The Practitioner

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Soleymani majd H, Ismail L, Currie I. GPs should be vigilant for pelvic inflammatory disease
Practitioner 2011; 255 (1738): 15-18

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Practitioner
Medical Publishing Ltd

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Reprint orders to *The Practitioner*, 10 Fernthorpe Road, London SW16 6DR, United Kingdom. Telephone: +44 (0)20 8677 3508
www.thepractitioner.co.uk

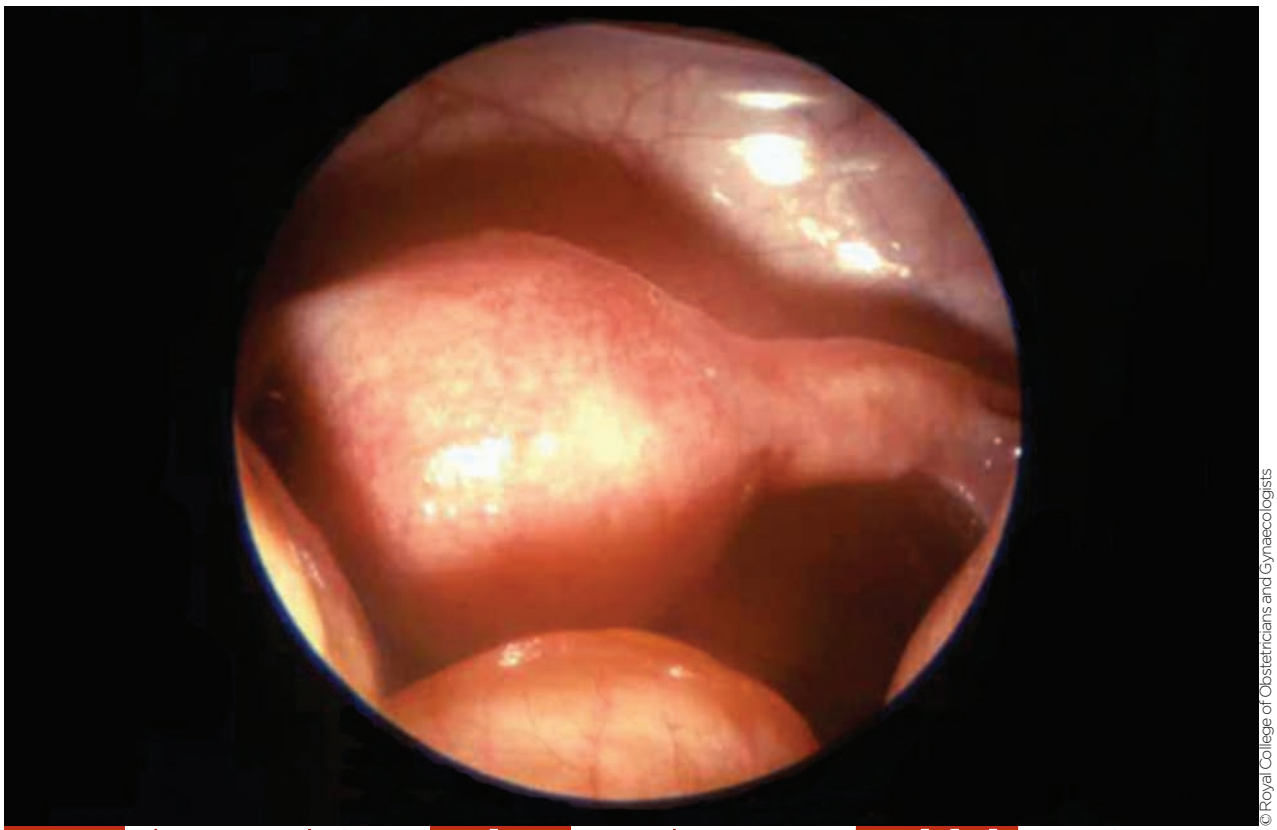
GPs should be vigilant for pelvic inflammatory disease

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Acute pelvic inflammation with free fluid

How does pelvic inflammatory disease present?

