PELVIC INFLAMMATORY DISEASE

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Provide a clinical definition of pelvic inflammatory disease

Describe the epidemiology of PID in the US

Describe the risk factors associated with PID

Identify common clinical manifestations of PID, and describe the clinical criteria used to diagnose PID
Learning Objectives

- Know the CDC recommended treatment regimens for PID
- Describe patient and partner management
- Describe the sequelae associated with PID
- Understand the priority public health measures to prevent PID
Pelvic inflammatory disease (PID) is a clinical syndrome that occurs when pathogens from the lower genital tract (vagina, cervix) ascend to the upper genital tract and cause infection and inflammation of upper pelvic structures.
PID is an “umbrella” term that includes a spectrum of upper genital tract infections, including

- Endometritis
- Salpingitis
- Pelvic abscess, such as tubo-ovarian abscess
- Pelvic peritonitis
PID is responsible for over one million physician or clinic consultations

PID is largely managed through outpatient care

Hospitalization rates for PID have declined nearly 40% in area hospitals since 1990

Office visits for PID also appear to have declined since 1998.
Pelvic inflammatory disease — Initial visits to physicians’ offices by women 15 to 44 years of age: United States, 1997-2007

Note: The relative standard error for these estimates ranges from 21.6% to 29.3%

SOURCE: National Disease and Therapeutic Index (IMS Health)
PID and its sequelae represent a substantial economic burden.

Currently, costs of treating PID exceeds four billion dollars.

Costs of PID management and treatment will continue to rise, in view of the sequelae of this infection.
Identifying risk markers for PID may improve prevention and management of this clinical syndrome.

Must recognize both behavioral and biologic risks that increase one’s risk of PID.

Identification of risk factors should improve patient education and counseling.
Risk Factors

- Adolescence
- History of PID
- Gonorrhea or chlamydia, or a history of gonorrhea or chlamydia
- Male partners with gonorrhea or chlamydia
- Multiple partners
Risk Factors

- Current douching
- Insertion of IUD
- Bacterial vaginosis
- Oral contraceptive use (in some cases)
- Demographics (socioeconomic status)
Contraceptive Use and PID

- Studies have shown a complex and often confusing relationship of contraceptive use and PID.
- Contraceptives must be used consistently and correctly in order to have maximum benefit for pregnancy prevention and to experience any non-contraceptive benefits of their use.
Consistent condom use can decrease one’s risk for PID, particularly recurrent disease, by as much as 50%.

Prospective study of 684 women (14-37yo) who were followed for 3 years after initial dx of PID.

Consistent condom users were half as likely to have recurrent PID, 60% decrease in infertility.
Inconsistent condom use may significantly increase one’s risk for PID and other STIs.

Studies indicate as much as a two-fold increase in risk for PID with inconsistent condom use.
Oral contraceptives also have not shown consistent protective effect.

Oral contraceptives present some theoretical benefits, including cervical barriers and reduced menstrual flow.

OCPs may increase risk of chlamydia cervicitis.

Counsel patients using OCPs to use condoms consistently to reduce risk of PID, STIs.
Upper genital tract infections are frequently polymicrobial.

Infections at the lower genital tract ascend upward, facilitated by sperm, douching, myometrial contractions.
Most cases of PID are polymicrobial

Most common pathogens:
- *N. gonorrhoeae*: recovered from cervix in 30%-80% of women with PID
- *C. trachomatis*: recovered from cervix in 20%-40% of women with PID
- *N. gonorrhoeae* and *C. trachomatis* are present in combination in approximately 25%-75% of patients
Other important pathogens associated with PID include anaerobes, enteric organisms.

