Medical and surgical management of chronic pelvic pain

Dominique E Baker
Lydia R Simpson

Abstract

Chronic pelvic pain is common and is estimated to affect over one million women in the UK. It may be a symptom of a number of different conditions and is often multifactorial in nature, caused by a combination of physical, psychological and social factors. For many women, a primary cause cannot be identified. This can make both diagnosis and management difficult. Gynaecological causes of chronic pelvic pain include endometriosis, chronic pelvic inflammatory disease and adhesions. The gynaecologist must also consider non-gynaecological causes of pain related to the gastrointestinal, urinary, neurological, musculoskeletal and psychological systems if satisfactory management of the woman's pain is to be achieved.

This review addresses the approach to diagnosis and management of women presenting with chronic pelvic pain. It details specific disease management but also seeks to encourage a holistic approach to all women with chronic pelvic pain, whether or not a primary diagnosis is established.

Keywords chronic pain; chronic pelvic pain syndrome; disease management; pain management; pelvic pain

Introduction

Chronic Pelvic Pain (CPP) is common and is estimated to affect up to 25% of women of reproductive age. Definitions for CPP vary however for the purpose of this article it is defined as "intermittent or constant pain in the lower abdomen or pelvis of at least six months duration, not occurring exclusively with menstruation or intercourse and not associated with pregnancy". The reported incidence of CPP in primary care is comparable to that of back pain and asthma and up to 20% of visits to gynaecologists are attributed to CPP. The management of CPP remains challenging: the pathophysiology of CPP is often poorly understood and its multifactorial nature can hinder the diagnostic process. Consequently, for a large proportion of women, investigations and treatments do not result in symptom relief even after many years. Living with CPP results in a significant mental, social and physical burden for the sufferer, which in turn can decrease quality of life, cause psychological distress and impact on the woman's ability to function. This results in a wider economic and social burden.

CPP is known to be associated with a number of gynaecological and non-gynaecological conditions such as endometriosis, adenomyosis, pelvic floor prolapse, adhesions, irritable bowel syndrome and musculoskeletal problems (Box 1). However, whilst the gynaecologist's approach has traditionally focused on an organ-specific approach to diagnosis and hence treatment, in a majority of cases no underlying pathology can be identified, thus labelling such cases as, "Chronic Pelvic Pain Syndrome (CPPS)". Furthermore, even when pathology is identified, pain can persist despite treatment or be disproportionate to disease extent. Consequently, there is a growing consensus that CPP should be managed holistically from the outset, taking into consideration its multifactorial nature and the involvement of the central nervous system in its aetiology. If possible, this management may occur in the context of a chronic pelvic pain multidisciplinary team.

Role of central nervous system in CPP

Any experience of pain involves the central nervous system (CNS) and that pain can be generated and perpetuated by the CNS itself, no matter where the pain is perceived to originate. Chronic pain, irrespective of its origin, is associated with long-lasting changes to the structure and function of the CNS and there is good evidence that this is true for many gynaecological conditions associated with CPP. Furthermore, CNS dysfunction itself can result in altered organ function leading to symptoms such as urinary frequency or retention, diarrhoea and constipation, which are commonly associated with CPP. It is therefore suggested that the initiation of treatments which target the CNS in patients with CPP will hopefully both help to alleviate symptoms and improve quality of life but also possibly help prevent the development of long-lasting central changes.

Establishing a diagnosis

Establishing a diagnosis in CPP is often difficult and many women experience a significant delay in diagnosis as a result. There are frequently multiple components to CPP and therefore assessment should aim to identify these contributory factors rather than seeking for a single pathological cause, remembering that a cause is often not clearly identified at the initial review. Women with CPP need to be able to tell their story, be listened to and believed. They often have their own theory or concern regarding the cause of the pain and this should be explored. This improves the doctor–patient relationship and can be a positive experience for the woman as well (see Box 2).

