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EM CASE OF THE WEEK

BROWARD HEALTH MEDICAL CENTER DEPARTMENT OF EMERGENCY MEDICINE

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Pelvic inflammatory disease (PID) is an acute and subclinical infection of the upper genital tract in women, involving any or all of the uterus, fallopian tubes, and ovaries. The neighboring pelvic organs are often involved. It can result in endometritis, salpingitis, oophoritis, peritonitis, perihepatitis, and/or tubo-ovarian abscess.

EM CASE OF THE WEEK

EM Case of the Week is a weekly "pop quiz" for ED staff. The goal is to educate all ED personnel by sharing common pearls and pitfalls involving the care of ED patients. We intend on providing better patient care through better education for our nurses and staff.

Pelvic Inflammatory Disease

A 30-year-old female presents to the ED with 3 days of bilateral lower abdominal and pelvic pain that is sharp, non-radiating, 9/10 in severity, and constant. The pain is aggravated by movement and sex, and temporarily alleviated by ibuprofen. Her LMP was 2 weeks ago. The patient admits to associated intermittent dysuria and malodorous vaginal discharge. Vital signs: T 98.8, HR 96, RR 22, BP 138/88, O2 sat 100%. Pelvic exam is positive for cervical motion tenderness. Urine pregnancy test is negative. All other labs are pending. What is the next best step?

A. Perform pelvic transvaginal ultrasound imaging.

B. Order an abdominal CT scan.

C. Give appropriate pain medication and consult OBGYN to admit the patient.

D. Start oral antibiotics with broad empiric coverage, and NSAIDs for pain, then discharge home from ED.

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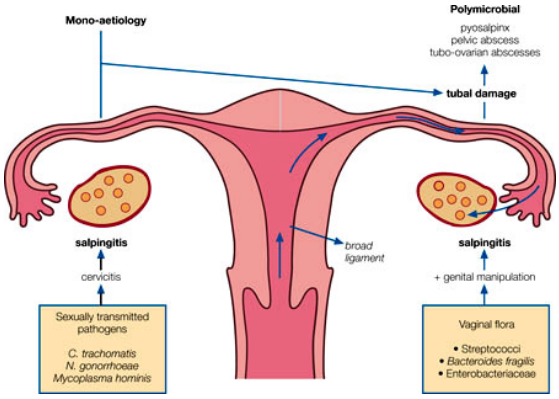

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Take Home Points

- In the United States, ***Neisseria gonorrhoeae, Chlamydia trachomatis,* and bacterial vaginosis-associated pathogens** cause 85% of pelvic inflammatory disease cases.
- Primary risk factor is sex, especially with multiple sexual partners.
- Acute **cervical motion tenderness** (aka Chandelier's sign) on bimanual pelvic exam is a defining characteristic of acute symptomatic PID.
- First line outpatient therapy is **Ceftriaxone** (250 mg IM single dose) plus **doxycycline** (100 mg PO BID for 14 days).

Pelvic Inflammatory Disease

The correct answer is D. PID represents a spectrum of infection and there is no single diagnostic gold standard. Clinical diagnosis remains the most important practical approach in mild to moderate cases. Pelvic imaging can help evaluate for alternative causes of pelvic pain or complications of PID, e.g., a tubo-ovarian abscess. However, the absence of radiographic findings consistent with PID does not rule out the possibility of PID and should not be a reason to forgo or delay therapy. There is limited data supporting use of CT or MRI in women to diagnose PID, however, they are useful to exclude other causes of pelvic pain with atypical and severe presentation.

Pathogenesis:

The vaginal flora of most normal, healthy women consists of the dominant, non-pathogenic, hydrogen peroxide-producing *Lactobacillus* species. However, a variety of potentially pathogenic bacteria, such as species of streptococci, staphylococci, enterobacteriaceae, and several different anaerobes are also present in very small numbers. The endocervical canal functions as a protective barrier between the normally sterile upper genital tract from the organisms of the dynamic vaginal ecosystem. Sexually transmitted pathogens disrupt this barrier providing vaginal bacteria access to the upper genital organs.

