Management of Acute Pelvic Inflammatory Disease

1. Introduction • Pelvic inflammatory disease (PID) is a common cause of morbidity and accounts for 1 in 60 GP consultations by women under the age of 45
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- Delays of only a few days in receiving appropriate treatment markedly increase the risk of sequelae, which include:
  1. Infertility,
  2. Ectopic pregnancy and
  3. Chronic pelvic pain.
1. Introduction

• This guideline applies to women requiring treatment for confirmed or suspected acute PID being treated in an outpatient or inpatient setting by primary and secondary care practitioners.
1. Introduction
• PID is usually the result of infection ascending from the endocervix causing:
  1. Endometritis,
  2. Salpingitis,
  3. Parametritis,
  4. Oophoritis,
  5. Tuboovarian abscess and/or
  6. Pelvic peritonitis.
1. Introduction

• While sexually transmitted infections such as:
  1. *Chlamydia trachomatis* and
  2. *Neisseria gonorrhoeae* have been identified as causative agents,
  3. *Mycoplasma genitalium*,
  4. *Anaerobes* and other organisms may also be implicated.
1. Introduction

- There are currently marked variations in the antimicrobial regimens used in the treatment of PID, reflecting uncertainty in the optimal treatment schedule.
2. Identification and assessment of evidence

• A Medline search was carried out from January 1963 to April 2002, looking for the following terms in the title or abstract:
  'pelvic inflammatory disease,' 'adnexitis,' 'oophoritis,' 'parametritis,' 'salpingitis' or 'adnexal disease'
2. Identification and assessment of evidence

- A search of the Cochrane controlled trials register using a search strategy of 'pelvic inflammatory disease,' 'adnexitis,' 'oophoritis,' 'parametritis,' 'salpingitis' or 'adnexal disease' identified 312 citations.
2. Identification and assessment of evidence
   • The following guidelines and reports were also reviewed:
   2. Recommendations from the RCOG Study Group on Pelvic Inflammatory Disease (1996),
   3. UK National Guidelines on Sexually Transmitted Diseases (2002) and the
   4. European Guidelines for the Management of
2. Identification and assessment of evidence
   • The recommendations given in this guideline have been graded according to the guidance for the development of RCOG green-top guidelines.
Levels of Evidence
### Evidence category

<table>
<thead>
<tr>
<th>Category</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ia</td>
<td>Systematic review and meta-analysis of randomised controlled trials</td>
</tr>
<tr>
<td>Ib</td>
<td>At least one randomised controlled trial</td>
</tr>
<tr>
<td>IIa</td>
<td>At least one well-designed controlled study without randomisation</td>
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<tr>
<td>IIb</td>
<td>At least one other type of well-designed quasi-experimental study</td>
</tr>
<tr>
<td>III</td>
<td>Well-deserve non-experimental descriptive studies, such as comparative studies, correlation studies or case studies</td>
</tr>
<tr>
<td>IV</td>
<td>Expert committee reports or opinions and/or clinical experience of respected authorities</td>
</tr>
</tbody>
</table>
Grading of recommendations
Recommendation grade

A

B

C

D

Evidence

Directly based on category I evidence

Directly based on:

• category II evidence, or
• extrapolated recommendation from category I or II evidence

Directly based on:

• category III evidence, or
• extrapolated recommendation from category I or II evidence

Directly based on:

• category IV evidence, or
• extrapolated recommendation from category I, II, or III evidence
Clinical diagnosis

• Because of the lack of definitive clinical diagnostic criteria, a low threshold for empirical treatment of PID is recommended.
• Where there is diagnostic doubt or in clinically severe cases, admission to hospital for treatment and further investigation is advisable.
Clinical diagnosis
• The following clinical features are suggestive of a diagnosis of PID:
  1. Lower abdominal pain and tenderness
  2. Deep dyspareunia
  3. Abnormal vaginal or cervical discharge
  4. Cervical excitation and adnexal tenderness motion
  5. Fever (> 38 °C).
Clinical diagnosis

• Clinical symptoms and signs, however, lack sensitivity and specificity (the positive predictive value of a clinical diagnosis is 65-90% compared with laparoscopic diagnosis).

level III
Clinical diagnosis
• The presence of excess leucocytes on a wet mount vaginal smear is associated with PID, but is also found in women with isolated lower genital tract infection.
level III
Clinical diagnosis
• Laparoscopy:
  1. Enables specimens to be taken from the fallopian tubes and the pouch of Douglas and
  2. Can provide information on the severity of the condition. level III
Clinical diagnosis
• Although Laparoscopy has been considered the gold standard in many studies of treatment regimens, 15-30% of suspected cases may have no laparoscopic evidence of acute infection. level III
1. Introduction

Pelvic inflammatory disease (PID) is a common cause of morbidity and accounts for 1 in 60 GP consultations by women under the age of 45.

