrogenism
3. Polycystic ovaries on ultrasound (≥12 follicles 2–9 mm or ovarian volume >10 mL)

Clinical Manifestations:

- Menstrual irregularities: Oligomenorrhea or amenorrhea
- Infertility (due to anovulation)
- Hirsutism (face, chest, abdomen)

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- Acne, oily skin
- Obesity (especially central)
- Acanthosis nigricans (marker of insulin resistance)
- Mood disturbances (depression, anxiety)

Long-term risks:

- Type 2 diabetes mellitus
- Endometrial hyperplasia/cancer
- Dyslipidemia
- Cardiovascular disease
- NAFLD (non-alcoholic fatty liver disease)

Non-Pharmacological Management:

- **Lifestyle modification**: First-line
  - Weight loss (5–10% can restore ovulation)
  - Low glycemic index diet
  - Regular aerobic and resistance exercise
- **Psychological support**: Address body image issues, depression, anxiety
- **Fertility planning**: Timely conception or fertility preservation discussions

Pharmacological Management:

1. Menstrual regulation:

- **Combined Oral Contraceptives (COCs)** – regulate cycles, reduce androgen symptoms
  - Choose ones with antiandrogenic progestins (e.g., drospirenone)

2. Anti-androgens:

- **Spironolactone** – reduces hirsutism and acne
- **Finasteride** or **flutamide** – second-line options
  - Require contraception due to teratogenicity

3. Ovulation induction (for infertility):

- **Letrozole (first-line)** – aromatase inhibitor
- **Clomiphene citrate** – older first-line
- **Metformin** – improves insulin sensitivity, may restore ovulation

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4. Insulin sensitizers:

- **Metformin** – reduces insulin resistance, may aid in weight loss, regulate periods

5. Acne treatment:

- Topical retinoids, antibiotics, or hormonal agents as appropriate

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Dysmenorrhea

Definition:

- Dysmenorrhea refers to painful menstruation severe enough to interfere with daily activities.

It is classified as:

- **Primary dysmenorrhea**: Painful menses without underlying pathology
- **Secondary dysmenorrhea**: Due to identifiable pelvic pathology (e.g., endometriosis, fibroids)

Etiopathogenesis:

Primary Dysmenorrhea:

- Caused by excess prostaglandin F2α release in the endometrium during menstruation
- Leads to uterine contractions, ischemia, and pain
- Typically begins within 6–12 months of menarche

Secondary Dysmenorrhea:

- Common causes:
  - Endometriosis
  - Adenomyosis
  - Fibroids
  - Pelvic inflammatory disease (PID)
  - Intrauterine devices (IUDs)

Clinical Manifestations:

Primary Dysmenorrhea:

- Crampy, lower abdominal pain starting with menstruation
- May radiate to lower back or thighs
- Associated symptoms: nausea, vomiting, diarrhea, fatigue, headache

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- No pelvic abnormality on examination

Secondary Dysmenorrhea:

- Pain often starts before menstruation and may persist after
- May have dyspareunia, abnormal bleeding, infertility
- Requires pelvic evaluation

Non-Pharmacological Management:

- **Heat therapy** (hot water bottle, heat patches)
- **Exercise** (regular physical activity improves symptoms)
- **Relaxation techniques** (yoga, meditation)
- **Dietary changes**: Reduce caffeine, alcohol; increase omega-3 intake
- **Acupuncture** (some evidence)

Pharmacological Management:

1. **NSAIDs (first-line):**
   - Ibuprofen, naproxen – inhibit prostaglandin synthesis
   - Best when started at onset of pain or bleeding
2. **Hormonal therapy:**
   - **COCs** – suppress ovulation, thin endometrium, reduce prostaglandin production
   - **Progestin-**only pills, depot medroxyprogesterone, or levonorgestrel IUD
3. **Treatment of underlying cause (for secondary dysmenorrhea):**
   - **Endometriosis**: GnRH analogs, laparoscopy
   - **Fibroids**: Myomectomy or hormonal therapy

Premenstrual Syndrome (PMS)

Definition:

- Premenstrual Syndrome (PMS) is a set of physical, emotional, and behavioral symptoms that occur in the luteal phase of the menstrual cycle and resolve shortly after menstruation begins.
- Premenstrual Dysphoric Disorder (PMDD) is a severe form of PMS, with more pronounced mood symptoms and functional impairment.

Etiopathogenesis:

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