Must use antibiotics that treat a broad spectrum of pathogens.
Pathway of Ascendant Infection

- Cervicitis
- Endometritis
- Salpingitis/oophoritis/tubo-ovarian abscess
- Peritonitis
Clinical Manifestations

- Signs and symptoms vary widely
- Patients may appear quite ill or may have minimal complaints (“Silent PID”)
- Clinical symptoms have positive predictive value of 65-75% compared to laparoscopy
- Lack a single historical, physical, or laboratory finding that identifies PID
Clinical Manifestations

PID Classification

- Severe symptoms: 4%
- Subclinical/silent: 60%
- Mild to moderate symptoms: 36%
- Overt: 40%

Severe symptoms

Mild to moderate symptoms

Subclinical/silent

Overt
Normal Cervix with Ectopy

Source: Seattle STD/HIV Prevention Training Center at the University of Washington/
Claire E. Stevens
Mucopurulent Cervical Discharge
(Positive swab test)

Source: Seattle STD/HIV Prevention Training Center at the University of Washington/
Claire E. Stevens and Ronald E. Roddy
Minimal clinical criteria include
- Abdominal pain, particularly pelvic or lower abdominal pain
- Cervical motion tenderness or uterine tenderness or
- Adnexal tenderness, unilateral or bilateral
Clinical Diagnostic Criteria

- Additional criteria include
- Oral temperature above 101° F (38.3° C)
- Abnormal cervical discharge
- Increase WBCs on saline wet mount
- Elevated ESR
- Elevated C-reactive protein
- Positive test for *N. gonorrhoeae, Chlamydia trachomatis*
Elaborate criteria

Laparoscopy (“gold standard”)

Endometrial biopsy with histopathologic evidence of endometritis (increased plasma cells and histiocytes)

Transvaginal sonogram showing thickened, fluid-filled fallopian tubes
Treatment

- Broad spectrum coverage must cover the most common pathogens
- Treatment must be initiated as early as possible to minimize risk of sequelae
- Partner evaluation and treatment should also be provided as soon as possible, after initiating treatment
Treatment

- INPATIENT TREATMENT
- Cefotetan-2 grams IV q 12 hr OR
- Cefoxitin- 2 grams IV q 6 hr PLUS
- Doxycycline- 100 mg IV or po q 12 hr
- Switch to doxycycline 100mg twice a day to complete 14 days of treatment
INPATIENT TREATMENT

- Clindamycin- 900mg IV q 8 hr PLUS
- Gentamicin- 1.5mg/kg IV q 8 hr (Initial Loading dose is 2mg/kg IV)

Following patient improvement and stabilization for at least 24 hr, may complete 14 day treatment with doxycycline 100mg bid, or clindamycin 450mg qid.
Treatment

- ALTERNATIVE TREATMENT
- Ampicillin/Sulbactam 3 grams IV q 6 hr PLUS
- Doxycycline 100 mg IV q 12 hr
Outpatient Treatment

- Ceftriaxone 250mg IM single dose PLUS
- Doxycycline 100 mg bid for 14 days
- OR
- Cefoxitin 2 grams IM single dose PLUS probenicid 1 Grams po
- PLUS doxycycline 100mg bid for 14 days
Outpatient Treatment

- Metronidazole may be included with doxycycline
- Metronidazole 500mg bid for 14 days
- Improves anaerobe coverage
Follow-up

- Clinical evaluation 48-72 hours after initiating treatment for PID
- Contact treatment of all sex partners

Patient is suspected of having a surgical emergency
The patient is pregnant
The patient has an abscess
She is severely ill with fever, N/V
She does not respond to outpatient therapy

Indications for Hospitalizations
Infertility rates increase with increasing severity and increasing frequency of PID

Recurrent PID will occur in approximately 25% of patients

Ectopic pregnancy rates can increase seven-fold
Risk of PID with IUD use is within first 3 weeks, not afterwards.

CDC does not recommend removal in PID but careful followup.
Seattle WA Group health Cooperative Study

2607 women at risk for Chlamydia were randomized to Screening Population (1009) and to Usual Care (1598)

Screening Population had 0.44 relative risk for PID compared to the Usual Care group

9 cases of PID in Screening Group compared to 33 cases in Usual Care Group
Prevention of PID

- Annually screen and treat women for GC and chlamydia, if they test positive.
- Priority populations for screening include sexually active women under 25 yr of age
- Screen for GC/CT 3-6 months post treatment, with a review of sexual history and risk factors for STI.