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Chronic pelvic pain: clinical dilemma or clinician's nightmare

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Chronic pelvic pain is a common problem presenting a major challenge to healthcare professionals. This is partly due to the lack of understanding of the aetiology and natural history of the disease. This condition is best managed using a multidisciplinary approach. In recent years, the emphasis in the clinical management has tended towards psychosocial or psychosexual involvement after organic disease has been excluded.

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Introduction

Chronic pelvic pain (CPP) is a serious problem affecting the lives of many women during their child bearing years. It is a recognised long term morbidity of sexually transmitted infections and pelvic inflammatory disease. The differential diagnosis of the underlying aetiology often involves both psychological and organic factors. The management of CPP constitutes a major challenge to the clinician mainly because of our lack of understanding of its natural history, aetiology, and pathogenesis.

The aim of this descriptive review is to identify the wide range of aetiological factors for CPP in order to illustrate the dilemma facing clinicians in investigating and managing this condition.

Literature search

Electronic Medline search for all relevant articles on CPP between 1980 and 1999 was performed by one of the authors (AFFG). The search terms used were “dyspareunia,” “dysmenorrhoea,” and “pelvic/abdominal pain.” Other key words used in the search included “endometriosis,” “pelvic inflammatory disease,” “pelvic adhesions,” “irritable bowel syndrome,” “gastro-intestinal symptoms,” “genito-urinary pain/pelvic congestion,” and “urological pain.” The search was confined to articles published only in the English language.

Definition of CPP

One of the main problems with CPP is that there is a wide variety of recognised definitions for this condition and they are all subject to different interpretations and misunderstanding. This also makes appraisal and comparison of research data in the literature difficult. The

International Association for the Study of Pain (IASP)¹ defines CPP as chronic or recurrent pelvic pain that has a gynaecological origin but for which no definite lesion or cause is found. One of the criticisms of this definition is that it implies absence of pathology, which may not be the case. Reiter² defined CPP as non-cyclical pelvic pain of greater than 6 months' duration which is not relieved by narcotic analgesia. It is, however, debatable whether non-cyclical in the above definition means continuous pain or pain with certain frequency and not related to the menstrual cycle. The duration of 6 months as a criterion for the above definition is also rather arbitrary. It has been suggested that a shortened duration of 3 months may be more applicable and be more easily remembered by the patient.³

Incidence

CPP is the second most common gynaecological presenting complaint and it accounts for 13%–20% of gynaecological consultations and up to 52% of diagnostic laparoscopy.² It also represents a significant percentage of patients attending genitourinary medicine clinics with upper genital tract complaints.

In the United States, 12%–16% of hysterectomies were performed for CPP and the overall financial cost has been estimated to exceed \$2 billion annually.² The personal cost to the woman in terms of physical and mental morbidity, relationship disharmony, and work absenteeism cannot be calculated (table 1).

Aetiology

There are many aetiological factors that can contribute to CPP. It is not uncommon to find that more than one aetiological factor may be

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Table 1 Costs to society from chronic pelvic pain

	Healthcare and employment cost	Personal cost
United Kingdom	Total NHS annual cost = £154.8 million Approximately 0.6% of total NHS expenditure Cost due to work absenteeism	Unsuccessful medical intervention Social (loss of employment/absenteeism) Psychological/psychiatric illness Psychosexual Others
United States	Total annual healthcare cost >\$2 billion ² Direct cost of medical consultations \$9 million per annum	

present in a single case and both organic and non-organic causes may coexist. Table 2 shows the various recognised aetiological causes for this condition.

