

Clinical Algorithms

Pelvic inflammatory disease

M J HARE

Women suffering from pelvic inflammatory disease usually present with lower abdominal pain, odd vaginal discharge, secondary dysmenorrhoea, menstrual upset, or dyspareunia. To make an accurate clinical diagnosis and eliminate other possible causes of lower abdominal pain the symptoms, signs, and possible predisposing factors must be carefully assessed. Especially relevant are the wearing of an intrauterine contraceptive device and known current infection with sexually transmitted disease in the woman or her sexual partners. Recurrence of pelvic inflammatory disease is common, but great care must be taken to differentiate true recurrence from the periodic bouts of chronic lower abdominal pain without reinfection that are experienced by nearly 20% of women after their attack.¹

Diagnosis

Even when made by an experienced gynaecologist the diagnosis of acute pelvic inflammatory disease is correct in only two thirds of cases.² Symptoms are often unreliable, and, unless three or more of those listed in the algorithm are present, in addition to abdominal pain and dyspareunia, the diagnosis remains uncertain. Signs are more useful, but at least three should be elicited.

Because of the difficulty of making an accurate clinical diagnosis many doctors in Scandinavia and America believe that this should be confirmed by routine laparoscopy. This procedure is relatively safe, has no adverse effects on the course of the disease, and, when the diagnosis is mistaken, may disclose such conditions as acute appendicitis, ectopic pregnancy, and ovarian tumour.² Laparoscopy also enables specimens for microbiological investigation to be taken cleanly and directly from the fallopian tubes and pouch of Douglas, giving more chance of a positive culture than specimens obtained from the lower genital tract or by culdocentesis.³ Most British gynaecologists, however, are reluctant to subject their patients to laparoscopy as a routine procedure and reserve it for selected cases. These should include cases in which the diagnosis is in doubt, women who are ill with severe infection, and possibly older women, in whom the likelihood of endometriosis, ovarian neoplasia, and scarring from previous disease is higher.

If antibiotic treatment is started without laparoscopy being performed there should be a substantial improvement within 48 hours. If this does not occur laparoscopy becomes mandatory to confirm the diagnosis. Should a tubo-ovarian abscess be present at diagnosis or develop during treatment then laparotomy may be needed. At laparoscopy or laparotomy the features present include hyperaemia and oedema of the fallopian tubes, which are usually

covered by a purulent exudate that may also be seen oozing from the tubal ostia if these are not blocked. An abscess may be present.

Types of pelvic inflammatory disease

Active pelvic inflammatory disease—that is, where the disease is stimulated by a viable micro-organism—may be divided into primary, secondary, recurrent, and chronic forms.

Primary infection occurs when the intact and uncompromised cervical barrier is breached by a virulent organism, usually sexually transmitted, such as *Neisseria gonorrhoea* or *Chlamydia trachomatis*. Once the genital tract has been overwhelmed by a primary infection the cervical barrier seems no longer to be able to keep at bay the virulent organisms that usually colonise the vagina, and secondary colonisation occurs within a few days.⁴

Secondary infection may also be due to termination of pregnancy, miscarriage, childbirth, or other trauma (including surgery), and, in older women, the presence of malignant disease. The presence of an intrauterine contraceptive device renders a woman up to 10 times more likely to develop pelvic inflammatory disease, and this is best considered as a secondary infection. Although some older devices (notably the Dalkon shield, which has now been withdrawn) were particularly bad, any type of device may be responsible. The rare actinomycotic pelvic inflammatory disease is almost entirely confined to women wearing intrauterine contraceptive devices. Rarely, the cervix and uterus are not affected, and tubal infection results from spread from a site in the abdomen such as the appendix.