Clinical diagnosis
- When there is diagnostic doubt, however, laparoscopy may be useful to excluded alternative pathologies.

level III
Clinical diagnosis

- Transvaginal ultrasound scanning may be helpful where there is diagnostic difficulty.
- When supported by power Doppler it can identify inflamed and dilated tubes and tubo-ovarian masses, but there is insufficient evidence to support its routine use.

level III
Clinical diagnosis
• Magnetic resonance imaging can assist in making a diagnosis but the evidence is limited and it is not widely available.

level III
Clinical diagnosis
• 1. A peripheral blood leuco cytosis,
2. Elevated erythrocyte sedimentation rate or
3. C-reactive protein
• also support the diagnosis but are non-specific findings.
level III
1. Introduction

Pelvic inflammatory disease (PID) is a common cause of morbidity and accounts for 1 in 60 GP consultations by women under the age of 45.

Clinical diagnosis

- There is insufficient evidence to support endometrial biopsy as a routine diagnostic test.
  level II
Microbiological diagnosis

- Women with suspected PID should be screened for gonorrhoea and chlamydia.
1. Introduction

Pelvic inflammatory disease (PID) is a common cause of morbidity and accounts for 1 in 60 GP consultations by women under the age of 45.

Microbiological diagnosis
• Testing for gonorrhoea and chlamydia in the lower genital tract is recommended,
• A positive result strongly supports the diagnosis of PID, but the absence of infection at this site does not exclude PID.

Evidence level IV
1. Introduction

Pelvic inflammatory disease (PID) is a common cause of morbidity and accounts for 1 in 60 GP consultations by women under the age of 45.

Microbiological diagnosis
• Testing for gonorrhoea should be with an:
  1. Endocervical specimen and tested via culture (direct inoculation on to a culture plate or transport of the swab to the laboratory within 24 hours) or using a
  2. Nucleic acid amplification test (NAAT). Evidence level IV
Microbiological diagnosis
• Screening for chlamydia should also be from the endocervix, preferably using a NAAT (e.g. polymerase chain reaction, strand displacement amplification).
• Taking an additional sample from the urethra increases the diagnostic yield for gonorrhea and chlamydia.
Evidence level IV
Microbiological diagnosis

- A first-catch urine sample provides an alternative sample for some NAATs.
- Other organisms, including *M. genitalium*, have been associated with PID but routine screening is not yet justified.

Evidence level IV
1. Introduction

- Delays of only a few days in receiving appropriate treatment markedly increase the risk of sequelae, which include:
  1. Infertility,
  2. Ectopic pregnancy and
  3. Chronic pelvic pain.
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2. Ectopic pregnancy and
3. Chronic pelvic pain.

Outpatient treatment
- Outpatient antibiotic treatment should be commenced as soon as the diagnosis is suspected.
Outpatient treatment
• In mild or moderate PID (in the absence of a tubo-ovarian abcess) there is no difference in outcome when patients are treated as outpatients or admitted to hospital.
Evidence level I b
Outpatient treatment

- It is likely that delaying treatment, especially in chlamydial infections, increases the severity of the condition and the risk of long-term sequelae such as:
  1. Ectopic pregnancy,
  2. Subfertility and
  3. Pelvic pain.

Evidence level I b
Outpatient treatment
• Outpatient antibiotic treatment should be based on one of the following regimens:
  1. Oral ofloxacin 400 mg twice a day plus oral metronidazole 400 mg twice a day for 14 days.
Outpatient treatment

• Or:

2. Intramuscular ceftriaxone 250 mg immediately or intramuscular cefoxitin 2 g immediately with oral probenecide 1 g, followed by:
oral doxycycline 100 mg twice a day plus metronidazole 400 mg twice a day for 14 days.

B.
Outpatient treatment

- Broad-spectrum antibiotic therapy is required to cover *N. gonorrhoeae*, *C. trachomatis* and anaerobic infection.
- Although the combination of oral doxycycline and metronidazole is in common use in the UK, there are no clinical trials assessing its effectiveness.

Evidence level IV
1. Introduction

- Delays of only a few days in receiving appropriate treatment markedly increase the risk of sequelae, which include:
  1. Infertility,
  2. Ectopic pregnancy and
  3. Chronic pelvic pain.