GYNAECOLOGICAL CAUSES

Pelvic inflammatory disease

Pelvic inflammatory disease (PID) is not uncommonly seen in women attending the genitourinary medicine clinic. It results from acute inflammation caused by micro-organisms colonising the endocervix ascending to the endometrium, fallopian tubes, and ovaries. PID is a clinical diagnosis implying that the patient has upper genital tract infection. It involves cervicitis and progresses to endometritis and eventually salpingo-oophoritis. Hager *et al*¹ have also proposed a set of clinical criteria to enhance the accuracy of the diagnosis and severity of PID. Most cases of pelvic inflammatory disease are caused by sexually transmitted organisms, such as *Chlamydia trachomatis* and *Neisseria gonorrhoeae*. Chlamydia infection may be asymptomatic and the resulting salpingitis is often referred to as “silent pelvic inflammatory disease.” Endogenous micro-organisms found in the vagina, particularly the bacterial vaginosis micro-organisms (for example, *Prevotella*, *Gardnerella vaginalis*), are often also isolated from the upper genital tract of women with PID. On a worldwide perspective, other organisms such as *Mycobacterium tuberculosis* and schistosomiasis are blood borne organisms that can also cause PID.

The mechanism of CPP following PID is likely to be related to the scarring, tissue damage, and adhesions resulting from it. The nerves to the intra-abdominal pelvic organs and contiguous structures can be damaged or the structures can adhere in such a way that painful stretching is produced by activities such as exercise, sexual intercourse, or passage of food through the bowel.³ A study conducted by Heisterberg² found that women with previous PID complained more of dyspareunia (14% versus 3% respectively) and CPP (6% versus 0.4% respectively) compared with controls.

Table 2 Organic/non-organic “psychological” causes of pelvic pain

Gynaecological	Pelvic inflammatory disease Endometriosis Peritoneal adhesions Others, eg pregnancy complications, ectopic pregnancy Ovarian remnant syndrome
Gastrointestinal	Irritable bowel syndrome Diverticulitis Regional ileitis Others, eg chronic appendicitis
Urological	Urethral syndrome Interstitial cystitis Others, eg pelvic kidney, renal calculi
Musculoskeletal/neurological	Nerve entrapment Myofascial pain (“trigger points”) Low back pain syndrome
Psychological	Physical and/or sexual abuse Depression Anxiety Child abuse Rape Others, eg personality disorder

Pelvic congestion syndrome

Pelvic congestion syndrome can be defined as dilated pelvic veins with delayed disappearance of dye and is a common finding in women with no apparent cause for their pelvic pain.⁶ If congestion is sufficiently severe, then it is likely that pain will develop. Standing for long periods of time will increase pelvic congestion and hence pain in these women. Reginald *et al*⁶ have shown that a 30% reduction in pain can be achieved following the intravenous administration of the selective vasoconstrictor, dihydroergotamine. Pelvic congestion is largely confined to women in their reproductive years, and therefore it seems likely that ovarian hormones, probably oestrogen, are the cause of dilated pelvic veins in these women.

Endometriosis

Endometriosis is characterised by the presence and proliferation of functional endometrial tissue containing both glands and stroma in sites outside the endometrial cavity. The most frequent sites of implantation are the pelvic viscera and peritoneum. On the other hand, adenomyosis is characterised by the presence of endometrial glands within the myometrium and this can also cause chronic pain, especially dysmenorrhoea.

There is no single theory that can explain all clinical cases of endometriosis. The mechanism of chronic pain from this condition is far from clear and it probably involves not only release of prostaglandins to the peritoneal surfaces by the products of menstruation but also by swelling and stretching of the tissue as well as nerve damage secondary to scarring that occurs around the implants.⁸ Endometriosis seems to be common among middle class women between the ages of 30 and 45 years. The symptoms may range from deep dyspareunia, dysmenorrhoea, and constant pelvic pain.

Peritoneal adhesions

Pelvic peritoneal adhesions can sometimes be responsible for pelvic pain although they are often asymptomatic. A single adhesion band which is under tension is likely to cause pain in certain positions or during movement. While peritoneal adhesions are usually asymptomatic, they can cause pain, particularly when they are extensive and involve sensitive structures like the ovary.⁹ Adhesions are usually a complication of PID, endometriosis, appendicitis, peritonitis, and/or previous pelvic surgery. The degree and the characteristic of the pain from adhesions therefore depend on its extent and location.

