Worcestershire Acute Hospitals NHS Trust

Management and Prevention of Acute Pelvic Inflammatory Disease (PID)

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INTRODUCTION

Pelvic Inflammatory disease is usually the result of infection ascending from the endocervix causing endometritis, salpingitis, parametritis, oophoritis, tuboovarian abscess and/or pelvic peritonitis. While sexually transmitted infections such as *Chlamydia trachomatis* and *Neisseria gonorrhoea* have been identified as causative agents, *Mycoplasma genitalium*, anaerobes and other organisms may also be implicated.

Diagnosis of acute PID

The following clinical features are suggestive of a diagnosis of PID:

- Lower abdominal pain and tenderness
- Deep dyspareunia
- Abnormal vaginal or cervical discharge
- Cervical excitation and adnexal tenderness
- Fever (38ºC)

Clinical symptoms and signs however lack sensitivity and specificity. 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 infections. Laparoscopy enables specimens to be taken from the fallopian tubes and the pouch of Douglas and can provide information on the severity of the condition. Where there is diagnostic doubt a laparoscopy may be useful to exclude alternative pathologies.

Additional diagnostic tests include:

- Transvaginal ultrasound scanning may be helpful where there is diagnostic difficulties
- Bloods: FBC, ESR and CRP
- Microbiological

Women with suspected PID should be screened for gonorrhoea and chlamydia as a positive result strongly supports the diagnosis of PID, but the absence of infection at this site does not exclude PID. Swabs should include:

- High Vaginal Swab (HVS)
- Vulvovaginal swab for chlamydia and gonorrhoea (using NAAT)
- Endocervical culture for gonorrhoea

Outpatient Treatment

In mild or moderate PID (in the absence of a tuboovarian abscess), there is no difference in outcome when patients are treated as outpatients or admitted to hospital. 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 ectopic pregnancy, subfertility and pelvic pain.

Outpatient antibiotic regime:

- IM Ceftriaxone 1g as a single dose

Followed by:

- PO Doxycycline (100mg BD) for 14 days

Plus

- PO Metronidazole 400mg BD for 14 days

Alternative outpatient regime (if cephalosporin or severe penicillin allergy):

- Oral ofloxacin 400mg twice daily for 14 days

Plus

- Oral metronidazole 400mg twice daily for 14 days

Ofloxacin and moxifloxacin should be avoided in patients who are at high risk of gonococcal PID because of increasing quinolone resistance in the UK.
Quinolones are not licensed in under 18s
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 partners, reinforced with clear and accurate written information. This includes the need for abstinence until the course of treatment is completed and partner notification and treatment.

Inpatient Treatment

Admission to hospital may be appropriate in the following circumstances:

- Surgical emergency cannot be excluded
- Clinically severe disease
- Tuboovarian abscess
- PID in pregnancy
- Lack of response to oral therapy
- Intolerance to oral therapy

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.

Recommended regime:

- Ceftriaxone 2g IV OD

Plus

- Doxycycline 100mg BD (oral if tolerated)

To be continued until 24 hours after clinical improvement and then followed by:

- Doxycycline 100mg BD for 14 days

Plus

- Metronidazole 400mg BD for 14 days

If cephalosporin or severe penicillin allergy:

- Oral ofloxacin 400mg BD for 14 days

Plus

- Oral metronidazole 400mg BD for 14 days

If nil by mouth discuss with microbiology

Treatment in Pregnancy

A pregnancy test should be performed in all women suspected of having PID to help exclude an ectopic pregnancy. In an intrauterine pregnancy, PID is extremely rare, except in the case of septic abortion. Cervicitis may occur, however, and is associated with increased maternal and fetal morbidity.

The risk of giving any of the recommended antibiotic regimens in very early pregnancy (prior to a positive pregnancy test) is low. Empirical treatment should be IV initially and switch to oral to complete 14 days with treatment regimens dependent upon the organisms isolated.

Drugs known to be toxic in pregnancy should be avoided e.g. tetracyclines (including doxycyline), gentamicin and ofloxacin. Erythromycin, clindamycin and amoxycillin are not known to be harmful in pregnancy.

Treatment in young women

Ofloxacin should be avoided in young women when bone development is still occurring. BNF currently recommends that ofloxacin can be used in children where other options are limited. 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. The risk of pregnancy in those who have otherwise unprotected intercourse in the preceding 7 days may need to be discussed in individual cases.

An IUCD only increases the risk of developing PID in the first 4-6 weeks after insertion.

Other modes of treatment

Surgical treatment: should be considered in severe cases or where there is clear evidence of a pelvic abscess. (See Tubo-ovarian abscess section)

Management of sexual partners of women with PID which may be sexually acquired

Referral of the index patient and her current partner(s) to a genito-urinary medicine clinic is recommended, to facilitate contact tracing and infection screening.

Recent sexual partner(s) (within six months of onset of symptoms) are recommended to be offered screening, tracing of contacts and treatment

Patients should be advised to avoid intercourse until they and their partners have completed the treatment course. Gonorrhoea diagnosed in the sexual partner should be treated appropriately and concurrently with the index patient. Concurrent empirical treatment for chlamydia is recommended for all sexual contacts due to the variable sensitivity of current available diagnostic tests. If adequate screening for gonorrhoea and chlamydia in the sexual partner is not possible, empirical therapy for both gonorrhoea and chlamydia should be given.

Review of patients with PID

It is recommended that patients should be reviewed in the outpatient setting at 72 hours after commencing antibiotic treatment, particularly those with a moderate or severe clinical presentation. Failure to improve suggests the need for further investigation, parenteral therapy and or surgical intervention.

