**Pelvic inflammatory disease**

Pelvic inflammatory disease or pelvic inflammatory disorder (PID) is an infection of the upper part of the female reproductive system namely the uterus, fallopian tubes, and ovaries, and inside of the pelvis. Often there may be no symptoms. Signs and symptoms, when present may include lower abdominal pain, vaginal discharge, fever, burning with urination, pain with sex, or irregular menstruation. Untreated PID can result in long term complications including infertility, ectopic pregnancy, chronic pelvic pain, and cancer.

The disease is caused by bacteria that spread from the vagina and cervix. Infections by Neisseria gonorrhoeae or Chlamydia trachomatis are present in 75 to 90 percent of cases. Often multiple different bacteria are involved. Risk factors are similar to those of sexually transmitted infections generally and include a high number of sexual partners and drug use. Vaginal douching may also increase the risk. The diagnosis is typically based on the presenting signs and symptoms. It is recommended that the disease be considered in all women of childbearing age who have lower abdominal pain. A definitive diagnosis of PID is made by finding pus involving the fallopian tubes during surgery. Ultrasound may also be useful in diagnosis.

Efforts to prevent the disease include not having sex or having few sexual partners and using condoms. If the diagnosis is suspected, treatment is typically advised. Treating a woman's sexual partners should also occur.In those with mild or moderate symptoms a single injection of the antibiotic ceftriaxone along with two weeks of doxycycline and possibly metronidazole by mouth is recommended. For those who do not improve after three days or who have severe disease intravenous antibiotics should be used.

Signs and symptoms

Symptoms in PID range from none to severe. If there are symptoms, then fever, cervical motion tenderness, lower abdominal pain, new or different discharge, painful intercourse, uterine tenderness, adnexal tenderness, or irregular menstruation may be noted.

Cause

Chlamydia trachomatis and Neisseria gonorrhoeae are usually the main cause of PID.

The anatomical structure of the internal organs and tissues of the female reproductive tract provides a pathway for pathogens to ascend from the vagina to the pelvic cavity thorough the infundibulum. The disturbance of the naturally occurring vaginal microbiota associated with bacterial vaginosis increases the risk of PID.

Microorganisms associated with PID are listed below.

* Chlamydia trachomatis
* Neisseria gonorrhoeae
* Prevotella spp.
* Streptococcus pyogenes
* Prevotella bivia
* Prevotella disiens
* Bacteroides spp.
* Peptostreptococcus asaccharolyticus
* Peptostreptococcus anaerobius
* Gardnerella vaginalis
* Escherichia coli
* Group B streptococcus
* α-hemolytic streptococcus
* Coagulase-negative staphylococcus
* Atopobium vaginae
* Acinetobacter spp.
* Dialister spp.
* Fusobacterium gonidiaformans
* Gemella spp.
* Leptotrichia spp.
* Mogibacterium spp.
* Porphyromonas spp.
* Propionibacterium acnes
* Sphingomonas spp.
* Veillonella spp.
* Mycoplasma genitalium
* Mycoplasma hominis
* Ureaplasma spp.

Diagnosis

Upon a **pelvic examination**, cervical motion, uterine, or adnexal tenderness will be experienced. Mucopurulent cervicitis and or urethritis may be observed. In severe cases more testing may be required such as laparoscopy, intra-abdominal bacteria sampling and culturing, or tissue biopsy.

**Laparoscopy** can visualize "violin-string" adhesions, characteristic of Fitz-Hugh–Curtis perihepatitis and other abscesses that may be present.

Other imaging methods, such as **ultrasonography**, **computed tomography (CT)**, and **magnetic imaging (MRI)**, can aid in diagnosis. **Blood tests** can also help identify the presence of infection: the **erythrocyte sedimentation rate (ESR), the C-reactive protein (CRP) level, and chlamydial and gonococcal DNA probes.**

Definitive criteria include histopathologic evidence of endometritis, thickened filled Fallopian tubes, or laparoscopic findings. Gram stain/smear becomes definitive in the identification of rare, atypical or and possibly more serious organisms.

Differential diagnosis

A number of other causes may produce similar symptoms including appendicitis, ectopic pregnancy, hemorrhagic or ruptured ovarian cysts, ovarian torsion, and endometriosis and gastroenteritis, peritonitis, and bacterial vaginosis among others.

Pelvic inflammatory disease is more likely to reoccur when there is a prior history of the infection, recent sexual contact, recent onset of menses, or an IUD (intrauterine device) in place or if the partner has a sexually transmitted infection.

Prevention

Regular testing for sexually transmitted infections is encouraged for prevention. The risk of contracting pelvic inflammatory disease can be reduced by the following:

* Using barrier methods such as condoms; see human sexual behavior for other listings.
* Seeking medical attention if you are experiencing symptoms of PID.
* Using hormonal combined contraceptive pills also helps in reducing the chances of PID by thickening the cervical mucosal plug & hence preventing the ascent of causative organisms from the lower genital tract.
* Seeking medical attention after learning that a current or former sex partner has, or might have had a sexually transmitted infection.
* Diligence in avoiding vaginal activity, particularly intercourse, after the end of a pregnancy (delivery, miscarriage, or abortion) or certain gynecological procedures, to ensure that the cervix closes.
* Reducing the number of sexual partners.
* Sexual monogamy that restricts sexual activities to two 'virgins' or partners remaining sexually exclusive with each other and having no outside sex partners.
* Abstinence

Treatment

Treatment is often started without confirmation of infection because of the serious complications that may result from delayed treatment. Treatment depends on the infectious agent and generally involves the use of antibiotic therapy. Hospitalization sometimes becomes necessary if there are other complications. Treating sexual partners for possible STIs can help in treatment and prevention.

For women with PID of mild to moderate severity, parenteral and oral therapies appear to be effective.

Prognosis

Even when the PID infection is cured, effects of the infection may be permanent. Treatment resulting in cure is very important in the prevention of damage to the reproductive system. Formation of scar tissue due to one or episodes of PID can lead to tubal blockage, increasing the risk of the inability to get pregnant and long-term pelvic/abdominal pain. Certain occurrences such as a post pelvic operation, the period of time immediately after childbirth (postpartum), miscarriage or abortion increase the risk of acquiring another infection leading to PID.

Complications

PID can cause scarring inside the reproductive system, which can later cause serious complications, including chronic pelvic pain, infertility, ectopic pregnancy, and other complications of pregnancy. Occasionally, the infection can spread to in the peritoneum causing inflammation and the formation of scar tissue on the external surface of the liver (Fitz-Hugh–Curtis syndrome)

Other complications include endometritis, salpingitis, tubo-ovarian abscess, pelvic peritonitis, periappendicitis, and perihepatitis.