PELVIC INFLAMMATORY DISEASE (PID) TYPICALLY RESULTS FROM ASCENDING INFECTION THROUGH the endocervix, from the lower to the upper genital tract. This leads to inflammation of the endometrium, uterus, fallopian tubes, adnexal structures or pelvic peritoneum. It is extremely common and accounts for one in 60 GP consultations by women under the age of 45 years.[1]

PID may cause significant short- and long-term morbidity. Whereas most patients are asymptomatic, others may present acutely unwell with pelvic peritonitis and septicaemia. The long-term effects of PID include chronic pelvic pain, subfertility and ectopic pregnancy. However, there may also be substantial psychological morbidity in the form of guilt, isolation, and stigma associated with the diagnosis.[2]

What are the potential complications?

Although PID may occur following pelvic surgery, after instrumentation of the uterus and even in the puerperium, the most common cause is sexually transmitted infection (STI).

Chlamydia trachomatis and *Neisseria gonorrhoeae* have a proven association with PID and account for 25% of cases. Other organisms, such as *Mycoplasma genitalium* and *Mycoplasma hominis*, *Gardnerella vaginalis*, *Ureaplasma urealyticum* and anaerobes have all been implicated, however, their role is less clear.[3]

Which patients should be referred?

In 2007, according to the Health Protection Agency, rates of infection with chlamydia, genital warts and gonorrhoea were highest in women aged 16 to 19, with rates of 1,423, 830 and 137 per 100,000 population, respectively.[4] Although young people aged 16 to 24 years represented only 12% of the UK population, they accounted for nearly half of STIs diagnosed in GUM clinics.[4] It has been suggested that young people experience higher rates of infection because they are more sexually active and more susceptible to infection.[5] »

Table 1

Risk factors for PID

- Age 16-24 years
- Multiple sexual partners
- Not using barrier methods of contraception[8]
- Douching (may double the risk)[9]
- Previous history of STIs
- Smoking (increases risk two fold)
- Recent insertion of an IUCD[10]

Table 2

Differential diagnosis for PID

- Ectopic pregnancy
- Urinary tract infection (UTI)
- Appendicitis
- Irritable bowel syndrome
- Endometriosis
- Ovarian cyst accident (rupture, haemorrhage or torsion)
- Functional pain

Table 3

Complications associated with *Chlamydia trachomatis* and *Neisseria gonorrhoeae* infection

Site affected	Sequelae
Pelvis	Chronic pelvic pain
Fallopian tubes	Ectopic pregnancy, sub-fertility
Abdomen	Fitz-Hugh Curtis syndrome:[16] peri-hepatic adhesions and chronic pain
Eyes	Adult conjunctivitis
Systemic	Sexually acquired reactive arthritis (SARA)/Reiter's syndrome: fatigue, post-inflammatory joint pain and stiffness, erosive joint damage, cataracts
Lower genital tract (while pregnant)	Transmission to the neonate resulting in conjunctivitis (with potential blindness) and pneumonia

It is therefore important to have an extremely high index of suspicion in any young, sexually active woman who presents to general practice in this age group.

The Health Protection Agency (HPA) has recently reported an alarming increase in STIs among over 45 year olds.[6] Thus GPs should have a high index of suspicion for PID in this age group, if the symptoms and risk assessment suggest this.

PRESENTATION

Patients with PID may be asymptomatic or may present with a spectrum of clinical symptoms including: [7]

- Lower abdominal pain (typically bilateral, sometimes radiating to the legs)
- Abnormal vaginal or cervical discharge (often purulent)
- Dysuria
- Deep dyspareunia
- Abnormal vaginal bleeding (postcoital, intermenstrual and breakthrough)

Symptoms may set in rapidly (within days) or take months to develop.

Emphasis should be placed on taking a thorough general, gynaecological and sexual history. If any of these symptoms are present, the history should be complemented by an assessment of patient risk factors, see table 1, above.

A general, abdominal and pelvic examination should then be performed. The following signs[7] may be evident:

- Fever (> 38° C)
- Lower abdominal tenderness (usually bilateral)
- Speculum examination: cervicitis or purulent discharge
- Bimanual vaginal examination: cervical motion tenderness, adnexal tenderness or a palpable adnexal mass

It is important to remember that symptoms and signs of PID may be non-specific and insensitive (as the positive predictive value of a clinical diagnosis is 65-90% compared with a laparoscopic diagnosis).[11] However this should not lead to a delay in commencing treatment for PID, as even a few days' delay may increase disease severity and have significant implications for the patient's long-term health.

Practitioners should employ a cautious approach and have a low threshold for commencing empiric treatment, if the history, symptoms and signs suggest this.