Risk Factors:

Sex is the primary risk factor for pelvic inflammatory disease. Celibate women are not at risk for PID, and women with longstanding monogamous relationships rarely develop PID. **Women with multiple sexual partners are at the highest risk**. Other risk factors include younger age, past infection with chlamydia, a partner with a STI, and previous PID. Frequency of PID is affected by contraceptive use, i.e., the barrier method is protective. In the U.S., African-American or Black-Caribbean ethnicity has been associated with a higher risk of PID (possibly related to access to care or behavioral differences).

Differential:

The differential diagnosis of PID is broad and includes other pelvic pathology. The main differentials include ectopic pregnancy, ovarian cyst rupture/torsion, endometriosis, cystitis, appendicitis, diverticulitis, IBS, and functional pain.

Signs and Symptoms:

The cardinal presenting symptom is **lower abdominal pain**, which is usually bilateral and rarely more than two weeks' duration. The character of the pain is variable, and can be subtle in some cases. The acute onset of pain that **worsens during sexual intercourse or jarring movement** may be the only symptom of PID. The onset of pain during or shortly after menses is particularly suggestive. The majority of women usually have mild to moderate disease, and a small number of women develop peritonitis or pelvic abscess, which typically cause significantly more pain and greater tenderness on exam, and with or without fever. Abnormal uterine bleeding occurs in one-third of women with PID. Non-specific symptoms include urinary frequency and abnormal vaginal discharge.

Diagnosis:

Physical exam findings typically include abdominal tenderness on palpation, greatest in the lower quadrants, which may or may not be symmetrical. Severe PID may also produce rebound tenderness, fever, and decreased bowel sounds. Acute **cervical motion tenderness** on bimanual pelvic exam is a defining characteristic of acute symptomatic PID. The following additional findings can be used to support the clinical diagnosis of PID:

- Oral temp > 101°F (> 38.3°C)
- Abnormal cervical/vaginal mucopurulent discharge or cervical friability
- Abundant numbers of WBCs on saline microscopy of vaginal secretions (eg >15-20 WBCs/hpf)
- Documented cervical infection with *N. gonorrhoeae* or *C. trachomatis*.

The CDC also lists an elevated CRP ≥ 60 mg/L or ESR ≥ 40mm/h as factors that may increase specificity of the diagnosis of PID.

Treatment:

PID is a polymicrobial infection, which typically requires **broad coverage antibiotics**., especially against *N. gonorrhoeae* and *C. trachomatis*. Severe disease requires hospitalization and parenteral antibiotics.

What are the indications for hospital admission?

Pregnancy, lack of response or tolerance to oral medications, nonadherence to therapy, inability to take oral meds due to nausea and vomiting, severe clinical illness (fever, nausea, vomiting, several abdominal pain), complicated PID with pelvic abscess (including tuboovarian abscess), possible need for surgical intervention or diagnostic exploration for alternative etiology (e.g., appendicitis)

What is first-line inpatient therapy?

Cefoxitin (2 g IV q6h) or **cefotetan** (2 g IV q12h) plus **doxycycline** (100 mg PO q12h).

Clindamycin (900 mg IV q8h) plus **gentamicin** loading dose (2 mg/kg of body weight) followed by a maintenance dose (1.5 mg/kg) q8h. Single daily IV dosing of gentamicin may be substituted for three times daily dosing.

What is first-line outpatient therapy?

Ceftriaxone (250 mg IM single dose) plus **doxycycline** (100 mg PO BID for 14 days)

Cefoxitin (2 g IM in a single dose) concurrently with **probenecid** (1 g PO in a single dose) plus **doxycycline** (100 mg PO BID for 14 days)

Alternative agents for doxycycline are **azithromycin** (1g once per week for 2 weeks)

References:
Pelvic inflammatory disease: Clinical manifestations and diagnosis, Uptodate
Pelvic inflammatory disease: Treatment, Uptodate
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