Pelvic inflammatory disease

An approach for GPs in Australia

BACKGROUND Pelvic inflammatory disease (PID) is a treatable condition with serious long term sequelae. Due to the wide spectrum of disease and clinical presentation, diagnosis can often be challenging.
OBJECTIVE This article discusses the diagnosis, management and treatment of PID in the general practice setting.
DISCUSSION Prompt and effective treatment is essential in cases of PID. A high index of suspicion for symptomatic women at risk may help decrease the burden of serious associated morbidity.

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Pelvic inflammatory disease (PID) is defined as the acute clinical syndrome associated with infection of the endometrium, fallopian tubes and/or contiguous structures from microorganisms ascending from the cervix and/or the vagina.[1] Diagnosis may vary from any combination of:

- endometritis
- salpingitis
- oophoritis
- pelvic peritonitis, and
- pelvic abscess, to
- clinically silent or asymptomatic infection.[1]

Due to this wide variation in clinical presentation, diagnosis is often difficult. The 'gold standard' for diagnosis is laparoscopy. As it is invasive, costly and impractical in a general practice setting, many doctors rely upon clinical examination with a sensitivity and specificity of approximately 50%.[2] Long term sequelae of untreated infection are significant to both public[3] and private health, making prompt diagnosis and treatment essential.

Epidemiology

The actual incidence of PID is indeterminable as reliable diagnosis is difficult to attain clinically. The disease is not notifiable and patients are usually treated in an outpatient setting leaving estimates of PID based predominately upon complications associated with hospital visits. Rates of PID are therefore most likely under estimated, and in Australia are unknown. It has been estimated that, in industrialised nations, the annual incidence of PID in women aged 15–39 years of age is 10–13/1000, peaking to 20/1000 in women aged 20–24 years of age.[4] In the United Kingdom, PID accounts for 1.7% of general practice attendances of women aged 16–46 years.[5]

Pathogenesis

Sexually transmitted infections (STIs) such as gonorrhoea and chlamydia are the most important causative organisms associated with PID, accounting for 60–80% of cases in those under 25 years of age.[6] Cervical infection is usually initiated by either or both of these agents leading to an alteration in the cervicovaginal environment. This change facilitates the over growth of facultative vaginal organisms. The initial epithelial damage caused by the original pathogens then allows either or both the original pathogens and vaginal flora to ascend into the endometrium, fallopian tubes and peritoneal cavity. Isolates in PID are polymicrobial, including organisms associated with bacterial vaginosis, however, no organisms are recovered in 20–30% of cases.[7]

Iatrogenic PID may result from procedures that breach the protective cervical barrier and directly introduce bacteria into the endometrial cavity such as intrauterine device (IUD) insertion, dilatation and curettage and suction termination of pregnancy (TOP). Risks associated with IUD insertion have been shown to be limited to the four weeks