GPs may initiate outpatient therapy for PID without prior hospital referral.[12]

Table 4

Outpatient regimens for PID

Intramuscular ceftriaxone 250 mg single dose followed by oral doxycycline 100 mg twice daily plus metronidazole twice daily for 14 days
Oral ofloxacin 400 mg twice daily plus oral metronidazole 400 mg twice daily for 14 days
Oral moxifloxacin 400 mg once daily for 14 days

Clinical trial evidence for the following regimen is limited but it may be used when the treatments above are not appropriate, e.g. allergy, intolerance.

Intramuscular ceftriaxone 250 mg immediately, followed by azithromycin 1 g/week for two weeks

CONFIRMING DIAGNOSIS

It is important to consider the differential diagnosis for lower abdominal pain in a young woman before diagnosing PID, see table 2, above left.[7]

Considering the differential diagnosis will help to guide your further investigations, which may include:

Pregnancy test: It is good practice to perform a pregnancy test to exclude an ectopic pregnancy[7]

Urine dipstick: If there are positive findings on dipstick testing, then a midstream urine sample should be sent for culture and sensitivity testing[3]

Blood tests: Elevated inflammatory markers such as ESR or CRP and a high white cell count, may support the diagnosis and give an indication of disease severity[13] but are non-specific

Endocervical swabs: Testing for *Chlamydia trachomatis*, by nucleic acid amplification test (NAAT) and *Neiserria gonorrhoeae*, by culture, is recommended since a positive result will support the diagnosis. However, a negative test result will not refute the diagnosis.[3] Swabs should arrive at the laboratory within 24 hours.

A first-catch urine sample or self-taken vulvovaginal swab: Either of these methods may be used as an alternative to NAATs[7]

POTENTIAL COMPLICATIONS

The most significant potential complication associated with PID, following symptomatic salpingitis, is tubal damage which confers a 6-10 times increased risk of ectopic pregnancy.[14] Studies have also suggested that symptomatic

key points

SELECTED BY

Dr Peter Saul
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Pelvic inflammatory disease (PID) typically results from ascending infection through the endocervix, from the lower to the upper genital tract. This leads to inflammation of the endometrium, uterus, fallopian tubes, adnexal structures or pelvic peritoneum. It is extremely common and accounts for one in 60 general practice consultations by women under the age of 45 years. The long-term effects of PID include chronic pelvic pain, subfertility and ectopic pregnancy. The most common cause of PID is sexually transmitted infection. It is important to have a very high index of suspicion in any, sexually active woman, aged 16-24, who presents to general practice.

Patients with PID may be asymptomatic or may present with a spectrum of clinical symptoms including: lower abdominal pain (typically bilateral, sometimes radiating to the legs, abnormal vaginal or cervical discharge (often purulent), dysuria, deep dyspareunia and abnormal vaginal bleeding (postcoital, intermenstrual and breakthrough). A general, abdominal and pelvic examination should be performed.

It is important to consider the differential diagnosis for lower abdominal pain in a young woman before diagnosing PID. This includes: ectopic pregnancy, urinary tract infection, appendicitis, irritable bowel syndrome, endometriosis, ovarian cyst accident and functional pain. The most significant potential complication associated with PID, following symptomatic salpingitis, is tubal damage which confers a 6-10 times increased risk of ectopic pregnancy. Symptomatic salpingitis may also lead to tubal factor infertility.

Outpatient therapy is considered to be as effective as inpatient treatment for patients with clinically mild to moderate PID. Most clinical trial data support the use of IM cefoxitin, however, as this drug is not readily available in the UK ceftriaxone has been deemed a suitable alternative. Metronidazole is usually included in most outpatient regimens to cover for the presence of anaerobes. Oral antibiotics in very early pregnancy (before a positive pregnancy test) pose a low risk to the fetus.

Prompt referral for hospital admission should be undertaken, to facilitate parenteral therapy, further investigation or possible surgical intervention, in the following cases: intolerance of, or lack of response to, oral antibiotic therapy; clinically severe disease; pregnancy or concern that a surgical emergency cannot be excluded

The duration of outpatient treatment is usually 14 days. Patients should be told to avoid any form of sexual intercourse until they, and their partner(s) have completed their full course of treatment. It is good practice to use the diagnosis and/or follow-up visit, as an opportunity for health promotion and education about PID. A further follow-up appointment should also be arranged two to six weeks after completing treatment. This will allow patient compliance and outcomes to be assessed.

salpingitis can lead to tubal factor infertility. The risk seems to be cumulative and is approximately: 10-12% after one episode, 20-30% after two episodes and up to 60% after three or more episodes.[15] Other complications are listed in table 3, p16.

