

## Pelvic Inflammatory Disease: When to Suspect, How to Treat

**P**elvic inflammatory disease (PID) often remains undetected. In some women, PID is asymptomatic; in others, its mild or nonspecific signs and symptoms (eg, abnormal bleeding and dyspareunia) may go unrecognized. Without prompt diagnosis and treatment, PID can result in upper reproductive tract inflammation and infertility. However, empiric treatment should never be started in the absence of reasonable diagnostic certainty, since it can delay the management of other disorders with similar presentations, such as ectopic pregnancy and acute appendicitis.

PID can include endometritis, salpingitis, tubo-ovarian abscess, and/or pelvic peritonitis—in any com-

ination. Most cases are caused by the sexual transmission of *Neisseria gonorrhoeae* or *Chlamydia trachomatis*; however, the causative pathogen may be any microorganism that is part of the vaginal flora (eg, *Gardnerella vaginalis*, *Haemophilus influenzae*, *Streptococcus agalactiae*, *Mycoplasma hominis*, or *Ureaplasma urealyticum*).

Unfortunately, no single historical finding, physical sign or symptom, or laboratory test is sufficiently sensitive and specific to confirm the diagnosis of PID. Thus, the Centers for Disease Control and Prevention (CDC) has issued recommendations on when to suspect PID, how to increase diagnostic certainty, when

**Table 1. Diagnosing and managing PID: CDC recommendations**

### Diagnostic criteria

*Minimal* (all the following criteria must be present)

- ◆ Lower abdominal tenderness.
- ◆ Adnexal tenderness.
- ◆ Cervical motion tenderness.

### *Supportive*

- ◆ Fever, with a body temperature above 38.3°C (101°F).
- ◆ Abnormal cervical or vaginal discharge.
- ◆ Elevated erythrocyte sedimentation rate.
- ◆ Microbiologic evidence of a cervical infection caused by *Neisseria gonorrhoeae* or *Chlamydia trachomatis*.

### *Definitive*

- ◆ Endometritis (based on histopathologic evidence).
- ◆ Thickened, fluid-filled fallopian tubes, with or without free pelvic fluid or tubo-ovarian complex (based on evidence obtained by ultrasonography or another imaging technique).
- ◆ Laparoscopic evidence,\* such as salpingitis or other abnormalities.

### Hospitalization criteria

- ◆ Potential surgical emergency.
- ◆ Pregnancy.
- ◆ No response to oral antimicrobial therapy.
- ◆ Inability to tolerate or to comply with outpatient oral therapy.
- ◆ Severe illness, nausea and vomiting, high fever.
- ◆ Tubo-ovarian abscess.
- ◆ Immunodeficiency.

### Treatment options

#### *Parenteral*

- ◆ Cefotetan (2 g IV q12h) or ceftioxin (2 g IV q6h), plus doxycycline (100 mg IV or PO q12h).<sup>†</sup>
- ◆ Clindamycin (900 mg IV q8h) plus gentamicin (2 mg/kg IV or IM, followed by 1.5 mg/kg q8h [a single daily dose of gentamicin may be substituted]).<sup>‡</sup>

#### *Oral*

- ◆ Ofloxacin (400 mg PO bid) plus metronidazole (500 mg PO bid) for 14 days.
- ◆ Ceftriaxone (250 mg IM, single dose), or ceftioxin (2 g IM, single dose) given concurrently with probenecid (1 g PO, single dose), plus doxycycline (100 mg PO bid for 14 days).

PID, pelvic inflammatory disease; CDC, Centers for Disease Control and Prevention.

\* Laparoscopy cannot detect endometritis and may not detect subtle inflammation of the fallopian tubes.

<sup>†</sup> This regimen may be discontinued 24 hours after clinical improvement is noted and followed by doxycycline (100 mg PO bid); the total duration of treatment is 14 days.

<sup>‡</sup> This regimen may be discontinued 24 hours after clinical improvement is noted. It should then be followed by doxycycline (100 mg PO bid) or clindamycin (450 mg PO qid); the total duration of treatment is 14 days.

Data extracted from Centers for Disease Control and Prevention. *MMWR*. 1998.<sup>1</sup>

to hospitalize women with PID, and which antimicrobial regimens (parenteral or oral) to consider (Table 1).<sup>1</sup>


The CDC recommends empiric treatment of PID in women who are at risk for sexually transmitted disease if all the minimum criteria are present and no other cause can be determined. If increased diagnostic certainty is required—as is often the case—additional criteria, such as fever and laboratory evidence of gonorrhea or chlamydial infection, may be used to support the diagnosis of PID. If the diagnosis remains in doubt, endometrial biopsy, transvaginal ultrasonography (or another imaging technique), or laparoscopy may be used to establish the diagnosis.

Hospitalization for bed rest and treatment with parenteral antibiotics was once considered mandatory for women with PID. This is no longer the case. Parenteral therapy can be given in an outpatient setting, and data on the relative efficacy of inpatient versus outpatient therapy are not currently available. Thus, at present, the decision to hospitalize is based on the clinical situation and the discretion of the practitioner.

Most clinicians consider at least 24 hours of inpatient care appropriate for a woman with tubo-ovarian abscess. Other possible reasons to hospitalize a patient with PID include pregnancy; lack of response to therapy; inability to comply with or to tolerate an outpatient regimen; concomitant, severe illness; and immunodeficiency.

Broad-spectrum antimicrobial treatment should be started as soon as the presumptive diagnosis of PID has been made. The early institution of therapy has been linked to the prevention of long-term complications. The regimen selected should be active against both *N gonorrhoeae* and *C trachomatis*, as well as anaerobes, Gram-negative facultative bacteria, and streptococci. Other considerations include availability, cost, and patient acceptance.

The CDC stresses that upper reproductive tract infection with *N gonorrhoeae* or *C trachomatis* may be present even if endocervical screening tests for these organisms are negative. If infection with *N gonorrhoeae* or *C trachomatis* has been documented, the patient's sex partners also should receive treatment.

The parenteral and oral regimens listed in Table 1 have been proved effective for PID; however, the relative efficacy of parenteral versus oral therapy has not been studied. Each practitioner must determine the best time to switch a patient from parenteral to oral therapy. However, this usually can be accomplished after 24 hours of clinical improvement. 

#### REFERENCE

1. Centers for Disease Control and Prevention. 1998 Guidelines for treatment of sexually transmitted diseases. *MMWR*. 1998;47 (No. RR-1):1-116.