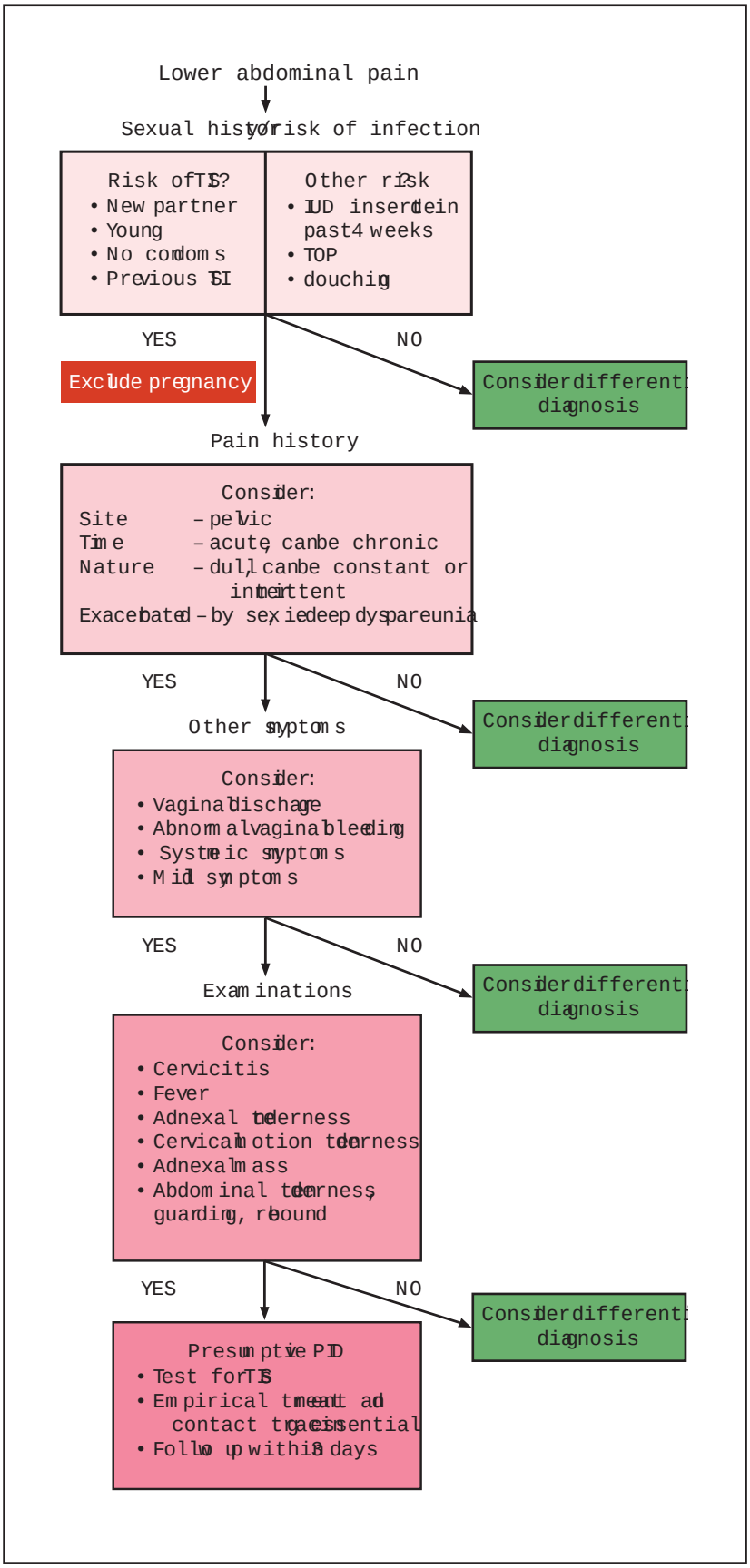

Figure 1. Diagnosing PID

Table 1. Common signs and symptoms associated with PID[19]

Symptoms	Signs
• lower abdominal pain/discomfort	• abdominal tenderness/ guarding/rebound
• vaginal discharge	• adnexal tenderness
• abnormal vaginal bleeding	• adnexal mass
• dyspareunia	• cervical excoriation
	• raised temperature

following insertion only, in women at low risk of STIs.[8] Both sexually transmitted organisms and the vaginal anaerobes of bacterial vaginosis[9] may be responsible. In all instances, prior screening and/or prophylactic antibiotic treatment have significantly reduced the rate of PID.[8,10] Vaginal douching has also been suggested as a predisposing factor.[11] Screening and treatment of bacterial vaginosis and STIs, particularly chlamydia, before any diagnostic procedure, referral for TOP, or IUD insertion, should be routine.

Risk factors

Most risk factors associated with PID are closely associated with those of acquisition of other STIs,[12] the most important risk factor being actually having either chlamydia or gonorrhoea.[5,12–14] These may include:

- young age
- high frequency of partner change
- lack of barrier contraception
- low socioeconomic group, and
- smoking.[5,12–14]

One Australian study found young women aged 15–19 years were over five times more likely than other age groups to suffer from PID.[13]

Hormonal contraception such as the oral contraceptive pill has been shown to decrease the risk of PID by up to 40–60%, particularly in those cases where the causative organism is chlamydia.[7]

Clinical presentation and complications

Clinical presentation may vary from severe, debilitating abdominal pain associated with tubo-ovarian abscess requiring hospitalisation, to subclinical, asymptomatic infection for which the patient may not seek health care. It has been estimated that a

Table 2. Outpatient treatment for PID[19]

In young sexually active women with no predisposing factors

doxycycline 100 mg twice per day for 14 days
+
metronidazole 400 mg twice per day for 14 days
+/–
azithromycin 1 g stat orally (if compliance is an issue)
+ (if gonorrhoea is suspected or proven)
ceftriaxone 250 mg intramuscularly immediately, or ciprofloxacin 500 mg orally immediately (depending on local patterns of NG resistance)

Postprocedural PID (including IUD, abortion)

doxycycline 100 mg twice per day for 2–4 weeks
or
amoxycillin 500 mg 3 times per day for 2–4 weeks
+
metronidazole 400 mg 3 times per day for 2–4 weeks

With previous PID history

doxycycline 100 mg twice per day for 2–4 weeks
or
amoxycillin 500 mg 3 times per day for 2–4 weeks
+
metronidazole 400 mg 3 times per day for 2–4 weeks

clinical diagnosis of PID is incorrect in 33% of cases and of all true cases, up to 60% will be subclinical, 36% mild to moderate, and 4% severe.[7]

No individual sign or symptom is pathognomonic of PID and correct diagnosis may rest upon clinician experience. A study of Australian women diagnosed with PID at a sexual health clinic found the most common symptoms were abnormal vaginal discharge, lower abdominal pain and dyspareunia. The most common examination findings were adnexal tenderness, cervical motion tenderness and cervicitis.[15] For those with more severe disease, systemic symptoms such as fever, nausea and vomiting may also be present.