Dominique E Baker ***BSc BMBS****, Specialty Trainee Registrar, Department of Obstetrics and Gynaecology, Royal Infirmary of Edinburgh, Edinburgh, UK. Conflicts of interest: none declared.*

Lydia R Simpson ***MBChB MA (Cantab) MRCOG DMCC****, Specialty Trainee Registrar, Department of Obstetrics and Gynaecology, Royal Infirmary of Edinburgh, Edinburgh, UK. Conflicts of interest: none declared.*

Causes of chronic pelvic pain

Gynaecological

- Endometriosis
- Adenomyosis
- Chronic pelvic inflammatory disease
- Pelvic Venous Congestion
- Adhesions, including residual and trapped ovary syndromes
- Pelvic organ prolapse
- Gynaecological malignancy

Gastrointestinal

- Irritable bowel syndrome
- Inflammatory bowel disease
- Coeliac disease
- Hernia
- Mesenteric venous thrombosis

Urinary

- Bladder pain syndrome (interstitial cystitis)
- Urethral syndrome

Neurological

- Trigger points
- Nerve entrapment
- Damaged nerves
- Pudendal neuralgia
- Perineal pain syndrome

Musculoskeletal

- Fibromyalgia
- Osteoporosis
- Scoliosis
- Piriformis syndrome
- Levator ani spasm or injury

Psychological

- Depression, including post natal depression
- Previous traumatic experience

Unknown aetiology

- Chronic Pelvic Pain Syndrome

Box 1

Case study 1

Mrs. A is a 28-year-old Para 0 + 1 (previous early miscarriage), who has been living with 10 years of heavy and painful menses and dyschezia during menstruation. She has no other bowel or bladder symptoms. She has been trying to conceive for 1 year. She previously used the combined pill for contraception, which improved the pain slightly. Other treatments she has tried include: tranexamic acid, mefenamic acid and norethisterone. She last attended for cervical screening in 2017, which was negative. Her menstrual cycle is regular and consists of 5 days bleeding every 30 days.

Investigations

- Pregnancy test negative, Chlamydia and gonorrhoea screen negative, high vaginal swab negative.
- Urine dip - negative
- Normal haemoglobin and pelvic ultrasoundOn examination the vulva and cervix are normal, anteverted mobile uterus, generally tender, no adnexal masses, there is a firm nodule on the posterior vaginal wall.

Management

Mrs. A was seen in clinic and an outpatient MRI requested; she subsequently had laparosopic excision of a rectovaginal nodule with an endometriosis and colorectal surgeon. She was reviewed six months post surgery and had noted a significant improvement in her pain but heavy bleeding continued to be an issue.

Box 2

History

A detailed history should be taken, giving the patient sufficient time to express their ideas, concerns and expectations regarding their pain. Demonstrating empathy, effective communication and the ability to listen are all skills that patients with CPP value highly.

The history should cover the nature, frequency, pattern and site of the pain as well as its relationship to precipitating/relieving factors, including its relation to movement and posture, and the menstrual cycle. Although pain can vary over the menstrual cycle, strikingly cyclical pain is likely to be gynaecological in origin. A pain diary for two to three menstrual cycles can help identify provoking factors and temporal associations. Associated gynaecological, urogenital and bowel symptoms should be sought. If history suggests a specific non-gynaecological component to the pain, referral to the relevant healthcare professional should be considered.

It is important to enquire about the woman's level of functioning and symptoms relating to overall wellbeing such as psychological and social factors, affect on employment, affect on sexual functioning and relationships, sleep disturbance, tearfulness and appetite. Depression and sleep disturbance often co-exist with CPP as either a cause or consequence and specific treatment may improve the woman's ability to function. Enquiry regarding a history of physical or sexual abuse should be made sensitively. The relationship between CPP and abuse is complex however it may be that for some women, child sexual abuse may predispose them to CPP as an adult. The possibility of continuing abuse should also be considered. Appropriate support services, such as counselling, should be offered where possible.

Examination

This should be performed sensitively with the awareness that new information may be revealed at this time and that the woman may find examination very painful. It should include abdominal and pelvic examinations, specifically to identify obvious gynaecological pathology, areas of tenderness, enlargement, distortion and tethering, or pelvic organ prolapse. Deep endometriosis may

be revealed as tenderness of the cul-de-sac and uterosacral ligaments whilst tenderness of the uterus may signify adenomyosis. Tender trigger points located in the abdominal wall and/or pelvic floor or tenderness of the symphysis pubis or sacroiliac joints may identify musculoskeletal components to the pain. Abnormalities in muscle function should be assessed.

Investigations

Simple bedside investigations should be undertaken as part of the initial assessment if indicated by the history given. Infection should be considered and in sexually active women with pelvic pain, screening for sexually transmitted infections such as *Chlamydia trachomatis* and *Neisseria gonorrhea* should be performed. Urinalysis, followed by microscopy and culture if indicated, should be performed due to the overlap between urological and gynaecological causes of CPP. "Red flag" symptoms should be investigated to exclude potential malignancy (see Box 3).