TREATMENT

Outpatient therapy is considered to be as effective as inpatient treatment for patients with clinically mild to moderate PID.[17] The choice of outpatient treatment regimen will be influenced by the patient's past medical and drug history, allergies, severity of disease, preference and compliance, cost and evidence of local antimicrobial sensitivity patterns.[11]

Careful consideration is required for patients on hormonal contraception and for those in whom drug interactions are likely to occur if the antibiotic regimens below are prescribed.

The outpatient regimens, listed in table 4, p16, have all been advocated by the British Association for Sexual Health and HIV (BASHH) as they are evidence based and of similar efficacy.[11]

Most clinical trial data support the use of cefoxitin. However, as this drug is not readily available in the UK ceftriaxone has been deemed a suitable alternative, as these two drugs have a similar spectrum of action. There is no clinical evidence to support the use of oral cephalosporins, as tissue levels may be lower resulting in reduced efficacy.[11]

Ofloxacin should be avoided in women thought to be at high risk of gonorrhoea because of increasing quinolone resistance in this group. Those deemed to be at high risk include women whose partners are gonorrhoea-positive, patients with clinically severe disease or a history of sexual contact abroad.[11]

Metronidazole is usually included in most outpatient regimens to cover for the presence of anaerobes, however, if patients with mild to moderate disease are unable to tolerate this drug, it can be discontinued.[11]

REFERRAL

Prompt referral for hospital admission should be undertaken, to facilitate parenteral therapy, further investigation and/or possible surgical intervention in the following cases:[18]

- Intolerance of/lack of response to oral antibiotic therapy
- Clinically severe disease (e.g. pyrexia > 38° C, clinical signs of tubo-ovarian abscess or pelvic peritonitis)
- Pregnancy
- Concern that a surgical emergency cannot be excluded

Inpatient intravenous antibiotic therapy is usually continued for at least 24 hours after clinical improvement and then followed by a course of oral antibiotics.[7]

PID in pregnancy is rare but should it occur necessitates prompt hospital admission, to minimise the risk of maternal and fetal morbidity. The treatment schedule should exclude drugs known to be harmful to the fetus e.g. tetracycline and quinolones. Oral antibiotics given for PID in very early pregnancy (before a positive pregnancy test) pose a low risk to the fetus.[11]

For patients with PID and intrauterine contraceptive devices (IUCDs) in situ, removal should be considered if symptoms have failed to resolve by the time they attend for a clinical review.[7] Removal may be associated with better short-term outcomes. However, it should be carefully weighed against the risk of pregnancy if the patient has had otherwise unprotected intercourse in the previous seven days, in which case hormonal emergency contraception should be offered.[7]

FOLLOW UP

A clinical review at 72 hours should be arranged,[19] especially for those patients with a moderate or severe clinical presentation. The general expectation is that these patients should show a significant clinical improvement within that time, if not they would probably benefit from referral to hospital.[11]

The duration of outpatient treatment is usually 14 days (as outlined in the treatment regimens above). The importance of drug compliance should be stressed and patients should also be given analgesia if appropriate. When severe disease is present, patients should be advised to rest.[11]

Patients should be told to avoid any form of sexual intercourse until they, and their partner(s) have completed their full course of treatment.[11] It is good practice to use the diagnosis and/or follow-up visit as an opportunity for health promotion and education about PID.

The use of barrier methods of contraception should be encouraged to reduce the risk of future PID. »

A comprehensive explanation of the condition with particular emphasis on the long-term implications should be given and the importance of contact tracing should be stressed.[7] The current partner of a patient with PID should be contacted, given health advice and offered screening for gonorrhoea and chlamydia.[7] If the woman has had other recent sexual partners, they should also be offered screening. Contact tracing within a six-month period of the start of symptoms is generally recommended, but this may vary depending on the sexual history.[11]

While screening and contact tracing may be carried out in a primary care setting, the RCOG has suggested referring these patients, and their partners, to a sexual health (GUM) clinic, to facilitate these processes.[7]

All the information imparted to the patient should ideally be reinforced by providing a clearly written information leaflet, such as the one produced by the RCOG (see Useful information box, below).