First presentation for some patients may be with long term sequelae of infection. Pelvic inflammatory disease has significant morbidity with an associated 20% infertility, 20% chronic pelvic pain and 10% ectopic pregnancy.[16] With each repeated episode of PID the risk of permanent tubal damage and infertility increases 4–6-fold.[17] One study found rates of infertility of 8% after one episode of PID, nearly 20% after two episodes and 40% after three or more episodes.[18] Risk of ectopic pregnancy has been shown to increase 7–10-fold after PID.[6]

Diagnosis

Due to the wide spectrum of clinical presentation, clinical diagnosis is imprecise, and a diagnosis of PID must involve an accurate history including sexual history and evaluation of risk as well as examination and testing (Figure 1). Common signs and symptoms are shown in Table 1. The Centre for Disease Control guidelines suggest a minimum criteria for PID of lower abdominal pain, adnexal tenderness and cervical motion tenderness in sexually active young women at risk of STIs where no other cause is identified.[1]

There are no specific laboratory tests to diagnose PID and in most cases empirical treatment should be commenced immediately on presumptive diagnosis, while results are pending. Tests to exclude STIs should be conducted:[19] endocervical swabs for chlamydia and bacterial culture including gonorrhoea, as well as a high vaginal swab for vaginal anaerobes. A wet prep of vaginal secretions may reveal polymorphs if microscopy is available. Tests for other STIs such as syphilis and blood borne viruses are appropriate for screening in this setting. Nonspecific serum markers associated with PID are erythrocyte sedimentation rate >15 mm/hr, elevated C-reactive protein, and elevated white blood cell count.[7,20]

Differential diagnosis

The differential diagnosis of lower abdominal and pelvic pain includes endometriosis, ruptured ovarian cyst, dysmenorrhoea and ectopic pregnancy. A pregnancy test should be considered in suspected cases of PID. Other causes of abdominal pain include appendicitis, irritable bowel syndrome, urinary tract infection and gastroenteritis. A complete history and examination should eliminate these possibilities in most cases.

Management

Pelvic inflammatory disease treatment must provide cover for all suspected organisms including

Table 3. Hospital admission and PID[1,19]

Consider hospitalisation where:

- tubo-ovarian abscess is suspected
- patient is pregnant
- nonresponsive to treatment
- unable to tolerate or follow outpatient oral regimen
- suffering severe illness, eg. nausea, vomiting or febrile
- patient is immunodeficient
- surgical emergencies such as appendicitis cannot be excluded

both sexually transmitted and facultative organisms. The recommended treatment in Australia is shown in Table 2. Gonococcal cover is not routinely offered due to low rates of gonorrhoea in urban areas of Australia, however, if suspected cover for this organism should be considered.

The majority of women with mild to moderate infection can be treated on an outpatient basis provided close follow up is available, however, hospitalisation may be required in some cases (Table 3). Patients should demonstrate substantial clinical improvement within three days of treatment. Follow up should occur within this time and involve review of microbiological results and repeat clinical examination. Duration of treatment depends upon clinical response with a minimum duration of 14 days.

Contact tracing

It is essential that all sexual contacts of patients with presumptive PID are tested and treated both for public health reasons and to eliminate the high risk of reinfection with a sexually transmitted pathogen. It is not uncommon for partners of women with gonorrhoeal or chlamydial PID to be asymptomatic.

All those who had sexual contact with the patient within the 60 days preceding onset of symptoms should be screened for STIs and receive empirical treatment for chlamydia and, if suspected or proven, gonorrhoea.

Conclusion

Pelvic inflammatory disease is an important consequence of both STI and diagnostic procedures which breech the cervical barrier. Prompt diagnosis and treatment of women suffering PID may prevent serious sequelae such as infertility and chronic pelvic pain. Due to the wide clinical spectrum of presentation, a high index of suspicion is required for those women at risk. Provided patients are closely monitored, outpatient management in the general practice setting is effective and adequate.

Conflict of interest: none declared.

SUMMARY OF IMPORTANT POINTS

- STIs are the most important causative organisms associated with PID.
- PID carries significant morbidity with associated infertility, chronic pelvic pain and ectopic pregnancy.
- IUD insertion, dilatation and curettage, and termination of pregnancy may result in iatrogenic PID.
- A diagnosis of PID must involve sexual history, risk evaluation, examination and testing.

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