Initial radiological investigation often involves transvaginal ultrasound (TVS) as this is useful in identifying structural abnormalities such as fibroids, and pelvic masses including endometriomas. Both TVS and Magnetic Resonance Imaging (MRI) are comparable for the identification for adenomyosis. Peritoneal endometriosis, especially deeply infiltrating endometriosis, remains difficult to confidently diagnose through imaging alone. The role of imaging modalities for the non-invasive diagnosis of endometriosis remains uncertain. A recent Cochrane review found that none of the evaluated imaging modalities were able to detect pelvic endometriosis with enough accuracy to replace surgery. It did, however, note that recent advances in imaging (new types of ultrasound and MRI) show promising results but that further studies are required to properly evaluate their diagnostic role. Similarly, other recent Cochrane reviews have evaluated the use of urinary, blood and endometrial biomarkers to diagnose endometriosis. There was insufficient evidence to recommend any urinary or blood biomarkers as a replacement for surgery although several of those assessed may have diagnostic potential pending further evaluation. Several endometrial biomarkers showed considerable promise for diagnostic accuracy including one, Protein Gene Product 9.5 (PGP 9.5), which met the criteria for a diagnostic test but whose results demonstrated considerable inter-study heterogeneity. Therefore, overall there is insufficient evidence to allow clinical recommendations for its use at present. Cancer antigen 125 has been one of the biomarkers most thoroughly investigated for its diagnostic potential. A BJOG meta-analysis and systematic review found it could be used as an investigation to rule-in endometriosis in symptomatic woman, once a negative ultrasound had been performed. Once again the authors conclude it cannot be used to rule out endometriosis and that more research is required in this field. There is an upcoming meta-analysis in the journal of minimally invasive gynaecology regarding seven potential biomarkers for endometriosis. A summary Cochrane review assessed combinations of non-invasive methods for endometriosis diagnosis. Unfortunately studies were of low methodological quality and overall there was insufficient evidence to demonstrate benefit of any combined non-invasive test over surgical diagnosis and this remains a significant area for further research.

Diagnostic laparoscopy was previously seen as the "gold standard" for investigating CPP but current guidelines have moved away from this, suggesting its use be reserved as a second-line investigation if other therapeutic interventions have failed. Where cyclical pain exists, the Royal College of Obstetricians and Gynaecologists (RCOG) recommends an empirical trial of hormonal therapy for ovarian suppression for three to six months, rather than immediate diagnostic laparoscopy. The reason for this is that whilst diagnostic laparoscopy can identify endometriosis, adhesions and ovarian pathology, it cannot identify other disease processes such as adenomyosis and irritable bowel syndrome. Furthermore, despite laparoscopy still being considered "gold standard" for endometriosis diagnosis, subtle endometriotic lesions and deeply infiltrating endometriosis may be missed by a surgeon with insufficient training or experience. Evidence regarding the role of laparoscopy in developing a woman's beliefs about her pain remains inconclusive. The risks of laparoscopy are not insignificant (3% risk of minor complications, 0.24% risk of major complications such as bowel injury, of whom two-thirds will require laparotomy, and an overall risk of death of 1 in 10,000) and up to 55% of diagnostic laparoscopies will not identify specific pathology; therefore prudence in its use is advised. Women should be carefully consented prior to decision for surgery regarding the risks and benefits, likely findings and possibility of concurrent treatment (e.g. for endometriosis or adhesions) as well as the possibility of negative findings.

Red flags in chronic pelvic pain

Consider taking a Ca125 and performing an ultrasound scan if the following occur more than 12 times a month, especially in women age 50 or over.

- Bloating
- Early satiety
- Loss of appetite
- Pelvic or abdominal pain
- Increasing urinary urgency or frequency

Consider further investigation in those with persistent postcoital and intermenstrual bleeding and a normal cervix.
Consider a gastrointestinal malignancy in people who are:

- Age under 50 with rectal bleeding plus any one of the following unexplained symptoms: abdominal pain, weight loss, iron deficiency anaemia or change in bowel habit
- Age 40 or over with abdominal pain and unexplained weight loss
- Age 50 or over with new IBS symptoms
- Age 50 or over with rectal bleeding that is unexplained
- Age 60 or over with a change in bowel habit or iron deficiency anaemia

Box 3

Management

If assessment identifies a clear primary contributory cause this should be treated. However, an integrated approach with equal attention given to both organic and other causative factors should be adopted, whether or not a likely pathology has been

identified. The multifactorial nature of CPP should be discussed from the outset and a partnership between doctor and patient developed to plan management. This plan may include the use of therapies targeting the central nervous system, such as anti-convulsants, anti-depressants and transcutaneous electrical nerve stimulation (TENS). These therapies can be initiated whilst further investigations and treatments are carried out.