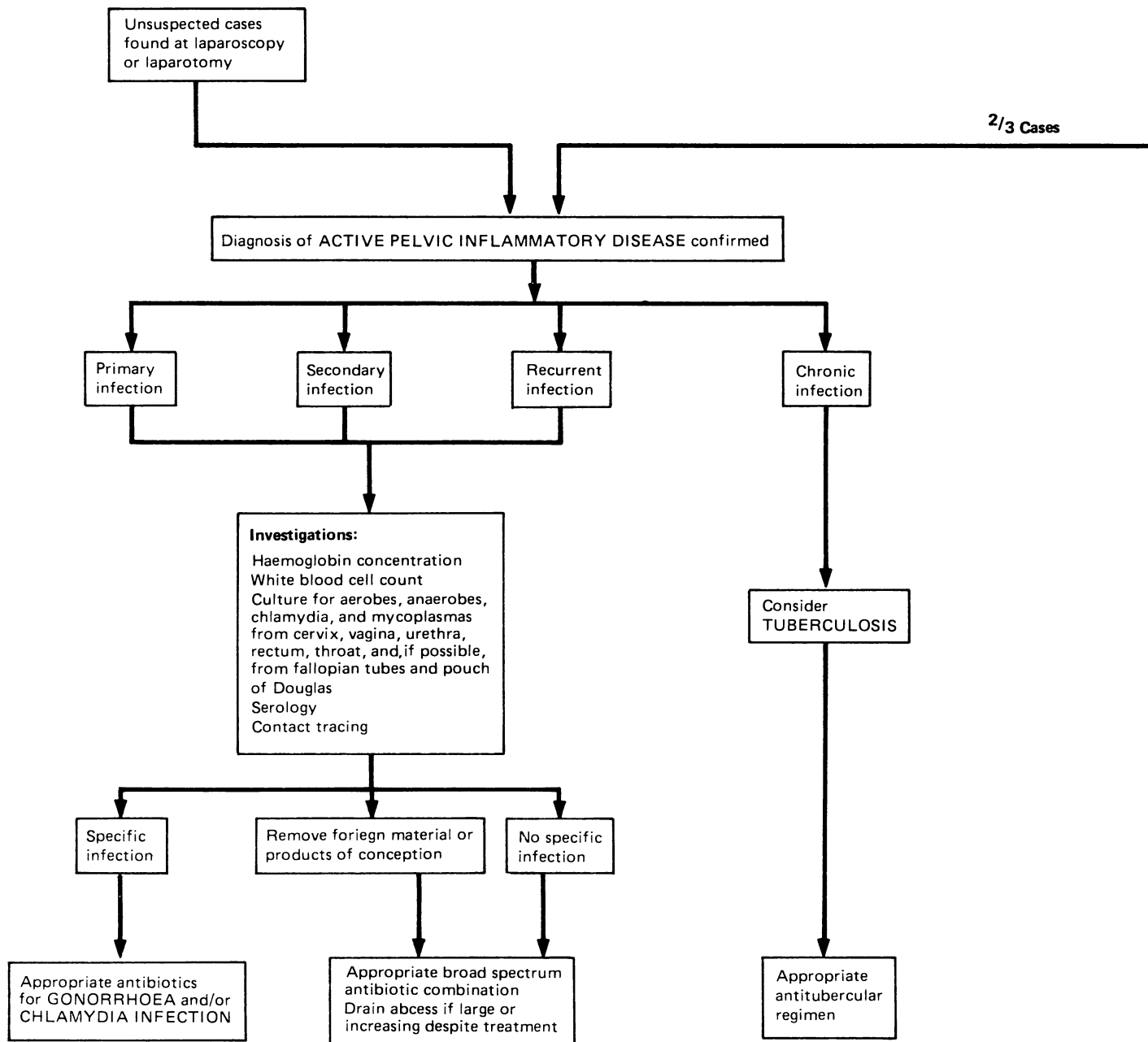
Once damaged, the genital tract often fails to recover fully its protective mechanisms, and a large proportion of women have recurrent attacks, usually caused by organisms harboured in their own vaginas or rectums.

True chronic disease occurs only with tuberculosis and some tropical infections—for example, schistosomiasis.