Outpatient treatment
• Patients should be provided with a detailed explanation of their condition, with particular emphasis on the long-term implications for the health of themselves and their partner(s), reinforced with clear and accurate written information.
1. Introduction

This guideline applies to women requiring treatment for confirmed or suspected acute PID being treated in an outpatient or inpatient setting by primary and secondary care practitioners.

Inpatient treatment
- Admission to hospital would be appropriate in the following circumstances:
  1. Surgical emergency cannot be excluded
  2. Clinically severe disease
  3. Tuboovarian abscess
  4. PID in pregnancy
  5. Lack of response to oral therapy
  6. Intolerance to oral therapy.
1. Introduction

- This guideline applies to women requiring treatment for confirmed or suspected acute PID being treated in an outpatient or inpatient setting by primary and secondary care practitioners.

Inpatient treatment

- In more severe cases inpatient antibiotic treatment should be based on intravenous therapy, which should be continued until 24 hours after clinical improvement and followed by oral therapy. Evidence level I b.
Inpatient Recommended Regimen 1
• Intravenous cefoxitin 2 g three times a day plus intravenous doxycycline 100 mg twice a day (oral doxycycline may be used if tolerated), followed by:
oral doxycycline 100 mg twice a day plus oral metronidazole 400 mg twice a day for a total of 14 days
B
Inpatient Recommended Regimen 2

- Intravenous clindamycin 900 mg three times a day plus intravenous gentamicin: 2 mg/kg loading dose followed by 1.5 mg/kg three times a day (a single daily dose of 7 mg/kg may be substituted), followed by either:
  1. Oral clindamycin 450 mg four times a day to complete 14 days or
  2. Oral doxycycline 100 mg twice a day plus oral metronidazole 400 mg twice a day to complete 14 days or
  3. Intravenous ofloxacin 400 mg twice a day plus intravenous metronidazole 500 mg three times day for 14 days.
Inpatient treatment

• If parenteral gentamicin is used then serum drug levels and renal function should be monitored.
Inpatient treatment
• The choice of an appropriate treatment regimen will be influenced by:
1. Robust evidence on local antimicrobial sensitivity patterns,
2. Robust evidence on the local epidemiology of specific infections in this setting,
3. Cost,
4. Patient preference and compliance, and
5. Severity of disease.
1. Introduction

This guideline applies to women requiring treatment for confirmed or suspected acute PID being treated in an outpatient or inpatient setting by primary and secondary care practitioners.

Inpatient treatment
- Evidence of the efficacy of antibiotic therapy in preventing the long-term complications of PID is currently limited.
Treatment in pregnancy

• A pregnancy test should be performed in all women suspected of having PID to help exclude an ectopic pregnancy.
Treatment in pregnancy

- The risk of giving any of the recommended antibiotic regimens in very early pregnancy (prior to a positive pregnancy test) is low, with any significant drug toxicity resulting in failed implantation.
1. Introduction

This guideline applies to women requiring treatment for confirmed or suspected acute PID being treated in an outpatient or inpatient setting by primary and secondary care practitioners.

Treatment in pregnancy

• In an intrauterine pregnancy, PID is extremely rare, except in the case of septic abortion.
Treatment in pregnancy

- Cervicitis may occur, however, and is associated with increased maternal and fetal morbidity.
1. Introduction

- PID is usually the result of infection ascending from the endocervix causing:
  1. Endometritis,
  2. Salpingitis,
  3. Parametritis,
  4. Oophoritis,
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  6. Pelvic peritonitis.

Treatment in pregnancy
- Treatment regimens will be dependent upon the organisms isolated.
- Drugs known to be toxic in pregnancy should be avoided e.g. tetracyclines.
- Erythromycin and amoxicillin are not known to be harmful in pregnancy.
1. Introduction

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Treatment in young women
- Ofloxacin should be avoided in young women when bone development is still occurring, based on data from animal studies.
- Doxycycline can be safely used in children over the age of 12 years.
Treatment in a woman with an intrauterine contraceptive device

- An intrauterine contraceptive device (IUCD) may be left in situ in women with clinically mild PID but should be removed in cases of severe disease.

B
Treatment in a woman with an intrauterine contraceptive device

• An IUCD only increases the risk of developing PID in the first weeks after insertion.
• A single small randomized controlled trial suggests that removing an IUCD does not affect the response to treatment.
• An observational study also showed no benefit in removing

Evidence level II b
Other modes of treatment
• Surgical treatment should be considered in:
  1. Severe cases or
  2. Where there is clear evidence of a pelvic abscess. B
Other modes of treatment

- Laparotomy/laparoscopy may help early resolution of the disease by division of adhesions and drainage of pelvic abscesses.
- Ultrasound-guided aspiration of pelvic fluid collections is less invasive and may be equally effective.