Comparison of medical management options for endometriosis

Intervention	Adverse effects	Evidence of benefit
GnRH agonists	Hypo-oestrogenic effects: vasomotor symptoms, vaginal dryness, loss of bone mineral density, sleep disturbance, mood swings, loss of libido	Significant symptom relief compared to no treatment (RR 3.93 95% CI 1.37 to 11.28)
COCP	Acne, headache, depression, breast symptoms, breakthrough bleeding, fluid retention, increased risk of venous thromboembolism	Similar efficacy as GnRH agonist (goserelin) at relieving pain associated with endometriosis (data from 1 small trial)
Vaginal contraceptive ring or transdermal oestrogen/progestin patch	As above for COCP, particularly fluid retention/weight gain, headaches	1 study showed benefit in reducing pain, however 36% of ring users and 61% patch users withdrew from the study for various reasons including side-effects and treatment inefficacy
LNG-IUS	Menstrual irregularities, abdominal pain, expulsion, depression, PID, peripheral oedema	No significant difference in pain scores between LNG-IUS and GnRH agonist
NSAIDs	Gastro-intestinal disturbance, gastric ulceration	Inconclusive evidence of benefit (1 small trial evaluated naproxen)
Progestagens	Weight gain, bloating, irregular menstrual bleeding, sore breasts, headache	Limited evidence however available evidence does suggest continuous progestagens are effective therapies (similar in efficacy to other treatments)

Table 1

The treatment of endometriosis is not discussed in this article as it is covered comprehensively in the review article "Endometriosis". Instead the following sections detail specific treatments for other identified or assumed pelvic pathologies. However, it is acknowledged that diagnosis often remains unclear and a variety of treatments may need to be trialled to assess benefit, therefore a comparison of medical management for endometriosis is shown in Table 1. For many patients, the outcome is likely to be best if they are managed within a multidisciplinary team whose expertise includes the use of hormonal, medical, invasive or surgical, psychological interventions and emotional support from experienced members of the team.

Pelvic inflammatory disease

Chronic pelvic inflammatory disease (PID) can cause CPP, though the precise aetiology is unclear. Approximately 20% of women with confirmed PID at laparoscopy will complain of CPP whilst 67% of women with three or more episodes of PID will have CPP. It is likely that the pain is caused by chronic inflammation caused by recurrent infection. Common causative organisms include *Chlamydia trachomatis, Neisseria gonorrhoea, Gardnerella vaginalis* and anaerobic infection.

Tuberculosis is a rare causative organism of peritoneal pathology, which may present with pain. Women found to have this condition should be managed in conjunction with a genito-urinary medicine physician and microbiologist. Treatment should be given either as an inpatient or outpatient depending on the patient's clinical status.

Adenomyosis

Adenomyosis is a benign condition characterised by the presence of ectopic endometrial glands and stroma within the myometrium. It frequently occurs coincidentally with fibroids. It more commonly affects women who are multiparous and aged 30–50 years. It may cause heavy, prolonged menstrual bleeding, severe dysmenorrhoea, chronic pelvic pain and dyspareunia, and a tender, enlarged uterus may be found on examination. Women with the condition may also be asymptomatic. The condition was previously only diagnosed histologically at hysterectomy. Diagnostic advances now mean ultrasound and MRI can diagnose it pre-operatively. In turn, this has resulted in the adoption of medical and surgical therapies aimed at reducing the need for hysterectomy, previously the mainstay of treatment. This is important for women who wish to preserve their fertility or prefer conservative management.

Medical management includes NSAIDs and hormonal therapy. The latter includes hormonal contraceptives (both the COCP and high dose progestagens such as norethisterone or MPA), GnRH agonists, danazol, hormone-releasing intrauterine devices (LNG-IUS or danazol-releasing IUS) and aromatase inhibitors. The effectiveness of these different treatments is the subject of an upcoming Cochrane review.

Other management options include endometrial ablation and resection, magnetic resonance-guided focused ultrasound, uterine artery ablation and hysterectomy. Uterine artery ablation for adenomyosis has been assessed by the National Institute for Health and Care Excellence (NICE) to be efficacious in the short and medium term for symptom control in a substantial number of patients. NICE advises that the multidisciplinary team, including a

gynaecologist and an interventional radiologist, should make patient selection. They note that symptoms may return and necessitate further treatment and that the effect on fertility is unknown.