Microbiological investigations

Specimens for microbiological assessment should be taken from the cervical canal, urethra, and vagina, and, if sexually transmitted disease is possible, from the rectum and throat. Culdocentesis (sampling of the pouch of Douglas by needle aspiration through the posterior vaginal fornix) may be performed, but more reliable tests are obtained by direct sampling of the tubal ostia and the pouch of Douglas at laparoscopy or laparotomy. Ideally, all these specimens should be set up for aerobic and anaerobic bacterial culture and specifically for gonococci, mycoplasmas, and chlamydia. Micro-immunofluorescence may be preferred to culture for some of the tests. All of this entails a considerable amount of laboratory work, and, if applied routinely, it would be extremely extravagant. Clinical judgment must therefore be used. Screening for chlamydia and gonococci is much more important in young and promiscuous women. A search for anaerobes is mandatory in women wearing intrauterine contraceptive devices, women who have recently been

Symptoms:
Abdominal pain and dyspareunia
Increased vaginal discharge
Fever
Irregular vaginal bleeding
Urinary symptoms
Nausea and vomiting
Symptoms of proctitis



Pelvic inflammatory disease

Signs:
 Bimanual tenderness
 Cervical excitation
 Bimanual mass
 Obvious vaginal discharge
 Pyrexia

Predisposing factors:
 Intrauterine contraceptive device
 Previous attacks
 Patient or consort has sexually transmitted disease

Clinical diagnosis of pelvic inflammatory disease

Confirmation of diagnosis is by laparoscopy for all or selected cases or by laparotomy if large mass present

1/3 Cases

Diagnosis of active pelvic inflammatory disease not confirmed

Pain due to scar tissue from old pelvic inflammation

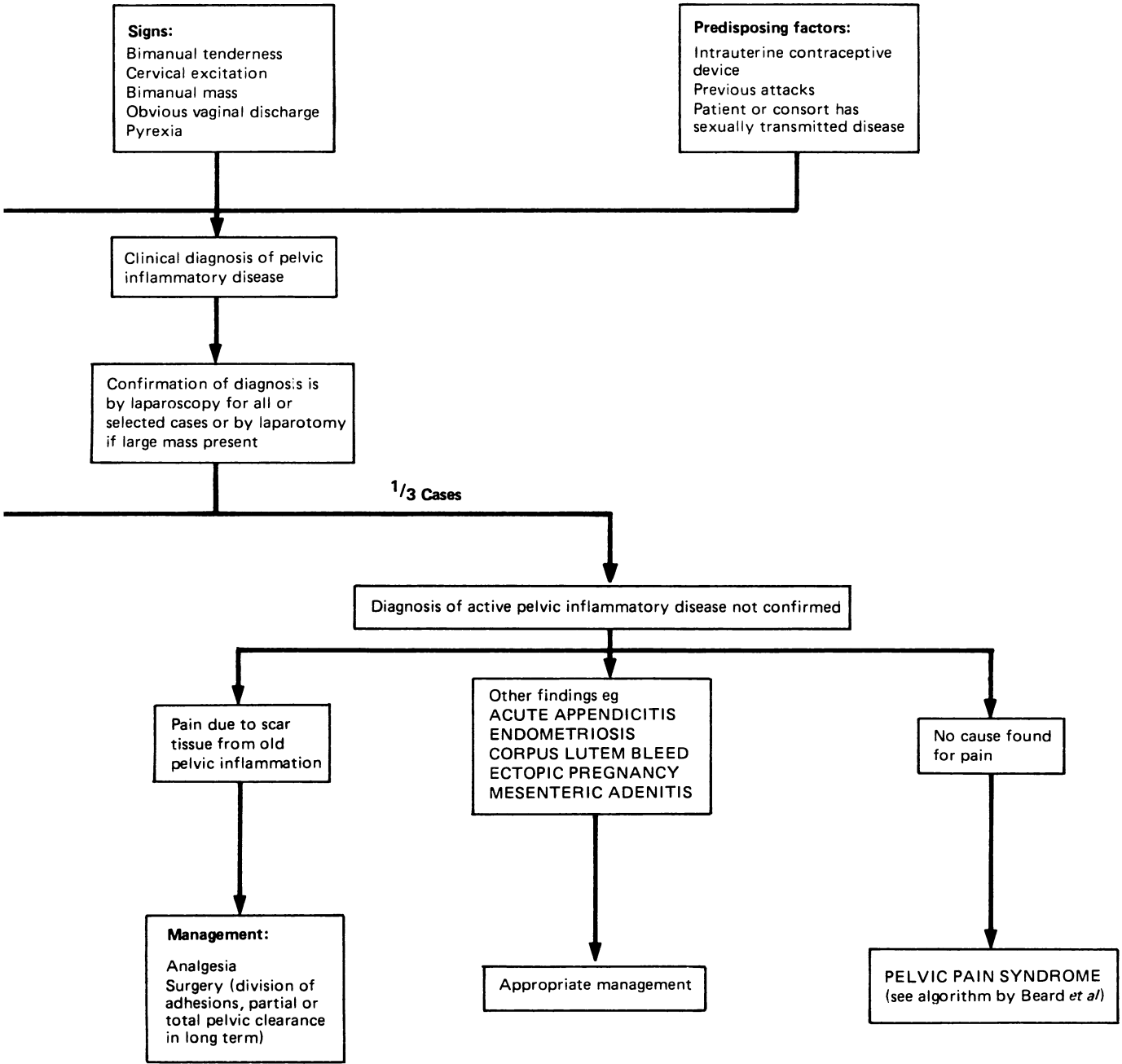
Other findings eg
 ACUTE APPENDICITIS
 ENDOMETRIOSIS
 CORPUS LUTEM BLEED
 ECTOPIC PREGNANCY
 MESENTERIC ADENITIS