Other gynaecological causes such as ovarian remnant syndrome, ovarian cyst, and retroverted uterus

Ovarian remnant syndrome is sometimes seen in patients following hysterectomy and bilateral salpingo-oophorectomy for severe endometriosis or pelvic inflammatory disease. Ovarian remnant syndrome results from residual ovarian cortical tissue that is left in situ after difficult surgical dissection during oophorectomy.¹⁰ The patient usually has had multiple

pelvic operations with the uterus and adnexa removed sequentially. Ovarian cysts can also cause unilateral pelvic pain. An acutely retroverted uterus can sometimes contribute to the pelvic pain syndrome. However, there is still no convincing evidence that ventrosuspension is effective in relieving such symptoms.

GASTROENTEROLOGICAL CAUSES

A significant proportion of woman with CPP can subsequently be found to have a gastrointestinal disorder, either pathogenic or functional. The location of the referred pain from the gastrointestinal tract overlaps that of the reproductive organs.

Irritable bowel syndrome

This is one of the most common causes of lower abdominal pain and may account for up to 60% of referrals to the gynaecologist for CPP.¹¹ The exact cause of irritable bowel syndrome is still unknown although visceral hypersensitivity or hyperalgesia has been postulated as a possible cause for the pain.¹² Patients with this syndrome have pain which is associated with smaller bowel distention volume compared with controls.¹³

Other gastrointestinal causes such as chronic appendicitis, diverticulitis

Chronic inflammatory conditions involving the gastrointestinal tract such as appendicitis with an atypical presentation and diverticulitis can also occasionally present as CPP.¹⁴

UROLOGICAL CAUSES

Urethral syndrome

Urethral syndrome is a complex of various symptoms such as dysuria, frequency and urgency of urination, suprapubic pelvic discomfort, and dyspareunia. The diagnosis is usually made by excluding any abnormality in the urethra or bladder. The cause of urethral syndrome is uncertain but it has been attributed to subclinical infection, urethral obstruction, cold, stress, and psychogenic and allergic factors.

Interstitial cystitis

Interstitial cystitis is a chronic non-bacterial inflammation of the bladder. Hypersensitivity or hyperalgesia has been postulated as the cause of the pain although the underlying aetiology remains unclear.¹⁵

NEUROLOGICAL AND MUSCULOSKELETAL CAUSES

Nerve entrapment

Nerve entrapment usually follows an abdominal cutaneous nerve injury. Entrapment may occur spontaneously or within weeks to years after transverse suprapubic or laparoscopic skin incisions.¹⁶ The ilioinguinal or iliohypogastric nerves may become trapped between the transverse and the internal oblique muscles, especially during muscular contractions. Alternatively, the nerve may be ligated or traumatised during surgery. The clinical picture is usually suggestive of long term postoperative symptoms with an onset following surgery.

Myofascial pain

Myofascial syndrome has been documented in approximately 15% of patients with CPP.¹⁷ Slocumb has termed certain spots in the abdominal wall as "trigger points."¹⁸ Trigger points are believed to be initiated by pathogenic autonomic reflex of visceral or muscular origin and can sometimes be observed during examination. The sites of the referred pain from trigger points are in a dermatome section and are the result of nerves from the muscle or deeper structures sharing a specific neuron in the spinal cord. Injections of local anaesthetics into these painful points can temporarily obliterate the pain. Trigger points are often present in woman with CPP, irrespective of the presence or type of the underlying pathology. In a conducted study by Slocumb,¹⁸ trigger points were present on the abdomen in 89%, vagina in 71%, and sacrum in 25% of cases.

Other aetiological factors may also contribute to this symptom. These include psychological, hormonal, and biomechanical factors which are believed to predispose the patient to chronic myofascial syndrome when pathology is absent.

Low back pain syndrome

Low back pain may accompany gynaecological pathology and pelvic pain. The underlying aetiology can involve vascular, neuralgic, psychogenic, or musculoskeletal causes.