Adhesions

Adhesions may result from endometriosis, previous abdominal surgery or infection such as appendicitis or pelvic inflammatory disease. They may be asymptomatic or may contribute to CPP. Evidence to demonstrate that adhesions cause pain or that laparoscopic division of adhesions relieves pain is lacking. There is no evidence to support the division of fine adhesions to relieve CPP. However it is generally accepted that dense and vascular adhesions may cause CPP and that division of such adhesions may alleviate pain and should be considered. It is recognised that ovarian tissue may become involved in adhesions in two specific situations: residual ovary syndrome (when remnants of ovarian tissue left after oophorectomy become buried in adhesions) and trapped ovary syndrome (when an intentionally retained ovary becomes trapped in dense adhesions post-hysterectomy). In these situations, removal of all ovarian tissue or suppression with a GnRH analogue may relieve pain. The surgical risks associated with attempts to remove the residual ovarian tissue may be significant and should be carefully considered before embarking on any surgical management.

Pelvic Venous Congestion

Pelvic congestion syndrome (PCS) is described as CPP arising from dilated and refluxing pelvic veins. It remains a controversial diagnosis as the causal relationship between vascular changes in the pelvis and CPP is not substantiated with robust data. However, some studies show strong associations between pelvic venous incompetence and CPP and proponents of PCS predict it is the underlying aetiology in up to 30% of CPP. The relationship between pelvic vein incompetence and CPP, its diagnosis and treatment was the subject of a systematic review by the National Institute for Health Research (NIHR). There are no generally accepted, well-defined clinical criteria for PCS and the diagnosis is based on symptoms, examination, anatomical features and venographic findings. Pain is often unilateral, dull/achy with sharp exacerbations, made worse by long periods of standing or walking and relieved by lying down. Postcoital ache and tenderness over the ovarian point are described as discriminatory factors to differentiate from other causes of CPP. Vulval varicosities are often present. Identification of incompetent pelvic veins is essential for diagnosis and the gold standard method for this is transcatheter selective venography. Other less invasive imaging techniques such as TVS and MRI have limited data regarding their accuracy in diagnosis, however TVS with Doppler and MRI venography show promise. Diagnosis during laparoscopy is limited by conditions that may result in false negatives (limited fields of view, positional effects leading to decompression of varices by gravity and pneumoperitoneum causing venous deflation). Positional effects also limit the use of CT and MRI in accurate diagnosis.

The available evidence to guide management is poor but treatment options include hormonal treatment, pelvic vein ligation, hysterectomy and pelvic vein embolisation. There is limited data to support the use of progestagens (MPA or subdermal etonogestrel) and GnRH agonists as some benefit has been demonstrated. A small case series suggests hysterectomy can eliminate pain in two-thirds of women, although this should not be seen as a first-line management option. Pelvic vein ligation, whilst generally has demonstrated pain improvements, has been superseded by pelvic vein embolisation. A systematic review demonstrated that early substantial pain relief, which was sustained and generally increased over time, was observed in approximately 75% of patients in six case series, significant reductions in pain scores following treatment were seen in a further nine studies and reinvention rates were low. It was, however, noted that no high-quality studies were found. Few data were available on its impact on menstruation, ovarian reserve and fertility and therefore more studies are required in these areas to reassure patients.

Gastrointestinal causes

There is a well-documented association between symptoms suggestive of irritable bowel syndrome (IBS) and CPP. This may be the primary cause of the pain, a component of it or a secondary effect caused by neurological dysfunction resulting from the chronic pain itself. One study found IBS symptoms were present in 50% of women presenting to gynaecology with pain. Symptom-based diagnostic criteria can be used confidently to diagnosis IBS, including in this patient group (see Box 4). Patients with IBS symptoms should be offered a trial of antispasmodics as this is proven to be beneficial when abdominal pain is a predominant symptom. Dietary change may also be beneficial, as one study has shown improvement in symptoms following exclusion of identified dietary components, such as dairy products and grains (See Boxes 2 and 5).

Other bowel diagnoses should also be considered, including inflammatory bowel disease and coeliac disease, and referral made to gastroenterology as appropriate.

Urological causes

Urological symptoms are also common in women with CPP. The International Association for the Study of Pain recommends that the term “bladder pain syndrome”, or BPS, replace the term “interstitial cystitis” (a term still used commonly by gynaecologists). BPS is subdivided into several subtypes, of which “classic interstitial cystitis” is one. A recent systematic review found that in women presenting with CPP, the prevalence of BPS was approximately 61% and that BPS and endometriosis co-existed in approximately 50%. Different medical and surgical treatments are available therefore patients presenting with urological symptoms should be referred accordingly.

Rome IV criteria for diagnosis of irritable bowel syndrome

Abdominal pain for at least three months and on at least one day a week.

- Related to defecation (increasing or decreasing pain)
- Associated with change in stool frequency
- Associated with change in form (appearance) of the stool

Box 4

Musculoskeletal causes

Evidence suggests that up to 85% of women with CPP have dysfunction of the musculoskeletal system, and again this may be the cause or a consequence of CPP. Musculoskeletal problems include postural changes, painful pelvic joints, pelvic organ prolapse and changes in the abdominal wall or pelvic muscles, such as spasm of levator ani. Spasm of the pelvic floor muscles has been treated by local anaesthetic blockade or by use of botulinum toxin A. Transvaginal manual therapy and transvaginal electrostimulation of pelvic floor musculature have also been described. "Trigger points" have been identified in women with CPP. These are localised areas of deep tenderness in a band of muscle and their aetiology is unknown. Evidence regarding the diagnosis and treatment of such trigger points is lacking, although some suggest injection of local anaesthetic or corticosteroids to alleviate symptoms.

Neurological causes

The role of the CNS in all cases of CPP has been discussed above. As well as these central changes, peripheral nerve damage and resulting neuropathies can also contribute to CPP. Nerve injury may result in peripheral and central nervous system changes that amplify the pain response such that there is increasing disparity between stimulus and response. Chronic pain, even in the absence of ongoing neurological damage or stimulus, can ensue.

Nerve entrapment resulting in highly localised, sharp, stabbing or aching pain that is exacerbated by particular movements can occur if a nerve is trapped in scar tissue, fascia or a narrow foramen. The incidence of this after one Pfannenstiel incision is 3.7%.

Pudendal neuralgia is a recognised source of peripheral neuropathy that causes pelvic pain, specifically in the perineum. It has a wide variety of causes and is encountered in a large age-range of women. Patients with the condition may complain of associated neurological symptoms such as paraesthesia, allodynia or hyperalgesia. Often they also suffer from fatigue and general muscle cramps. Secondary changes in the musculoskeletal system can confuse the clinical picture. If suspected, referral to an expert in the field is required. Treatment was previously by injected local anaesthetic with steroids, although a recent randomised controlled, double-blinded trial has shown no benefit to the addition of steroids. Local anaesthetic infiltration followed by symptom relief is a useful sign in diagnosing pudendal neuralgia. Surgical decompression is an option although there is only one prospective randomised study to evaluate this treatment. Topical treatment with a capsaicin patch has been assessed for pelvic, perineal and gluteal neuralgia in an observational study. It produced an improvement in pain scores in 35% of the 60 patients, while also improving their ability to stay seated by an average of 54 minutes ($p = 0.02$).

Summary of evidence for management options in CPPS

Treatment assessed	Conclusion
Treatment versus *placebo*	
Progesterone (medroxyprogesterone acetate, MPA) versus placebo	MPA more effective than placebo with evidence of benefit up to 9 months following treatment, but with increased side effects (bloating, weight gain) compared to placebo (moderate quality evidence)
Lofexidine versus placebo	Lofexidine no better than placebo but with increased side effects (low to moderate quality evidence)
Head-to-head treatments	
Goserelin versus progesterone	Greater improvement in pain scores, mood and sexual function with goserelin compared with progesterone (moderate quality evidence)
Gabapentin versus amitriptyline	Greater improvement in pain scores shown with gabapentin, comparable adverse effects (low quality evidence)
Psychological therapies	
Reassurance ultrasound scans and counselling compared to "watch and wait" approach	Improved pain in ultrasound/counselling group (low quality evidence)
Writing therapy (disclosure of pain) versus non-disclosure	Improved pain scores in writing therapy group (very low quality evidence)
Complementary therapies	
Distension of painful pelvic structures compared to counselling	Distension better effect on pain scores than counseling (moderate quality evidence)
Magnetic therapy versus control magnetic	No difference in pain levels observed
Psychotherapy versus no treatment	No significant benefit proven
Somatocognitive therapy versus no treatment	No significant benefit proven

Table 2

Chronic Pelvic Pain Syndrome

Chronic Pelvic Pain Syndrome (CPPS) is the occurrence of chronic pelvic pain in the absence of infection or other local pathology that may account for the pain. It is often associated with negative behavioural, sexual, social and emotional consequences. Pain perception may be associated with a single organ, more than one pelvic organ or combined with systemic symptoms (such as chronic fatigue). It is common, with 55% of patients with chronic pelvic pain having no identifiable pathology at the time of laparoscopy. CPPS is difficult to manage, as the pathophysiology is not well understood therefore treatment is often unsatisfactory and limited to symptom control. Even then, for a large proportion of women treatment does not lead to symptom relief and this results in a significant burden for the sufferer. Obtaining good quality evidence regarding the management of CPPS is difficult due to the multifactorial nature of the condition and the lack of a specific identifiable pathology, the lack of high quality studies and the heterogeneity of the studies available.

A multidisciplinary approach is likely to be of particular benefit for women with CPPS. The team may include gynaecologists, pain specialists, physiotherapists, clinical or health psychologists and sex therapists. The evidence for an integrated approach is increasing and is supported by evidence of its effectiveness in other chronic pain syndromes such as chronic back pain. The management plan should address any patient concerns regarding their condition, such as beliefs or anxieties about undiagnosed disease (e.g. cancer) or ongoing harm, as these may affect recovery of function and activity. Patients with CPPS often have multiple hospital admissions with acute exacerbations of their pain therefore the management plan should also detail self-management at times of increased pain. Awareness of patient support groups is of benefit to some patients.

Non-surgical management of CPPS is broad ranging. Possible treatments include analgesics, anti-convulsants (gabapentin and lamotrigine), anti-depressants (amitriptyline and sertraline), hormonal treatment (progestagens, GnRH agonists), lofexidine (an alpha-2 adrenoceptor agonist), ergometrine, and venomimetics (e.g. daflon). Other options include transcutaneous electrical nerve stimulation, transcranial stimulation, pulsed electromagnetic fields and neuromodulation. Neuromodulation can use either central spinal cord stimulation or peripheral nerves, including pudendal, sacral root or posterior tibial nerves. Further robust research is required to validate its role in CPP, as currently the evidence is limited to case studies. Invasive options include deep brain stimulation, however currently there are no studies specifically investigating its efficacy in CPPS in female patients. Further options include psychological drug interventions, psychological therapies (e.g. cognitive behavioural therapy), physiotherapy, and complementary therapies. A Cochrane review, published in 2014, assessed available evidence from randomised controlled trials regarding chronic pelvic pain (studies where the pain was known to be caused by endometriosis, dysmenorrhoea, chronic pelvic inflammatory disease or irritable bowel syndrome were excluded). The results are detailed in Table 2. Overall the authors conclude that the evidence supports the use of progesterone as an option for CPPS but that the other conclusions are drawn from evidence of generally low quality. Therefore they state the urgent requirement for further high-quality studies assessing management options in CPPS.

The role of surgical management in CPPS remains controversial as there is no specific pathology to treat. Evidence shows that laparoscopic uterosacral nerve ablation (LUNA) is ineffective in the management of chronic pelvic pain and therefore should not be performed.

Hysterectomy remains a potential option as previous studies have shown benefit from hysterectomy for CPP, even in the absence of known gynaecological pathology, with reasonable success rates and patient satisfaction. These positive effects may be associated with the pathological findings of increased nerve fibre formation in hysterectomy specimens from women with CPP compared to controls. However several factors must be considered, and clearly discussed with the patient, before this management is embarked upon. Firstly, it should only be considered if all other treatments options have failed. In view of the previously discussed multifactorial nature of CPP, it is prudent to ensure a multidisciplinary approach has been adopted to assess and treat non-gynaecological aspects of the pain. This may negate the perceived need for surgery and may help to focus discussions, as comorbid pain in secondary organs systems may contribute to ongoing pain following hysterectomy. Patients must be counselled about potential failure rates as well as surgical complications. Failure to achieve post-operative pain relief is very upsetting therefore pre-operative management of expectations is essential. Patients should be warned that 21–40% of women continue to experience pain, 5% experience increased pain, 26% have a longer-than-expected recovery time and 14% report worse results than expected. Depression should be actively assessed for as it has been demonstrated to affect likely success and results in three to five times' higher rates of ongoing pain. Other factors associated with ongoing pain post-hysterectomy include young age, low socio-economic status and a lack of identifiable pelvic pathology.