No cause found for pain

Management:
 Analgesia
 Surgery (division of adhesions, partial or total pelvic clearance in long term)

Appropriate management

PELVIC PAIN SYNDROME
 (see algorithm by Beard *et al*)



pregnant, and women with severe or longstanding disease. Serological tests may give retrospective information which is useful for research, but this rarely helps clinical management, as sequential specimens are needed. Contact tracing is vital in all cases and often gives information about the infection which cannot be obtained by investigating the woman herself.⁵

Treatment

Treatment should be started at diagnosis without waiting for full culture results, although the results of Gram stained smears and rapid immunofluorescence methods should be available. Intrauterine contraceptive devices may need to be removed, although the risk of pregnancy must be considered. Women who have recently been pregnant may have a focus of anaerobic infection in retained products, which must be removed by curettage under antibiotic cover. If a sexually transmitted organism is identified or suspected then a tetracycline or erythromycin should be used for chlamydia, and a penicillin or spectinomycin for *N gonorrhoea*.

In most cases the organism will not be known and treatment must be started on an empirical basis. No single antibiotic provides adequate cover,⁶ and double or triple treatment must be used. For

outpatient management a tetracycline—for example, oxytetracycline 500 mg six hourly—and metronidazole 400 mg eight hourly are adequate, but for ill women in hospital a penicillin—for example, crystalline penicillin 20 mega units daily intravenously—gentamicin (appropriate dose for patient's weight), and metronidazole (1 g 12 hourly via the rectum) give a quicker initial response. This regimen will not eradicate chlamydia, and so after three to five days treatment should be changed to the tetracycline and metronidazole regimen. Total treatment should last at least 14 days.

References

- 1 Westrom L. Effect of acute pelvic inflammatory disease on infertility. *Am J Obstet Gynecol* 1975;121:707-13.
- 2 Jacobson L, Westrom L. Objectivized diagnosis of acute pelvic inflammatory disease. *Am J Obstet Gynecol* 1969;105:1088-98.
- 3 Sweet RL, Mills J, Hadley KW, et al. Use of laparoscopy to determine the microbiologic etiology of acute salpingitis. *Am J Obstet Gynecol* 1979;134:68-74.
- 4 Paavonen J, Valtonen VV, Kasper DL, Malkamaki M, Makela PH. Serological evidence for the role of *Bacteroides fragilis* and enterobacteriaceae in the pathogenesis of acute pelvic inflammatory disease. *Lancet* 1981;ii:293-5.
- 5 Meheus AZ. Surveillance, prevention and control of sexually transmitted agents associated with pelvic inflammatory disease. *Am J Obstet Gynecol* 1980;138:1064-70.
- 6 Bell TA, James JF. Computer assisted analysis of the therapy of acute salpingitis. *Am J Obstet Gynecol* 1980;138:1048-54.

