Pelvic Inflammatory Disease (PID)

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PID

- **Infection of the upper female genital tract, including**

1- endometritis (infection of the uterine cavity),

2-salpingitis (infection of the fallopian tubes)

3-oophoritis (infection of the ovaries).

4-mucopurulent cervicitis (infection of the endocervix)

Risk factors

- **PID commonly occurs in women < 35 yr. It rarely occurs before menarche, after menopause, or during pregnancy.**
- **Risk factors for acute PID include :**

1-multiple sexual partners

2- previous PID

3- use of an IUD

4-the presence of bacterial vaginosis or an

STD,

5-recent instrumentation of the uterus (e.g. abortion).

N.B Oral contraceptives reduce the risk of developing acute PID

Causative agent

- **PID results from microorganisms transmitted during intercourse, instrumentation, abortion, or delivery**

- The infection is usually multifactorial, involving aerobic and anaerobic organisms.

Causative agent

- *Neisseria* gonorrhea is the most common cause of PID. N. gonorrhea can also cause sepsis, migratory polyarthritis, endocarditis, anal infection, and urethritis; the last may be asymptomatic in women.
- **Male-to-female transmission is more common than female-to-male transmission. Younger age, low socioeconomic status, and multiple or new** sexual partners are risk factors.

Causative agent

- Chlamydia trachomatis has 15 serotypes, which cause a spectrum of infections from Bartholin's gland infection to conjunctivitis and oropharyngeal infections.
- C. trachomatis infects 5% of nonpregnant women.
- Half of the women with Chlamydia infection are asymptomatic and have a cervix that appears normal.
- Risk factors are similar to those for N.gonorrhea. The most common clinical infection due to C. trachomatis is cervicitis.

Symptoms and Signs

- N. gonorrhea and C. trachomatis produce similar physical findings
- The patient presents with lower abdominal pain, fever, vaginal discharge, and/or abnormal uterine bleeding.
- Symptoms frequently occur during or after menses.
- Peritoneal irritation produces marked abdominal pain with or without rebound tenderness (the abdomen should be palpated gently to prevent abscess rupture).

Symptoms and Signs

- **Cervicitis**: The cervix appears red and bleeds easily (when touched with a spatula or cotton swab). Mucopurulent discharge is yellow-green and contains > 10 polymorphonuclear WBCs per oil immersion field using Gram stain.
- **Acute salpingitis**: Onset is usually shortly after menses. Lower abdominal pain becomes progressively more severe, with guarding, rebound tenderness, and cervical motion tenderness. Involvement is usually bilateral.
- **Nausea and vomiting occur with severe infection**
- **Chronic salpingitis**: Untreated or inadequately treated acute infection can lead to chronic salpingitis, with tubal scarring and possible adhesion formation. Chronic pelvic pain, menstrual irregularities, and infertility are long-term sequelae.

Note

- Pelvic infection due to N. gonorrhea is usually more acute and typical than that due to C. trachomatis;

  onset is rapid, and pelvic pain develops shortly after menses starts. Although the pain is often localized to one side, both tubes are probably infected. The infection produces a diffuse exudates, leading to agglutination, adhesions, and tubal occlusion. Peritonitis may occur, causing upper abdominal pain and adhesions

- C. trachomatis produces symptoms that often seem mild, but it can cause more damage than N. gonorrhea in the long term. Chlamydia organisms may remain in tubal mucosa for many months before clinical manifestations of acute disease appear

Complications

- Tubo-ovarian abscess
- develops in about 15% of women with salpingitis. It can accompany acute or chronic infection and may require prolonged hospitalization, sometimes with surgical percutaneous drainage.
- Rupture of the abscess is a surgical emergency, rapidly progressing from severe lower abdominal pain to nausea, vomiting, generalized peritonitis, and septic shock

Complications

- **Pyosalpinx:** in which one or both fallopian tubes are filled with pus, may also be present. The fluid may be sterile, but WBCs predominate in it.
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- **Hydrosalpinx:** (fimbrial obstruction and tubal distention with nonpurulent fluid) develops if treatment is late or incomplete. The consequent mucosal destruction leads to infertility. Hydrosalpinx is generally asymptomatic but can cause pelvic pressure, chronic pelvic pain, or dyspareunia.

Complications

- **Fitz-Hugh-Curtis syndrome** can be a complication of gonococcal or chlamydial salpingitis. It is characterized by right upper quadrant pain in association with acute salpingitis, indicating perihepatitis. Acute cholecystitis may be suspected, but symptoms and signs of PID are present or develop rapidly

Diagnosis

- **Major clinical criteria**

- **1- lower abdominal tenderness**
- **2- unilateral or bilateral adnexal tenderness,**
- **3- cervical motion tenderness.**

Diagnosis

- Minor criteria include

- 1-oral temperature > 38.3° C (> 100.9° F)
- 2- abnormal cervical or vaginal discharge
- 3- elevated ESR, elevated C-reactive protein, and laboratory documentation of cervical infection due to N. gonorrhoeae or C. trachomatis;

- All three major criteria and at least one minor criterion must be present to diagnose PID. Leukocytosis is typical.

- N.B ESR and C-reactive protein are elevated in many disorders and are therefore not specific for PID.

Investigations

- **1-Cervical cultures** or antigen detection tests with DNA probes for N. gonorrhoeae or C.trachomatis
- **2- CBC** with differential WBC, and a pregnancy test should be performed in all patients
- . Cervical infection due to N. gonorrhoeae can also be diagnosed by Gram stain showing intracellular gram-negative diplococci.
- **3-Endometrial biopsy** with aerobic and anaerobic culture may assist in the diagnosis.
- **4-Pelvic ultrasonography** may be used when a patient cannot be adequately examined because of tenderness or pain, when a pelvic mass may be present, or when no response to antibiotic therapy occurs within 48 to 72 h.
- **5-Laparoscopy** should be performed if the diagnosis is uncertain or if the patient does not promptly improve with medical therapy.

Differential diagnosis

- 1- ectopic pregnancy
- 2- acute appendicitis
- 3- endometriosis
- 4- symptomatic ovarian rupture
- 5- ovarian neoplasm
- 6- uterine fibroids.

Treatment

- Therapeutic goals include complete resolution of the infection and prevention of infertility and ectopic pregnancy.
- Immediate and vigorous treatment with antibiotic therapy should be started as soon as cultures are obtained

- Antibiotic
- 1-For uncomplicated infection due to N. gonorrhea, options include ceftriaxone 125 mg IM, cefixime 400 mg po, or ciprofloxacin 500 mg po.

- 2-Because C. trachomatis often accompanies N. gonorrhea, doxycycline 100 mg po bid for 7 days may also be used. Azithromycin 1 g po in a single dose or ofloxacin 300 mg bid for 7 days is equally effective.

Treatment

- indications for inpatient treatment

- 1- nulliparity or low parity
- 2- severe illness (eg, significant fever, leukocytosis, pain)
- 3- suspected pregnancy
- 4-mass noted during the pelvic examination

- in these cases, IV therapy should continue until the patient has been a febrile for 24 h

- Abscess drainage
- Percutaneous or transvaginal drainage of a tubo-ovarian abscess can be performed using ultrasound guidance or through laparoscope or culdocentesis.