NON-ORGANIC (PSYCHOSOCIAL) CAUSES

There are many observational studies suggesting that women with pelvic pain are significantly more likely to have histories of depression, somatisation, sexual and physical abuse, and chronic psychological distress compared with controls.¹⁹ Childhood sexual and physical abuse have also been shown to subsequently lead to somatisation, anxiety, and depression. The intensity of these psychosocial sequelae also appears to be correlated with the duration and severity of the abuse.²⁰ When organic disease has been excluded, these patients often have a characteristic psychological pattern: sad childhood, lack of parental interest and affection. Resentment is generally directed primarily against the patient's mother who is often perceived as having a negative attitude towards sexuality.²¹ The patient's marital and/or sexual relationship has often been unsuccessful with various psychosexual dysfunctions such as loss of libido, lack of orgasm, and dyspareunia. Russo *et al*²² have shown that the number of non-organic causes of pelvic pain is linearly correlated with both the number of lifetime anxiety disorders, agoraphobia, and the degree of neuroticism. Walker *et al*²³ highlighted the importance of recognising that medically unexplained physical symptoms may be a proxy for psychiatric distress. They emphasised that a simple review of various medical systems may be a convenient tool to provide an estimate of the degree of psychopathology which would provide a balance of the medical and psychological therapy offered to these patients. The following psychological and/or psychiatric conditions are not uncommonly found.

Depression

Pain and depression can be closely linked together. Both may be mediated by the same neurotransmitters such as noradrenaline (nor-epinephrine), serotonin, and endorphine.²⁴ They also give rise to similar behaviour, such as behavioural and social withdrawal with limited interaction. Depression was found to predate the symptom of pain in 75% of cases.²⁴ Nolan *et al*²⁵ found that 51 (72%) out of 71 patients with pelvic pain reported sleep disorders and 37 (51%) out of 72 patients were clinically depressed as determined by the Beck Depression Inventory. Slocumb *et al*²⁶ found gynaecological patients with pelvic pain to be more anxious, depressed, hostile, and had more somatic symptoms than controls. Although there appears to be an association between chronic pelvic pain and depression, in many cases it is still unclear as to whether the depressive symptoms precede the development of pain or result from it.

Somatization disorders

Patients with CPP have an increased incidence of upper abdominal pain, diarrhoea, constipation, low back pain, dyspareunia, dysmenorrhoea, nausea, bloating, breathlessness, dizziness, weakness, and menstrual irregularity.²⁷ There is also an association between somatisation and a history of sexual trauma in women with non-somatic pelvic pain.¹⁹

Physical and sexual abuse

Childhood physical and sexual abuse has been noted to be more prevalent in women with CPP compared with those with other types of pain and control groups (52% versus 12% respectively).²⁸ There is a specific association between major sexual abuse and CPP and a more general association between physical abuse and chronic pain.¹⁹ Walker *et al*²⁹ found that women with pelvic pain who had a previous history of sexual abuse had a significantly higher risk for having a current diagnosis of major depression and somatiform pain disorder compared with those with no abuse or less severe abuse. Toomey *et al*³¹ also found that 19 (53%) out of 36 patients with CPP reported previous abuse and that sexual abuse was reported more frequently than physical abuse. Moreover, other forms of abuse need to be identified since there was a significantly greater incidence of childhood physical abuse in patients with CPP compared with patients with other pain or with controls.³² Rapkin *et al*¹⁹ reported that 39% of patients with CPP had been physically abused during childhood and in this study physical abuse was more common than sexual abuse in the majority of these cases. However, many studies have failed to adopt comparative groups of patients with pain of equivalent chronicity. It is therefore difficult to exclude the possibility that psychological disturbances may have arisen from long term experiences of pain. Furthermore, the possibility of selection bias being operative cannot also be ruled out in these studies.

Management

The current management strategy for CPP is somewhat characterised by lengthy investigations before any form of effective management is offered to patients (fig 1). In order to avoid a fragmented approach, a multidisciplinary approach addressing both organic and psychological aspects has been adopted as the main management philosophy of this clinically complicated condition. This includes investigation and treatment of organic disease as well as clinical psychological and/or psychiatric input. Different healthcare professionals may have a part to play in the management of the patient depending on the underlying aetiology. The first author runs a genital uropelvic dysfunction clinic within the department of genitourinary medicine which acts as a tertiary referral clinic designed to coordinate the multidisciplinary management of this condition. The following are preliminary investigations carried out for all patients attending the clinic.