A further follow-up appointment should also be arranged two to six weeks after completing treatment.[7, 11] This will allow patient compliance and outcomes to be assessed. A pregnancy test can be performed at this time, if clinically indicated. Screening and treatment of sexual contacts can be checked and while repeat testing for gonorrhoea or chlamydia is not usually required, it may be appropriate in those patients where the possibility of ongoing or recurrent infection is high.[11]

REFERENCES

1 Simms I, Vickers MR, Stephenson J et al. National assessment of PID diagnosis, treatment and management in general practice: England and Wales. *Int J STD AIDS* 2000;11:440-4
2 Yeh JM, Hook EW 3rd, Goldie SJ. A refined estimate of the average lifetime cost of pelvic inflammatory disease. *Sex Transm Dis* 2003;30:369-8
3 Mears A, Bingham JS. Pelvic inflammatory disease. *The Obstetrician & Gynaecologist* 2004;6:138-144
4 The UK Collaborative Group for HIV and STI Surveillance. Sexually Transmitted Infection in Young People in the United Kingdom: 2008 report. Health Protection Agency, Centre for Infection. London. 2008
5 Washington AE, Aral SO, Wolner-Hanssen P et al. Assessing risk for pelvic inflammatory disease and its sequelae. *J Am Med Assoc* 1991;266:2581-6
6 www.hpa.org.uk/NewsCentre/NationalPressReleases/2008PressReleases/080627sti/
7 Royal College of Obstetricians and Gynaecologists. Management of Acute Pelvic Inflammatory Disease. Guideline No. 32. RCOG. London. 2008
8 Vanhegan G. Contraception in the under-16s: issues of confidentiality and choice of methods. *The Obstetrician & Gynaecologist* 2008;10:22-265
9 Scholes D, Daling JR, Stergachis A et al. Vaginal douching as a risk factor for pelvic inflammatory disease. *Obstet Gynecol* 1993;81:601-5
10 Farley TM, Rosenberg MJ, Rowe PJ et al. Intrauterine devices and pelvic inflammatory disease: an international perspective. *Lancet* 1992;339:785-8
11 Ross J, McCarthy G. UK National Guideline for the management of Pelvic Inflammatory Disease. www.bashh.org/guidelines/2011/PID guideline BASHH 2011 (1).pdf
12 Hillis SD, Joesoef R, Marchbanks PA et al. Delayed care of pelvic inflammatory disease as a risk factor for impaired fertility. *Am J Obstet Gynecol* 1993;168:1503-9
13 Miettinen AK, Heinonen PK, Laippala P et al. Test performance of erythrocyte sedimentation rate and C-reactive protein in assessing the severity of acute pelvic inflammatory disease. *Am J Obstet Gynecol* 1993;169:1143-9
14 Buchan H, Vessey M, Goldacre M et al. Morbidity following pelvic inflammatory disease. *Br J Obstet Gynaecol* 1993;100: 558-62
15 Weström L, Joesoef R, Reynolds G et al. Pelvic inflammatory disease and fertility. A cohort study of 1844 women with laparoscopically verified disease and 657 control women with normal laparoscopic results. *Sex Transm Dis* 1992;19:185-92
16 Fitz-Hugh Jr T. Acute gonococcic peritonitis of the right upper quadrant in women. *J Am Med Assoc* 1934;102:2094-2096
17 Ness RB, Soper DE, Holley RL et al. Effectiveness of inpatient and outpatient treatment strategies for women with pelvic inflammatory disease: results from the Pelvic Inflammatory Disease Evaluation and Clinical Health (PEACH) Randomized Trial. *Am J Obstet Gynecol* 2002;186:929-37
18 US Centers for Disease Control. Sexually Transmitted Diseases Treatment Guidelines 2006. MMWR *Morb Mort Wkly Rep* 2006;55(RR-11):1-94
19 US Centers for Disease Control. Sexually Transmitted Diseases Treatment Guidelines 2006. MMWR *Morb Mort Wkly Rep* 2006; 55(RR-11):56-60

Useful information

For healthcare professionals and patients
As well as providing guidance and advice for healthcare professionals the RCOG has also produced patient information leaflets
www.rcog.org.uk/files/rcog-corp/AcutePIDPIAug10.pdf

For healthcare professionals
British Association for Sexual Health and HIV
www.bashh.org

For patients
Women's Health Concern
www.womens-health-concern.org

The PID Support Group
Women's Health Tel: **020 7251 6580**

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