Medicine and the Media

A MAJOR TOPIC at recent dinner parties has been the awfulness of the British press: tales of repeatedly swapping one paper for another all conclude with the lack of any escape from the meretricious, the shallow, and the sensational. Are these just petulant anecdotes and any decline more apparent than real? I don't think so: there is the bewilderment of my franker American friends at what on earth has happened to our newspapers (and at least four great newspapers in the USA show that declining standards are not inevitable), and a look at British newspapers 20 or 30 years ago show what many people still want—accuracy, balance, and style, all based on deep background knowledge.

Perhaps the decline in our newspapers has to be accepted as yet another index of the downhill slide in Britain generally. But the launching on 7 October of a new daily, the *Independent*, raised the question of whether it could fill a gap, enabling me to start reading a daily paper again, instead of relying on the radio for news and the superb trio of the *Listener*, *Economist*, and *Times Literary Supplement* for comment and entertainment. I believe that the *Independent* is a major advance, well justifying its launch, and am now reading it regularly; it still has flaws, but, given that it is only a month old, these are far outweighed by its virtues.

Let's dispose of the minor points first. Foremost among these are the editorials, the politest description of which is lacklustre; they badly need rigour of argument and correction of a jerky prose style. Some of the five pages for city news (horrendously enlarged on Saturdays) and three for sport, with another one for a scrappy court circular and social, could surely be allocated better, say, to enlarge the skimmed treatment of the arts or to develop a weekly page devoted to science. And the daily "Going out" feature telling you what's on is too selective and patchy to help somebody who, say, wants to know all the concerts that are on that evening.

On the plus side the layout is clear and bright and the text largely free from typos; the coverage of foreign news is extensive, and there is a good daily book review as well as the weekly book page. Medicine has been treated well, though my heart sank on the first day when we had a ritual piece of doctor bashing by Caroline

Faulder on the unheard victims of breast cancer. Loosely based on the King's Fund consensus conference, this did little to explore the recommendations of the consensus and more importantly how they might be implemented. We know how dreadful breast cancer can be and we know that things often don't go right, but we don't know how to move from where we are to where the consensus conference thought we ought to be. An internationally oriented paper like the *Independent* should also have considered the recent American consensus conference on breast cancer. And how many of the newspaper's readers understand why we need consensus conferences?

Since then, however, things have looked up, with full coverage of the hidden advertising of cigarettes on television (as well as the way the industry was breaking the voluntary agreement), the development of psychiatric ghettos on the south coast, and the BMA's report on cervical cancer, among others. Nick Timmins's article on waiting lists acknowledged the costs and penalties of higher throughput of hospital beds, and for once we were spared the accusation that waiting lists were created by selfish consultants intent on private practice fees; full marks, too, for the acknowledgment of the source of the graphics. Oliver Gillie's recent middle page piece on AIDS hammered home two messages—the increasing risk to heterosexuals, and the emphasis any government campaign should put on prophylaxis with condoms. And on 31 October by discussing the background to denying a named patient haemodialysis in the health service Gillie may have done more to remind the public of Britain's position well down the international league than many recent campaigning pronouncements.

Finally, I am glad that the paper has started in a campaigning spirit. The account of two reports documenting Britain's decline in scientific research was juxtaposed with a summary of an important lecture on the same theme at the Royal Society of Chemistry, as well as a question and answer session on the subject at a House of Lords committee meeting. There was a marvellous page of pictures (and how good the photographs are in general) on the British housing crisis, as well as articles on two successive days, which did not