MICROBIOLOGY

Microbiological studies are very important in the management of such patients. Vaginal and cervical swabs would reveal lower genital infection. Although these results cannot be universally extrapolated to the upper genital tract, one can assume that a woman who has lower abdominal pain with chlamydial or gonococcal endocervical infection will probably have PID. Immediate microscopy as well as culture is routinely available within the clinic for this purpose.

PELVIC ULTRASOUND

Ultrasound can play a major part in diagnosing pathology as well as offering psychological reassurance to many patients without disease. Ultrasonic features of PID such as peritoneal free fluid, dilated fallopian tubes, and tubo-ovarian abscess are well recognised. Other gynaecological pathology such as ovarian cyst and fibroid can also easily be detected by this non-invasive imaging. It can also confirm or

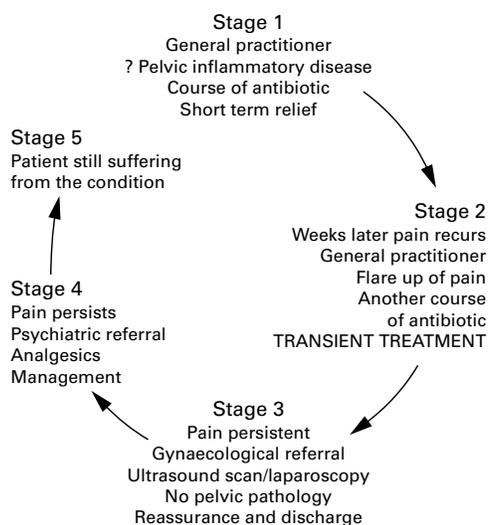


Figure 1 Diagnostic cul de sac for the management of chronic pelvic pain.

exclude early pregnancy problems such as ectopic pregnancy in those patients with an irregular or delayed menstrual cycle.

Transvaginal ultrasound is useful for imaging dilated pelvic veins in cases with pelvic congestion syndrome.³³ It has been reported that clinical evaluation of patients with CPP combined with ultrasound is highly predictive of pelvic pathology but the best information is still achieved with diagnostic laparoscopy.³⁴ Ultrasound, however, has limitations in diagnosing peritoneal endometriosis. The predictive ability of ultrasound for the diagnosis of PID depends on several factors such as operator skills, the quality of the ultrasound machine used, and the presence or absence of previous pelvic surgery.

OUTPATIENT ENDOMETRIAL BIOPSY

The procedure may be useful in diagnosing endometritis especially plasma cell type which is characteristic of chlamydial infection. Blind endometrial biopsy is an easy procedure which can be carried out with the minimal discomfort and harm to the patient. It is important that such a procedure is performed after a negative sexually transmitted disease screen in order to prevent any iatrogenic PID. The biopsy can be sent for microbiological as well as histopathological studies. Hysteroscopically directed endometrial biopsy, however, may be indicated in patients with irregular menstrual bleeding in order to improve the detection of intrauterine pathology such as polyp, fibroid, and carcinoma.³⁵

LAPAROSCOPY

Laparoscopic abnormalities have been reported in patients who had a primary diagnosis of CPP.³⁵ These findings include endometriosis with adhesions (48%), leiomyomas (42%), and enlarged globular uterus (24%). In addition, appendiceal abnormalities were present in 2% and hernia in 1% of cases. Hysterectomy was also performed on these patients and reported as abnormal in 30% of cases with findings that include leiomyomas (18%), interuterine polyps (6%), and cervical stenosis (3%).

Howard³⁶ reported that laparoscopy revealed pathology such as endometriosis, pelvic adhesions, pelvic inflammatory disease, and ovarian cysts in only 61% of women with CPP. This survey also found similar abnormalities in 28% of asymptomatic women presenting for infertility investigations. The author therefore suggested that laparoscopy is not the ultimate investigation since it is difficult to be certain if the laparoscopic findings are the cause of CPP in all cases. Ozaksit *et al*³⁷ reported that 82% of adolescents with CPP had abnormal findings at laparoscopy. This result is in contrast with those obtained from other studies³⁷⁻³⁸ where 35%–40% of patients suffering from CPP were found to have abnormal laparoscopic findings. Vercellini *et al*³⁹ and Goldstein *et al*⁴⁰ examined the value of laparoscopy in 47 adolescent women with CPP; endometriosis was found to be the most frequent pathology (38%) present and the authors suggested that endometriosis in adolescents is not a rare condition. It is also

important to obtain swabs for microbiology studies from the pouch of Douglas, fallopian tubal fimbriae, and adnexal abscess. If the microbiological results are positive, the appropriate antibiotics should be prescribed and the relevant contact tracings carried out as soon as possible.

OTHER INVESTIGATIONS

- (1) Urine analysis and midstream urine specimens for culture and sensitivity should be obtained to investigate for urinary tract infections.
- (2) Sigmoidoscopy is important for conditions such as irritable bowel syndrome or diverticulitis. This procedure is usually carried out in the outpatient clinic.
- (3) Radiological imaging studies can be helpful to exclude pathology related to low back pain syndrome.
- (4) Psychometric instruments such as the Minnesota Multiphasic Personality Inventory⁴¹ can be used to differentiate patients with non-organic chronic pain from those with pelvic pathology.
- (5) Other investigations are requested depending on the provisional diagnosis—for example, cystoscopy, intravenous pyelogram.

Multidisciplinary management

All patients with CPP should be managed by a multidisciplinary team addressing the different aspects of the problem. Gambone *et al*⁴² advocated such an approach, which incorporates the skills of the genitourinary physician, the gynaecologist, psychologist, anaesthesiologist, urologists, and gastroenterologists. Women with clinical depression should be treated with an appropriate antidepressant.⁴³ A useful algorithm that summarises the management pathway for CPP is shown in figure 2. A patient with an organic pathology is treated by the relevant specialist without losing sight of the potential psychological need.

The approach to women with CPP must be therapeutic, supportive, and sympathetic. Follow up appointments should be given because requesting patients to return only if pain persists can reinforce pain behaviour. Strategies such as relaxation techniques, stress management, sexual and marital counselling, and other psychotherapeutic approaches have been found to be useful. Studies of multidisciplinary pain management have shown that pain relief in such patients can be achieved in 85% of cases.⁴⁴ Pain clinics can offer an alternative approach for women in whom organic pathology has been excluded. Such alternative treatments such as acupuncture, transcutaneous electrical stimulation, hypnosis, exercise, biofeedback therapy, and intensive psychotherapy have been shown to achieve 71% reduction in pain in patients who continued to attend these clinics.⁴⁵ Anxiety and depression can also be reduced with psychosocial functioning improved, including return to work, increased social activities, and improved sexual activity. Therefore, the multidisciplinary pain management approach is effective in achieving

symptomatic relief from pain as well as palliative reduction in pain which is due to organic causes that have not responded to conventional therapy.

The mechanism by which hypnosis appears to be effective is still unclear. However, there are various reports which suggest that it helps in breaking up the harmful and well established pain reflexes through "synaptic ablation." Hypnotherapy is contraindicated in the psychotic patient, who should be referred to a psychiatrist. Presacral neuroectomy is one of the last surgical approaches to control persistent midline CPP. The reported success rate is 75% and it is usually carried out by a specialist anaesthetist or neurosurgeon.⁴⁶

Prevention strategies

Our focus in the clinical arena must also be effective preventative strategy by screening and treatment of avoidable conditions such as lower genital tract infection which can result in PID.