Further review four weeks after therapy may be useful to ensure:

- Adequate clinical response to treatment
- Compliance with oral antibiotics
- Screening and treatment of sexual contacts
- Awareness of the significance of PID and its sequelae

Repeat testing for chlamydia may be appropriate in those in whom persisting symptoms, compliance with antibiotics and/or tracing of sexual contacts indicate the possibility of persistent or recurrent infection (this should be carried out >5 weeks following treatment or 6 weeks if azithromycin is used). Repeat testing for gonorrhoea may be indicated for the reasons given above or in the event of an antibiotic resistant strain (this should be carried out >72 hrs after completion of treatment). If a patient has been treated for Chlamydia with erythromycin (e.g. in pregnancy) then repeat swabs should be taken 3 weeks after completion of treatment to check for clearance.

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.

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*.

The use of the combined oral contraceptive pill has usually been regarded as protective against symptomatic PID. Studies have shown an increased incidence of asymptomatic cervical infection with *C. trachomatis.* This has led to a suggestion that the oral contraception may mask endometritis. Women using the oral contraceptive pill should be warned that its effectiveness may be reduced when taking antibiotic therapy.

Tubo-Ovarian Abscess

Tubo-ovarian abscess (TOA) is a recognised complication of untreated PID although it can also be a complication of intra abdominal infection by direct or haematogenous spread. It is an inflammatory mass encompassing the ovary and tube with the presence of pus and can occasionally encompass the bladder or bowel.

Risk factors

- Reproductive age group
- Non use of barrier contraception
- IUCD
- Previous PID
- Earlier age at first intercourse
- Multiple sexual partners
- Diabetes mellitus
- Immunocompromise
- There is a risk of TOA in women having oocyte retrieval with endometriomas – risk low enough not to advise prophylactic antibiotics
- Older women are more likely to have a larger abscess/raised inflammatory markers
- More severe disease is seen with co-existing endometriosis

Diagnosis

Usually based on clinical history and a number of clinical findings:

- Abdominal pain/ tenderness
- Adnexal tenderness +/- palpable mass
- Cervical excitation
- Vaginal discharge
- Pyrexia (fever and diarrhoea are more common in TOA than PID)Raised inflammatory markers
- Imaging suggestive of abscess

Investigations

- Biochemistry- FBC, CRP, ESR
- Microbiology – as per PID investigation

Imaging

- Transvaginal USS
  - Complex solid/cystic mass which can be unilateral or bilateral
  - Incomplete septae within the tube walls is a sensitive sign of a tubal abscess
- CT scan - consider if there is suspicion of gastro intestinal pathology
- MRI – Has a higher sensitivity and specificity than ultrasound and may be useful if the diagnosis is uncertain

Management

Initial treatment

- IV access, fluids and broad spectrum antibiotics (as per sepsis pathway)

IV antibiotics

- If clinically stable treat with IV antibiotics as per severe PID regimenClinical improvement is seen in up to 70% although recurrence is high.
  - **Poor prognostic factors for medical treatment include; abscess size >5cm, age >40yrs, higher initial WCC, and smoking**
- Consider early recourse to radiological drainage or surgery if patient does not show clinical improvement or shows clinical deterioration

Ongoing care

- At least 4 hourly observations/ NEWS chart
- Daily FBC/CRP until clinical improvement
- Daily senior review
- Consider indwelling catheter and fluid balance chart depending on severity

Image guided drainage or aspiration

- If there is no clinical improvement despite IV antibiotic (after 24-48 hours), the case should be discussed with interventional radiology for consideration of abscess drainage
- For single small unilateral abscesses tranvaginal aspirate is first line and has a high success rate
- Larger, multilocular or bilateral abscess may require a catheter and has a lower (80%) success rate
- 6.8% of cases will go on to require surgery

Surgery

Is usually considered with minimal clinical improvement after 24-48 hrs of IV antibiotics

- Either Laparoscopy or laparotomy can be considered
- The abscess should be drained as fully as possible and thorough pelvic lavage performed .
- Apirated fluid should be sent for microbiology
- There should be a low threshold for insertion of a pelvic drain
- Adnexal surgery in the form of salpingo-oophorectomy or salpingectomy may be necessary
- A lower threshold for surgery should be considered in postmenopausal women due to the possibility of an underlying malignancy
    - Incidence of TOA in postmenopausal women = 1.7% of all TOAs
    - Incidence of underlying malignancy up to 47% in this group

Post surgery

- Continue IV antibiotics after surgery and until clinical improvement is seen and switch to oral treatment can be done
- *Further imaging and microbiological discussion may be required if signs of sepsis continue*

Pregnancy

This is a very rare presentation which can lead to miscarriage, pre term labour, chorioamnionitis, and fetal or maternal death. MRI may be helpful in diagnosis. Surgical management (which has a risk of miscarriage) or early delivery may be necessary in severe cases not responding to antibiotic therapy.

IUCD

Removal may give better short-term outcomes however this needs to be balanced against the risk of unwanted pregnancy if unprotected intercourse occurred within 5 days. Removed IUCDs should be sent to microbiology due to a relationship with **actinomyces** – a chronic suppurative condition associated with multiple abscess formation, granulation and fibrosis formation. The abscess may have a solid appearance on ultrasound and responds well to penicillin.

Long term complications

Chronic pain

- Affects up to one third
- No difference between those treated conservatively or surgically

Subfertility

- 32-63% of women achieved pregnancy following laparoscopy plus drainage vs 4-15% following antibiotics alone therefore surgical treatment should be considered for women who wish to conserve fertility

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