Evidence level III
1. Introduction

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Other modes of treatment
• It is also possible to perform adhesiolysis in cases of perihepatitis although there is no evidence as to whether this superior to antibiotic therapy alone.

Evidence level III
Management of sexual partners of women with PID, which may be sexually acquired

- Current sexual partners of women with PID should be:
  1. Contacted and offered health advice and
  2. Screening for gonorrhoea and chlamydia. B
Management of sexual partners of women with PID, which may be sexually acquired
• Patients should be advised to avoid intercourse until they and their partner have completed the treatment course.
• Gonorrhoea diagnosed in the sexual partner should be treated appropriately and concurrently with the index patient.
Evidence level III
Management of sexual partners of women with PID, which may be sexually acquired

- Concurrent empirical treatment for chlamydia is recommended for all sexual contacts due to the variable sensitivity of currently available diagnostic tests.

Evidence level III
Management of sexual partners of women with PID, which may be sexually acquired
- If adequate screening for gonorrhoea and chlamydia in the sexual partner(s) is not possible, empirical therapy for both gonorrhoea and chlamydia should be given.

Evidence level III
Management of sexual partners of women with PID, which may be sexually acquired

- Referral of the index patient and her partner to a genitourinary medicine clinic is recommended, to facilitate contact tracing and infection screening.

Evidence level III
1. Introduction

- While sexually transmitted infections such as:
  1. *Chlamydia trachomatis* and
  2. *Neisseria gonorrhoeae* have been identified as causative agents,
  3. *Mycoplasma genitalium*,
  4. *Anaerobes* and other organisms may also be implicated.

Review of patients with PID
- In the outpatient setting, review at 72 hours is recommended, particularly for those with a moderate or severe clinical presentation.
- Failure to improve suggests the need for further investigation, parenteral therapy and/or surgical intervention.
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Review of patients with PID
• Further review four weeks after therapy may be used to ensure:
  1. Adequate clinical response to treatment
  2. Compliance with oral antibiotics
  3. Screening and treatment of sexual contacts
  4. Awareness of the significance of PID and its sequelae.
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Review of patients with PID
- Repeat testing for gonorrhoea after treatment is recommended in those initially found to be infected.
Evidence level III
Review of patients with PID
• Repeat testing for chlamydia may be appropriate in those whom:
  1. Persisting symptoms,
  2. Compliance with antibiotics and/or tracing of sexual contacts indicate the possibility of persistant or recurrent infection.
Evidence level III
Women who are infected with HIV

- Women with PID who are also infected with HIV should be treated with the same antibiotic regimens as women who are HIV negative.

B
1. Introduction

- While sexually transmitted infections such as:
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Women who are infected with HIV
- Women who are HIV infected were previously thought to get clinically more severe PID but recent studies suggest that the differences may be minor and that they respond as well to treatment as patients who are not HIV infected.

Evidence level III
Women who are infected with HIV
- Standard antibiotic treatment is therefore appropriate and admission is only required for those with clinically severe disease.
- Potential interactions between antibiotics and anti-retroviral medication need to be considered on an individual basis.
Evidence level III
The oral contraceptive pill and PID
• Women taking the oral contraceptive pill who present with breakthrough bleeding should be screened for genital tract infection, especially *C. trachomatis*. C
1. Introduction

- There are currently marked variations in the antimicrobial regimens used in the treatment of PID, reflecting uncertainty in the optimal treatment schedule.

The oral contraceptive pill and PID
- The use of the combined oral contraceptive pill has usually been regarded as protective against symptomatic PID.
The oral contraception pill and PID
• Retrospective case-control and prospective studies have, however, shown an association with an increased incidence of asymptomatic cervical infection with *C. trachomatis*.
• This has led to the suggestion that the oral contraception may mask endometritis.
The oral contraceptive pill and PID
• Women using the oral contraceptive pill should be warned that its effectiveness may be reduced when taking antibiotic therapy.
1. Introduction

- There are currently marked variations in the antimicrobial regimens used in the treatment of PID, reflecting uncertainty in the optimal treatment schedule.

Auditable outcomes
- Little is know about the long-term outcomes, in relation to future fertility, ectopic pregnancy and chronic pelvic pain, following the treatment of PID.
1. Introduction

There are currently marked variations in the antimicrobial regimens used in the treatment of PID, reflecting uncertainty in the optimal treatment schedule.

Thank you

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Links: