Chronic pelvic pain: aetiology and therapy

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Chronic pelvic pain (CPP) is a common condition in women and rates of consultation for CPP in general practice are similar to those for asthma and migraine. US and UK population-based studies, together with data from UK hospital settings demonstrate a substantial impact of CPP on health-related quality of life. In this review, we will examine the current evidence on the aetiology and management of CPP, focussing on the randomised controlled trials (RCTs) that are available to date.

CPP is a heterogeneous condition and causation is often unclear. There are associations with specific pathological processes but a barrier to understanding is that many studies have data that are not comparable. In the community setting, as many as 60% of women with CPP have not received a specific diagnosis and up to 20% have not undergone any investigation. The factor most commonly associated with CPP in the community is irritable bowel syndrome, although in a tertiary setting with laparoscopy, pathology associated with CPP in ascending order of frequency is endometriosis (33%), adhesions (24%) and 'no pathology' (35%).

Current RCT evidence provides some support for the use of ultrasound scanning as an aid to counselling and reassurance, progestogen (medroxyprogesterone acetate) or goserelin for pelvic congestion and a multidisciplinary approach to assessment and treatment. Adhesiolysis is not shown to be of benefit other than in women with extensive adhesions. While studied in relation to dysmenorrhoea rather than CPP, the short term results for presacral neurectomy (PSN) and laparoscopic utero-sacral nerve ablation (LUNA) seem to be similar, although PSN has better results in the long term. Selective serotonin reuptake inhibitor (SSRI) antidepressants have not been shown to be of benefit in CPP. Most of these conclusions are based on the outcome of single randomised trials and therefore need replication.
INTRODUCTION

Chronic pelvic pain (CPP) is a common condition in women of reproductive age. A single study in the US found a 3-month prevalence of 15% in women aged 18–50 in the general population; whilst UK data showed an annual prevalence of 38/1000 in women aged 15–73,\(^1,2\) not dissimilar to the prevalence of common conditions such as asthma (37/1000), back pain (41/1000) and migraine (21/1000). Differences in estimated prevalence may be due to the design and type of study performed, for example the use of different definitions of CPP. Most pain research has taken a duration of 6 months or more as the minimum criterion for ‘chronic’. This approach does have a neurophysiological basis: while acute pain associated with tissue injury leads to an associated set of protective behaviours designed to defend the individual from further harm, in chronic pain states ongoing tissue injury is often absent or less than might be suggested by the degree of pain experienced by the sufferer. Key processes such as central sensitisation of the nervous system and peripheral neuropathy are increasingly understood through animal experimental models. Most experimental research has focused on somatic nociception, but there is an increasing body of neuroscience literature addressing chronic visceral pain and its mechanisms.\(^3\) A key point for clinical practice is that those with chronic pain, including CPP, have to make a range of psychological and behavioural adjustments in order to cope with their symptoms, which may lead to inappropriate labelling and stigmatisation in the process of seeking care.

For the purposes of this review, we take the definition of CPP to be ‘a non-cyclical pain of greater than 6 months’ duration that is localised to the pelvis, anterior abdominal wall at or below the umbilicus, the lumbosacral area, or buttocks, and is of sufficient severity as to cause functional disability or lead to medical care.’\(^4\)

There is evidence that the prevalence of CPP is probably underestimated in studies of clinical populations, as up to 40% of women in a large questionnaire survey reported not seeking any medical help for their pelvic pain.\(^3\) In a cohort study, approximately...
5000 women were followed up over a period of 3–4 years from their first contact with primary care. CPP had a median symptom duration of 15 months and a third of the women had persistent symptoms after 2 years. The study also showed that a quarter of the women had no diagnosis made in that 3–4 year follow-up period and only 40% were referred to a hospital specialist. CPP has been shown to significantly affect women’s daily activities and has a significant negative impact on their mental and physical health. While progressive impairment of health-related quality of life was seen in the above studies comparing groups of women with CPP who had not sought care through to recent consultation and current hospital care, there are many who do have substantial functional impairment but have not sought care; the socio-cultural correlates of this hidden burden of CPP have not, so far, been a focus for research. In terms of health economics, it was estimated in 1996 that the treatment of women with CPP cost over $800 million in the USA.

Typical laparoscopic findings in women investigated for CPP are, in increasing order of frequency, endometriosis (33%), adhesions (24%) and 'no pathology' (35%). Patterns of symptomatology and received diagnosis in the population-based studies cited above suggest a broad pattern of pathophysiology, with urinary (31%) and gastro-intestinal (37%) systems more commonly reported than specifically gynaecological (20%) problems. The spectrum of symptoms and diagnosis reported by these patients no doubt reflects the population studied, the limited diagnostic scope of conventional clinical methods and the different approaches to the management of the condition in the community as opposed to hospital or tertiary centres.

Pathology such as adhesions or endometriosis may not correlate with the site or severity of pain. This discrepancy may be explained in part by the complex neurophysiology of visceral sensation, in other words sensation arising from the internal organs such as the uterus and ovaries. Normal bodily sensation can be perceived as painful because of alteration in processing of spinal cord and brain stimuli. Thus a significant number of women with CPP will not have a definite diagnosis. Explanations for CPP without pathology have included irritable bowel syndrome, which is often present but missed without appropriate history taking in women referred to gynaecologists for investigation. Pelvic congestion syndrome refers to dilated uterine and ovarian veins with reduced venous clearance and is present in a proportion of those in the reproductive age group with CPP. Issues related to the role of endometriosis are discussed below.

The general principles of chronic pain management are applicable in CPP, such as an emphasis on optimising function, the graded or 'ladder' approach to analgesics, the use of adjunctive agents such as anticonvulsants where a neuropathic element is present and attention to mood and psychological wellbeing. Approaches specifically for CPP have included psychotherapy or counselling, reassurance via laparoscopy, hormonal manipulation using medroxyprogesterone acetate, surgery such as presacral neurectomy and utero-sacral nerve ablation to interrupt nerve pathways, or hysterectomy with or without bilateral oophorectomy. Other novel approaches have included the use of photographic reinforcement after surgery as part of the counselling of women with CPP, use of magnetic field treatment and writing therapy. Although only preliminary data are available about the latter approaches, they merit consideration as treatment options are limited for this, often challenging, condition. Whilst non-surgical approaches are less physically invasive they are more time consuming and may not always be acceptable to patients who typically desire a rapid resolution of their problem. Surgery carries irreversible consequences and potential harm such as exacerbation of central nervous sensitisation through further tissue injury and evidence on which to
base advice to patients about the outcomes is limited. Surgical trials in this area are
difficult to conduct and are certainly few and far between. Approaches to the treat-
ment of CPP can also be considered in terms of single specialist versus multidisciplin-
dary management. The latter will involve a team of specialists including a gynaecologist,
a clinical psychologist, a physician in pain management and specialist nurses to provide
care and support (Figure 1). Multidisciplinary management is a common approach to
many chronic conditions such as asthma, diabetes and other conditions associated
with chronic pain. This type of care is certainly slowly gaining recognition as being rele-
vant to the management of patients with CPP. However, the limiting step in setting up
such services is often the cost and the availability of interested specialists. There are
unresolved health service organisational questions about the appropriate setting of
care and referral arrangements.

In this review, we will examine the current evidence for the aetiology and treat-
ment of CPP and we will review the evidence available for aetiology, focussing on
the randomised controlled trials (RCTs) that are available to date for the management
of CPP.

**AETIOLOGY**

Understanding the aetiology of CPP at the population level is difficult because of an
incomplete range of investigations. Naturally, in practice, investigations are undertaken
with a focus on a particular patient and following assessment of the presenting symp-
toms and the clinical findings on examination. It is a challenge instigating the right in-
vestigations for patients with CPP because there is a considerable overlap in symptoms
in such patients. In a community study in 2001, among all women with CPP only 34%
reported that they had undergone at least one investigation for pain, but the propor-
tion of women who had had investigations varied from 30—48% depending on their
presenting symptoms. Thus, women with genitourinary symptoms or irritable bowel
symptoms tended to get more investigations compared to women with CPP only.

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**Figure 1.** Flow chart of referral and management of women with chronic pelvic pain within the multidisci-
plinary team setting.
The reported investigations, in descending order of frequency, were: ultrasonography (21.5%), laparoscopy or laparotomy (11.2%), sigmoidoscopy or colonoscopy (9.3%), radiography (7.2%) or others (4%). Among all women with CPP, 20% reported that they had never had any investigations but had received a diagnosis. Among these women, the most common diagnosis was irritable bowel syndrome (46%), ovarian cysts (26%), endometriosis (21%) and stress (20%). The 'gold standard' for diagnosing pelvic pathology in a hospital setting has been to perform surgery. The need for laparoscopy or laparotomy to make a diagnosis means that the profile of cases is highly selective and not generalisable to a wider population. Similarly, an inappropriate focus on laparoscopically visible disease as opposed to careful history taking and physical examination has led to a narrow view of causation.

As discussed above, not all women with CPP seek help or get referred to tertiary care, hence studies examining factors contributing to CPP are not representative of the whole population. Up to a third of women with CPP have not consulted a physician, while of those who had, about 60% will not be referred on to tertiary centres. We do not yet fully understand what precipitates care-seeking in women with CPP. It is possible that those women with CPP who do not seek care have less disruptive symptoms, as indicated by better scores for health-related quality of life, but there is still a burden of physical and functional impairment among this group.

Finally, many reports cover retrospective analyses performed in the primary, secondary and tertiary settings on highly selective groups of patients and therefore have many confounding factors. The ideal type of study on risk factors is a cohort study. However, these are expensive to conduct and the follow-up period can be very long. If the condition studied is not common, then a cohort study can be impractical especially if there is a large drop-out rate over time. A meta-analysis of all these studies to tease out the risk factors associated with CPP would be complex and would require special methods to allow the inclusion of studies with non-comparable characteristics within the same analysis.

CPP in the community

There are, to date, three epidemiological studies, all of cross-sectional design, that investigated CPP at the community level. Using a postal questionnaire, Zondervan et al (2001) surveyed 3916 women selected from the Oxfordshire Health Authority Register (74% response rate, n = 2304) and found that half the women with CPP (n = 483) also had genitourinary symptoms or irritable bowel syndrome, or both. There was a higher prevalence of dysmenorrhea and dyspareunia in women with CPP (81% and 41%, respectively) compared with women without CPP (58% and 14%, respectively). In this study, half of the women with CPP reported ever being given a diagnosis. Irritable bowel was the most common diagnosis among all women with CPP (20%), with the next most common diagnosis being stress (10%). Other less common diagnoses were ovarian cyst (8%), endometriosis (7%), cystitis (7%), pelvic inflammatory disease (6%) and adhesions (5%). There were, however, approximately 25% of women given more than one diagnosis.

Jamieson & Steege (1996) performed a questionnaire survey on women in the waiting areas of two obstetrics and gynaecology practices and three family practices in central North Carolina, USA (83% response rate, n = 581). They found that 90%, 46%, 39% and 12% of the women in the study had dysmenorrhea, dyspareunia, pelvic pain and irritable bowel syndrome, respectively. This study also reported that
pelvic pain varied significantly with age: 44% of those aged 18–25, 49% of those aged 26–30, 28% of those aged 31–35, 22% of those aged 36–40 and 37% of those aged 41–45 (p = 0.045) experienced pain. Pelvic pain was not associated with income, patient versus non-patient status, marital status, education, or parity, but was more common among African-American (51.3%) than among white (34.8%) women (p < 0.01).

Mathias et al (1996) performed a telephone survey of 17 927 US households and, of the 5263 women who agreed to participate, 773 (14.7%) reported CPP within the previous 3 months. Of these women, 61% reported the aetiology of their CPP as unknown. In contrast to the study of Jamieson & Steege discussed above, they found that African American (odds ratio (OR) = 0.73, 95% confidence interval (CI) = 0.55–0.85) and those of 35 years of age and older (OR = 0.72, 95% CI = 0.60–0.85) had lower odds of reporting CPP compared to white and younger respondents, respectively. Women who were separated, widowed and divorced had an increased likelihood of reporting CPP compared to single women (OR = 1.51, 95% CI = 1.12–2.04).

SPECIFIC CONDITIONS GIVING RISE TO CPP

Endometriosis

Although women with endometriosis are more likely to complain of pelvic pain, the relationship between endometriosis and pelvic pain is complex because the presence of endometriosis does not always cause pain and the severity of disease does not correlate well with symptoms. A number of explanations can account for these discrepancies. Firstly, the diagnosis of endometriosis can vary depending on the grade and skill of the surgeon. Furthermore, concepts of the appearances of endometriosis have evolved since the early 1990s. Now, surgeons are trained to identify a wide range of appearances of endometriosis ranging from superficial peritoneal deposits to ‘burnt out lesions’. Secondly, prior to the early 1990s, many of these variable presentations of endometriosis might have been missed. Moreover, laparoscopic equipment has also advanced significantly and with better optics on the laparoscope, surgeons can now diagnose endometriosis more readily. Thirdly, not all surgeons obtain histological diagnosis of endometriosis. The correlation of macroscopic findings with histological findings of endometriosis is relatively poor. Last but not least, when endometriosis is ‘burnt out’, the active disease may not be there but due to central sensitisation of the nervous system a chronic pain state has become established.

To date, only one double-blind, RCT has been carried out and this has shown that laser treatment of endometriosis does alleviate pain. That study, however, has been criticised because the investigators performed both laparoscopic uterine nerve ablation and laser treatment to endometriosis and hence we cannot know which treatment has resulted in the pain relief. Moreover, there was no histological diagnosis of the endometriosis and recent studies have shown that laparoscopic diagnosis of endometriosis often does not correlate with histology, as discussed above.

Adhesions

A meta-analysis of over 3000 women with CPP and over 2000 controls showed that adhesions are present in 36% of women with CPP compared to 15% of controls. The important question, however, is whether the association between adhesions and pelvic
pain is casual or causal. Unfortunately, the question of whether adhesions cause pain still does not have a satisfactory answer. Some declare that it is an ‘unsubstantiated myth’ that adhesions cause pain\(^{14}\) whilst others think that ‘adhesions can cause pelvic pain and adhesiolyis relieves it in 60–90% of the cases.’\(^{15}\) It therefore appears that some adhesions are associated with pain and some are not.

It has been proposed that adhesions that are dense and vascular are more likely to result in pelvic pain.\(^{16}\) Others believe that the peritoneum, when under traction and tension, produces pain as a result of the activation of pain receptors in the adhesion tissue and the viscera. To date, the best evidence for the latter comes from a study comparing 100 women with pelvic pain for a minimum period of 6 months with a control group of 50 asymptomatic women who were undergoing laparoscopic sterilisation.\(^{17}\) In the 100 women with CPP, 48% had adhesions involving their uterus, ovaries and bowel and 32% had endometriosis, while in the control group 14% had adhesions and 15% had endometriosis. The investigators also observed that the adhesions in the control group were loose and did not restrict bowel mobility, whilst adhesions in the group of women with CPP were more restrictive of the mobility of the viscera. In that study, the one important patient inclusion criterion was that the pain needed to be in a consistent location, regardless of its character. This criterion was not always used in many other studies. Furthermore, some organs, such as the ovaries, are richly innervated and during processes such as ovulation, produce the long recognised phenomenon of mittelschmertz (ovulation pain). Similarly, when the ovary is trapped or stretched by adhesions, pain can result.

More interestingly, it has been shown that adhesion tissue contains nerve fibres. Adhesion tissue was obtained from 17 patients, ten with chronic pain and seven without, and the tissue was examined using immunohistochemistry for nerve tissues. Ten of the 17 specimens contained nerve fibres.\(^{18}\) The nerve fibres were evenly distributed between patients with and without pain. A similar, but larger, study performed on 50 patients found no difference in the amount and quantity of nerve fibres in adhesions from women with pelvic pain and from those without pelvic pain.\(^{19}\) However, the authors remarked on the limitations of their study as follows: based on a 77% proportion of nerve fibres in women without pelvic pain, to detect a 10% difference in the proportion of nerve fibres in the two groups of women with a 5% level of significance and a power of 80%, a total of 502 women (251 women in each group) was needed. Therefore, the two studies to date that have examined nerve fibres and adhesion tissue did not have enough power to answer the question. More importantly, pain perception requires a complete physiological linkage with the central nervous system, not merely a ‘wiring diagram’. Nevertheless, the finding that adhesion tissue contains nerves may help explain why only some adhesions cause pain. Adhesions that are stretched during movement of the viscera could plausibly result in activation of C fibres and/or the release of sensory neurotransmitters such as Substance P and ATP, so as to elicit pain.

A number of non-randomised studies have shown that division of adhesions at surgery is useful in the treatment of CPP.\(^{20–23}\) In terms of retrospective studies, a meta-analysis showed that out of over 600 patients with CPP, 76% would obtain relief from adhesiolyis (Table 1). From the prospective studies, 51% of women would get relief of their pelvic pain from adhesiolyis.\(^{21,24,25}\)

A Cochrane Review concluded that ‘there is still uncertainty about the place of adhesiolyis among patients presenting to gynaecologists and the conclusion of this review is that there is no evidence of benefit, rather than evidence of no benefit.’\(^{26}\)
Pelvic congestion syndrome

Pelvic congestion is a condition associated with dilatation and reduced venous clearance in the pelvis. The exact pathophysiology is still a puzzle, although it is thought to be associated with psychological as well as biological predisposition. The common symptoms are shifting location of pain, deep dyspareunia and post-coital pain and exacerbation of pain after prolonged standing. Intravenous dihydroergotamine has been used for the relief of acute exacerbations of pain associated with pelvic venous congestion. That study used a crossover design in which women presenting with two successive exacerbations of pain were given either dihydroergotamine or placebo. Its major value was as a pathophysiological demonstration: as evidence of the causal relationship between congestion and pain, administration of dihydroergotamine to women with pelvic pain was associated with relief of pain and improvement in radiological appearances. Venography is still considered the definitive radiological investigation for women with pelvic congestion syndrome. The radiological features are dilated uterine and ovarian veins with reduced venous clearance of contrast medium. The absence of reflux on the ovarian vein does not preclude the diagnosis of pelvic congestion syndrome because other diagnostic features include the diameter of the ovarian veins, the distribution of vessels and the delay in contrast medium. Ultrasound does not appear to be as good as venography in the diagnosis of the condition and the correlation between ultrasound and venography is poor. Diagnosis via laparoscopy is also possible, although there is no objective measure of the diameter of the pelvic veins. Suffice to say, half a century after this condition was first described, more questions than answers are present.

Psychosocial factors

An immediate practical problem in the evaluation of a patient presenting with pelvic pain is how to gain an understanding of how the psychosocial circumstances may
have contributed to the current problem. From the literature, we know that depression and sleep disorders are more commonly associated with women with CPP. Psychological distress and mood disturbances may be a consequence and not a cause of persistent pain: while identification of depression is important as part of treatment, caution is required before attribution of causality. An unselective approach of administering anti-depressants to women with CPP has been shown to be ineffective in a small RCT that will be discussed below.

Child sexual abuse or physical abuse may be an antecedent for CPP but many individuals who have suffered such abuse do not have CPP or other consequences in later life and the research literature is beset with the problem of appropriate comparison groups. A comparative study was performed in a tertiary referral multidisciplinary setting on three groups of women (n = 30 each) with CPP, chronic pain of other types and women without pain identified by the GP. They found that 12 (40%) of those with CPP reported sexual abuse compared to five (17%) in each of the two comparison groups. Experience of physical abuse was the same in all groups although women with CPP had a higher score for somatisation, i.e. the experience and communication of somatic distress and symptoms with clear underlying pathology. In another study, abuse history was found more often in women with pelvic congestion syndrome.

Musculo-skeletal, nerve related disorders

This is an area of diagnostic difficulty outside primary care. In particular the general gynaecologist will not have great experience in this area. There is some controversy as to the existence of trigger points, but many have described these conditions as being responsible for CPP. Trigger points identified on the anterior abdominal wall may suggest nerve entrapment. Trigger points are areas of discrete hyperalgesia. When palpated with fingertip pressure, they elicit sharp pain that can refer to distant dermatomes. Because of a physiological phenomenon called ‘viscerosomatic convergence,’ subjective discrimination of somatic and visceral pain can be difficult. This is because somatic nerves synapse in the same dorsal horn segment of the spinal cord as the visceral nerves. Thus pain is perceived as originating from the same dermatome regardless of whether the stimulus is somatic or visceral in origin. Injection of local anaesthetics (lidocaine or bupivacaine) into the trigger point can help relieve pain and confirm the diagnosis of nerve entrapment. The ilioinguinal nerve is not uncommonly trapped in a very wide Pfannenstiel incision scar. Trigger points can also be present in the pelvic muscles. During the vaginal examination, a single digit is used to palpate the muscular attachments along the pubic arch and the insertion of the levator ani and coccygeus muscles. Any areas of previous trauma or scars, e.g. those from previous episiotomies or tears, can be explored for pinpoint tenderness. Chronic patterns of muscle holding following serious accidents or surgery that required prolonged immobilisation, prolonged or repetitive positions at work, relationship conflicts, poor health and lifestyle habits, lack of exercise, poor posture and a history of sexual abuse can all result in pelvic muscle tension and, with time, this gives rise to chronic vulval, perineal or pelvic pain.

Pelvic pain of non-obvious pathology

In clinical practice, many women with chronic pelvic pain turn out not to have any identifiable pathology despite having undergone multiple investigations. There is no
consensus as to the best management for women in this group and the majority will already have had an invasive procedure such as laparoscopy. When specific pathology is found there is the further problem that this can often be coincidental. Although a multidisciplinary approach to diagnosis and care has been advocated as best practice, it is costly and not practical in most units in the UK and many other countries owing to a lack of specialists in this area and to resource limitations. As a consequence we see many of these patients undergoing a cycle of repeated consultations over many years with no effective management plan. The outcomes for both patient and medical practitioners in this area are often less than satisfactory.

A number of reports have documented the experiences of patients with a range of chronic pain conditions when consulting their doctors, as well as the medical perspective. Similar themes can be drawn from these studies: firstly, women with medically unexplained disorders, including women with CPP, have reported negative experiences during medical consultations. Accounts of being met with scepticism and lack of comprehension, feeling rejected, ignored and belittled, blamed for their condition and assigned psychological explanations are common. Patients with chronic pain syndromes with no identifiable pathology find it ‘hard work being a credible patient.’ As their expectations of a diagnosis and a medical explanation of their pain are not met, there is a vicious cycle of futile attempts to convince the medical practitioner that the pain is real and somatic rather than imagined or psychological. Secondly, many physicians view chronic pain patients as ‘heart sink patients’ and often already have a preconceived perception of these patients. There is a lack of time and interest in these patients’ conditions and an intense desire to order more investigations, to find ‘something wrong’ to help explain the symptoms, which eventually turn out to be unhelpful.

**TREATMENT**

In this section, we will examine the evidence currently available from RCTs for the treatment of CPP to determine what type of treatment and management packages can be adopted for women with CPP.

**RCTs of treatment for CPP**

From the literature, 13 RCTs dealing with the management of CPP were found. These RCTs included interventions for CPP, namely, progestogen (medroxyprogesterone acetate) alone or in combination with psychotherapy, goserelin, sertraline, lofexidine hydrochloride, ultrasound scanning as an aid to counselling and reassurance, intravenous dihydroergotamine for acute exacerbations of CPP and the use of a polaroid print to assist in post-operative patient consultation. Other interventions also identified were writing therapy to improve symptoms, static magnetic fields to improve pain, adhesiolysis via laparoscopy or laparotomy and a multidisciplinary approach to investigation including physiotherapy, psychology and attention to dietary and environmental factors. While hormonal therapy aims to achieve benefit in a non-specific manner by inhibiting ovarian activity, based on the observation that many patients with CPP experience resolution at the time of the menopause, psychological approaches aim to enhance coping skills and reduce pain-associated distress.

Although many of these treatment RCTs have robust methodology, the outcomes of these trials can be difficult to compare because of the different outcome indicators.
used. Similarly, comparing trials with the same outcome indicators but different quality of methodology can also lead to misleading results. In this review, we have attempted to compare results from trials that used the same outcome indicators and with reasonable methodology. It should be emphasised that many conclusions are drawn from a single study, thus more studies of comparable design are needed in the future.

**Progestogen treatment**

Combining results from the two available studies, progestogen (medroxyprogesterone acetate (MPA)) was effective at the end of treatment as reflected in pain scores (OR = 2.64, 95% CI = 1.33–5.25, n = 146) and a self-rating scale (OR = 6.81, 95% CI = 1.83–25.3, n = 44), but the benefit was not sustained 9 months post-treatment.41,45 MPA plus psychotherapy was effective in terms of pain scores (OR = 3.94, 95% CI = 1.2–12.96, n = 43) but not the self-rating scale at the end of treatment. In one study41 there was an interaction between the effects of MPA and psychotherapy such that the group receiving both interventions did have a sustained benefit 9 months post-treatment. However, for reasons that are unclear, the ‘placebo alone’ group had an unexpectedly poor outcome, which makes the overall results more difficult to interpret.

In a study of Turkish women, venography scores, symptom and examination scores, mood and sexual function were improved to a greater extent 1 year after treatment with goserelin compared to progestogen.44 Weighted mean differences (95% CI) were: venography = 1.1 (0.64–1.56), symptom score = 3 (2.08–3.92), Hospital Anxiety and Depression Scale (HADS) anxiety score = 1 (0.42–1.58), HADS depression score = 0.3 (–0.34–0.94), HADS total score = 1.3 (0.42–2.18), revised Sabbatsberg Rating Scale (rSSRS) score = 15.5 (11.7–19.23).

**Anti-depressant therapy**

No improvement in pain scores was seen in women taking sertraline compared to placebo. The SF-36 subscale ‘Health perception’ showed a small improvement in the sertraline arm, while the ‘Role functioning-emotional’ subscale showed a large fall in the sertraline arm.40 Outcomes with lofexidine hydrochloride were no better than for placebo (OR for reduction in pain, visual analogue scale (VAS) = 2.5, 95% CI = 0.6–10.3).33 Pain scores after dihydroergotamine were reduced for up to 48 h post-injection.28 This study highlights the fact that non-selective treatment with anti-depressants as a blanket treatment of CPP is unlikely to work.

**Multidisciplinary management**

The use of a multidisciplinary approach,24 led to a positive outcome in a self-rating scale (OR = 4.15, 95% CI = 1.91–8.99, n = 106) and in daily activity but not in pain scores. There are no other randomised controlled trials of treatment (RCTT) examining multidisciplinary care, mainly because individual treatment effects would be difficult to dissect. Thus, in general, trials for the treatment of pelvic pain are conducted with the aim of examining an individual medical or surgical treatment. The core elements of a multidisciplinary team will include a gynaecologist and a physician with
a special interest in pain management, a psychologist, a pain clinic nurse and a physiotherapist. The multidisciplinary ‘package’ in the UK, even when available, is quite varied but may include cognitive behavioural psychotherapy, nursing support (such as in between clinic times where medications need readjusting) and the use of complimentary therapy including acupuncture.

As mentioned above, the main evidence to show that a multidisciplinary team approach works come from Leiden, Netherlands. That RCT showed that the multidisciplinary approach was beneficial compared to a conventional approach in terms of improvement in quality-of-life scores, although the McGill pain scores were not different in the two approaches. The study however also suggested a strong ‘functional’ component in many women with CPP and that this group of women benefited from the ‘integrated’ multidisciplinary treatment including psychotherapy. Indeed, counselling supported by ultrasound scanning has been shown to be effective both in terms of pain scores (OR = 6.77, 95% CI = 2.83–16.19, n = 90) and mood. There are important questions about the optimal use of this approach as it is time consuming and expensive. Realistically, many cases will continue to be seen by a single specialist, emphasising the need for the skills relevant to CPP being embedded in gynaecological specialist training.

Surgical treatment

Adhesions

The outcome in women undergoing adhesiolysis via laparotomy was not different to that in women who did not undergo surgery on any outcome measure (OR = 1.54, 95% CI = 0.81–2.93, n = 148). However, the small sub-group with severe adhesions did show a significant benefit for surgery (OR for self rating scale = 16.59, 95% CI = 2.16–127.2, n = 15). In a study by Peters et al (1992), adhesiolysis was performed via laparotomy, in contrast to a study by Swank et al (2003) where adhesiolysis was performed via laparoscopy. Theoretically, laparotomy could result in more adhesions compared to laparoscopy, thus making the two studies non-comparable. Moreover, Swank et al (2003) performed surgery on patients (88% women and 12% men) with abdominal pain, in contrast to Peters et al (1992) where only women with CPP were included. Our conclusions should be interpreted with caution given that the pathophysiology of abdominal and pelvic pain may differ between men and women and the presence of gynaecological conditions, such as endometriosis or pelvic inflammatory disease, could, if left untreated, give rise to persistent pain. Thus, there is still uncertainty about the place of adhesiolysis among patients presenting to gynaecologists and the conclusion of this review is that there is ‘no evidence of benefit’ rather than ‘evidence of no benefit.’

Two further conclusions may be drawn: that either additional large trials of adhesiolysis recruiting ‘gynaecological’ patients should be undertaken to provide the necessary level of evidence, or that, given the uncertainties about pathophysiology, clinical sub-groups such as those with adhesions involving the ovaries should be selected and the influence on their outcomes of psychological and sociocultural variables should be examined. Researchers should also concentrate on careful observational studies including full psychological assessment of participants, laboratory characterisation of adhesion tissues and physiological investigation of intraperitoneal inflammatory and nociceptive processes.
Presacral neurectomy and laparoscopic uterine nerve ablation

Presacral neurectomy (PSN) and laparoscopic uterine nerve ablation (LUNA) are both surgical procedures that involve the disruption of sensory nerve afferents that carry pain stimuli from the pelvis. In LUNA, the utero-sacral ligaments are transacted close to their insertion at the cervix, thus interrupting part of the Lee—Frankenhauser nerve plexus, while in PSN, the pre-sacral nerve plexus is isolated and cut proximally and distally. Complications associated with LUNA are rare; there have been isolated cases of uterine prolapse and bladder dysfunction, whilst PSN has been associated with more serious complications such as haematoma formation, major vessel injury as well as constipation and bladder dysfunction, although these complications are again rare in experienced hands. Many uncontrolled studies have claimed LUNA and PSN to be effective for primary and secondary dysmenorrhea. A Cochrane review reported some evidence of effectiveness of LUNA in the treatment of primary dysmenorrhea when compared to controls although this result is largely derived from one small trial of 21 participants where the allocation of randomisation was sequential and hence the results should be treated with caution. There is also a large decrease in effectiveness of LUNA for dysmenorrhea over time, suggesting a large placebo effect in the initial period. A multi-centre study is underway to examine the effectiveness of LUNA in CPP. Short term results for PSN and LUNA for dysmenorrhea seem to be similar, although PSN has better results in the long term as suggested by the single trial comparing LUNA and PSN. This showed no difference in the treatment groups up to 6 months (OR = 0.7, 95% CI = 0.9–82.7), although when responses were assessed at 12 months, PSN appeared to be more effective. The results of the prospective RCT of LUNA are therefore keenly awaited.

Other therapies

Static magnetic therapy

The effects of static magnetic therapy versus placebo were analysed using the Wilcoxon rank sum test. No differences were found following 2 weeks of treatment but there were statistically significant differences after 4 weeks of treatment as assessed by the Pain Disability Index and the Clinical Global Impression Scale but not by the McGill pain questionnaire. For consistency, in this review, we present the outcomes in terms of weighted mean differences, which show no significant differences in the outcomes. It is however, important to note that in that study, there was a high drop-out rate from the 2 week follow up to the 4 week follow up period (41% attrition rate). This modality is perhaps more of a curiosity than a substantially useful potential treatment.

Photographic reinforcement

A RCT was carried out on 235 women undergoing diagnostic laparoscopy for the investigation of CPP. At the operation, a Polaroid print was taken of the pelvis and patients were randomised to either see or not see the print during the post-operative period. Photographic reinforcement after surgery does not appear to have any beneficial effect. Unfortunately the intervention group had a trend for greater pain intensity compared to controls, which may have confounded possible beneficial effects of photographic reinforcement. Moreover, only 235 women were entered into the trial.
compared to the target of 450, so the final comparisons were somewhat different to those originally planned.

Writing therapy

The aim of this intervention was to allow patients to identify and express the thoughts and feelings associated with their pain as a means of reducing their impact. The main effects of writing about the stress of pelvic pain were limited: weighted mean differences (95% CI) on the various sub-categories of McGill Pain Questionnaire were: sensory pain $= 0.07 (-0.31 - 0.45)$, affective pain $= -0.12 (-0.42 - 0.18)$ and evaluation pain $= -1.16 (-1.96 - -0.36)$. Women with higher baseline ambivalence about emotional expression appear to respond more positively to this intervention, thus showing a sub-group who may benefit specifically from this type of psychological approach.

CONCLUSION

The aetiology of chronic pelvic pain (CPP) is still very much a puzzle. The factors associated with CPP seem to be many and varied because the study designs and the study populations reported so far are largely different. Some of the organic pathology that has been associated with CPP includes endometriosis, adhesions, pelvic inflammatory disease, muscle and nerve disorders and psychosocial issues. But from studies in the community, we know that more than half of women with CPP have not been given a diagnosis and up to 20% have never had any investigations. Of those who have, the most common diagnosis was irritable bowel syndrome.

Currently available information about the treatment of women with CPP provides some support for the use of ultrasound scanning as an aid to counselling and reassurance, progestogen (medroxyprogesterone acetate) or goserelin for pelvic congestion and (with the aim of improved function and self rating) a multidisciplinary approach to assessment and treatment. Adhesiolysis has not been shown to be of benefit other than in women with severe adhesions. Short term results for presacral neurectomy (PSN) and laparoscopic utero-sacral nerve ablation (LUNA) seem to be similar, although PSN has better results in the long term. SSRI antidepressants have not been shown to be of benefit. Most of these conclusions are based on the outcome of single randomised trials and need replication. Writing therapy may have a place as part of a multidisciplinary programme.

Practice points

- As there are multiple factors associated with chronic pelvic pain (CPP), it is vital for the physician to allocate enough time for the initial consultation
- Physicians need to understand that many women with CPP do not have laparoscopically visible disease; where pathology is seen it may or may not be causal.
- Current evidence shows some support for the use of ultrasound scanning as an aid to counselling and reassurance, progestogen (medroxyprogesterone acetate) or goserelin for pelvic congestion and (with the aim of improved function and self rating) a multidisciplinary approach to assessment and treatment.
REFERENCES