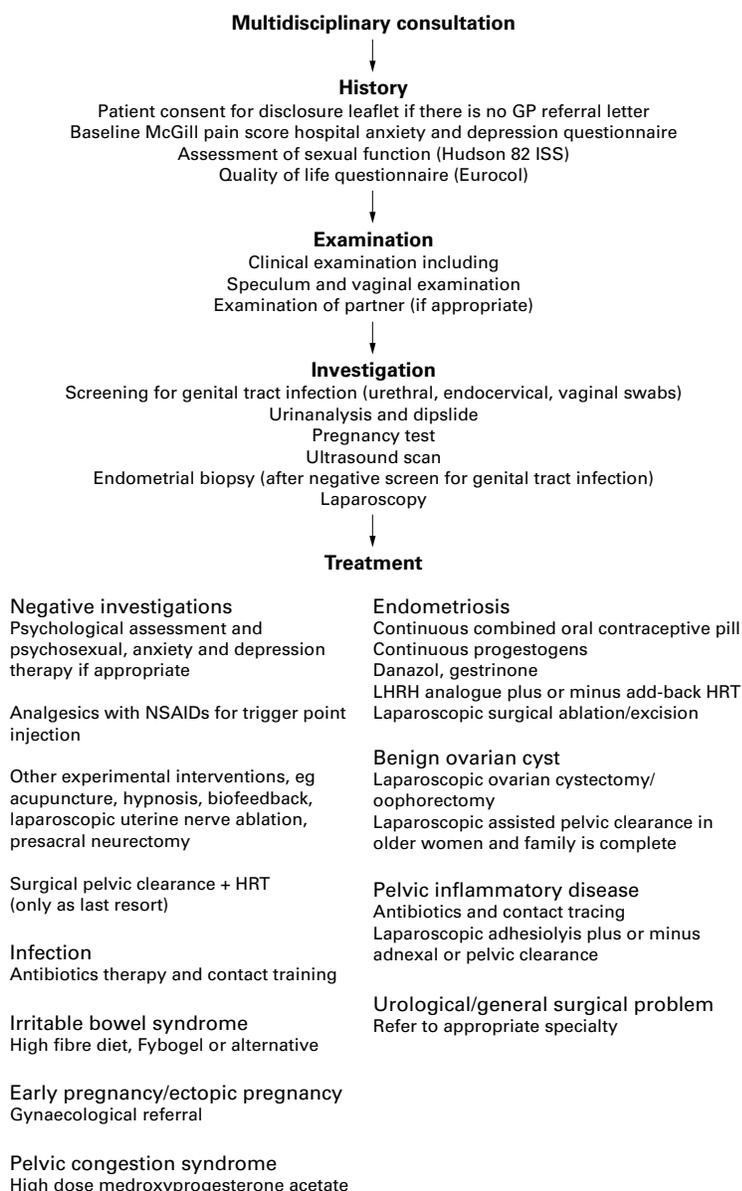


Figure 2 Management algorithm for chronic pelvic pain.

A recently conducted randomised controlled trial in a health maintenance organisation showed that routine screening for genital *Chlamydia trachomatis* in a sexually active population between the ages of 15–35 years resulted in a significant reduction of almost 60% in the incidence of PID.⁴⁷ This may lead to a reduction in the incidence of CPP. The second preventative strategy is the administration of single dose antibiotic therapy to index patients and relevant partners in order to ensure compliance. This strategy has to be supported by efficient contact tracing in which health advisers has a major role. The third vital preventative strategy is the availability of high quality diagnostic facilities such as ultrasound scans within the CPP clinics to look for sexual transmitted infections of the upper genital tract. Finally, public awareness and education are also vital in ensuring early recognition of the condition and early self referral to a multi-disciplinary clinic in order to ensure adequate management.

Other preventive measures can also follow a similar approach. For example, irritable bowel syndrome can be minimised by ensuring a healthy and high fibre diet and the incidence of nerve entrapment can be reduced by adapting surgical techniques which avoid the relevant nerves being damaged during surgery. Preventative measures will also be needed to tackle the growing incidence of childhood physical and sexual abuse.

Conclusion

Management of chronic pelvic pain is a major challenge for the health service. It represents a clinical dilemma for many clinicians. This is partially due to the usual presence of multiple factors in its aetiology and partly because of our lack of our understanding of the natural history of the condition. It is described by some clinicians as a nightmare to provide effective management and such patients are usually sucked into a fragmented treatment strategy. A multidisciplinary approach seems to be the way forward where the condition is not only investigated properly but therapeutic strategy takes into account both physical and psychological management offered by various medical and non-medical health professionals.

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