Concurrent bilateral oophorectomy (or oophorectomy without hysterectomy) is also considered as a management option for CPP. However, research within the last 15 years has highlighted potential long-term side effects of bilateral oophorectomy. One study assessing its use in women less than 45 years of age found a two-fold increased risk of death in the following 30 years compared to controls. A further study demonstrated increased risk of all-cause death, fatal and non-fatal coronary heart disease and lung cancer following bilateral oophorectomy. Therefore, any potential pain relief must be carefully weighed against the long-term potential harm (see Box 5).

The use of complementary therapies in CPP

As discussed, CPP is difficult to manage whether a primary aetiology is diagnosed or not. Patients may wish to consider complementary therapies, particularly if they feel more traditional approaches are not resolving their pain. Complementary therapies such as Chinese herbal medicine and acupuncture have been assessed for their role in the management of chronic pelvic pain. Overall there is no compelling evidence that they are effective in the treatment of CPP. However, there are some data available regarding their use in conditions that are associated with and may cause CPP such as endometriosis, dysmenorrhoea, IBS and PID. Unfortunately current evidence lacks rigour, as the available trials are often small and poorly designed. Consequently it is difficult to draw accurate conclusions regarding their effectiveness and more studies are required to properly evaluate their use.

Case study 2

Ms. B is a 20-year-old nulliparous woman who has been experiencing 18 months of pelvic pain. It is worse with movement and there is no pattern to when it occurs. She experiences some constipation but no other bowel or bladder symptoms. She has been using the progesterone only pill for contraception for the past two years. She has tried an intrauterine device previously but stopped due to PV spotting. She currently uses tramadol and dihydrocodeine for analgesia. Ms B is a student and has had to take time off from university due to the pain; her tutors have expressed their concerns about her attendance. She is a smoker and her sexual history includes three partners in the last six months. She has never attended for cervical screening due to her age. She is currently amenorrhoeic due to the progesterone only pill.

Investigations

- Pregnancy test negative
- Chlamydia & gonorrhoea screen negative, high vaginal swab negative
- Urine dip - negative
- Ultrasound - negativeOn examination she has a normal pelvic examination apart from generalised tenderness.

Management

Ms. B was seen in the chronic pelvic pain clinic and after an initial consultation was referred to the clinic's specialist physiotherapist and for a course of cognitive behavioural therapy (CBT). Her contraception was switched to medroxyprogesterone acetate and a trial of gabapentin was commenced. She was reviewed six months later and her pain was marginally improved.

Box 5

Conclusion

Chronic pelvic pain is a common condition that leads to significant disease burden for the patient. Diagnosis can be problematic due to the number of different causes of CPP and its commonly multifactorial nature. All contributing factors must be addressed if the pain is to be adequately managed and patients need to be counselled regarding appropriate expectations of treatment as a result. Treatment itself depends on the underlying causes but should also take into account the role the central nervous system has on the development of any chronic pain syndrome, including chronic pelvic pain, and should aim to treat this as appropriate. Evidence regarding treatment is often lacking or of poor quality and there is a pressing need for further high quality research in this important area of gynaecology. ◆

Practice Points

- A thorough assessment, taking into account the multifactorial nature of chronic pelvic pain, is essential to ensure an accurate diagnosis is made. It should be remembered that not all patients will have a gynaecological cause for their pain.
- A holistic approach should be adopted, with specific emphasis on the impact a woman's symptoms is having on her quality of life.
- The possibility of physical or sexual abuse, past or present, should be considered and sensitively discussed if appropriate.
- Involvement of the multidisciplinary team is beneficial and should be utilised where possible.
- Diagnostic laparoscopy should not be used as a first-line diagnostic tool but instead should be undertaken if initial therapeutic interventions are unsuccessful. For example, an empirical trial of ovarian suppression should be considered first for cyclical pain.
- Management should be focused and tailored to the patient. Therapies specifically targeting the central nervous system should be considered in all patients.

FURTHER READING

Cheong YC, Smotra G, Williams A. Non-surgical interventions for the management of chronic pelvic pain. *Cochrane Database Syst Rev* 2014; **3**.

Dunselman GAJ, Vermeulen N, Becker C, et al. ESHRE guideline: management of women with endometriosis. *Hum Reprod* 2014; **29:** 400–12.

Royal College of Obstetricians and Gynaecologists. The initial management of chronic pelvic pain. Green-top Guideline No. 41, May 2012.

Royal College of Obstetricians and Gynaecologists. Therapies targeting the nervous system for chronic pelvic pain relief. Scientific Impact Paper No. 46, January 2015.