Current Concepts of Pelvic Congestion and Chronic Pelvic Pain

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ABSTRACT

Chronic pelvic pain in women is a common and disabling illness caused by numerous organic pathologies usually accompanied by varying psychological dysfunctions. Many patients may receive misdiagnosis, misdirected therapies, or do not seek help at all. Pelvic congestion may be responsible for pain in patients without more common diseases, such as endometriosis and pelvic adhesions, among others. Our view of this condition is evolving. In the United States, this medical condition remains controversial. More recent research from the United Kingdom has caused a fresh look at the diagnosis and treatment of chronic pelvic pain produced by pelvic congestion. Potentially, many patients may benefit from a reconsideration of this approach.

Key Words: Chronic Pelvic Pain, Pelvic Congestion, Pelvic Venography, Embolotherapy.

INTRODUCTION

Chronic pelvic pain in women is a common and disabling condition. It is defined as pain that has been present for 6 months or longer. In contrast to episodic and acute pain, chronic pain is almost continuous and unresponsive to conventional diagnosis and treatment. If unrelieved, it may result in long-term disability, depression, and neurological changes.

Two to 10% of all gynecologic office consultations are for chronic pelvic pain. Twenty percent of all laparoscopies are performed for chronic pelvic pain. It is estimated that 10 million women suffer from this condition and that 7 million do not seek help. Up to 61% of patients are found to have no explanation for their pain.

The economic impact of this condition is astonishing. The annual medical cost for diagnosis and treatment of chronic pelvic pain is estimated to be about $1.2 billion. The cost of lost productivity in these patients is estimated to be $15 billion annually. The most commonly made diagnosis in chronic pelvic pain is endometriosis (31%). The majority are undiagnosed or improperly diagnosed.¹

In the majority of women with no obvious pathological cause for their pain, they may be suffering from pelvic congestion syndrome (PCS). It is a diagnosis that was proposed over 100 years ago, but is only recently regaining legitimacy. Pelvic congestion is the presence of enlarged venous complexes of the reproductive tissues with impaired circulation and drainage. Richet² is credited with first describing this condition as a case of “tubo-ovarian varicocele.” Before the days of laparoscopy and venography, Howard Taylor³ described this syndrome and gained some credibility in the medical community of the 1950s. However, due to assumptions regarding the psychosexual component of this illness, and the fact that stress always aggravates the pain, many physicians saw this as a purely psychosomatic illness. The resurgence of pelvic congestion as a legitimate cause of chronic pelvic pain is due to the elegant and systematic work of Beard’s group⁴ at St. Mary’s Hospital in London. Starting in the 1970s and proceeding through the present, the clinical characteristics, methods, and criteria for diagnosis and psychological components have been addressed in the

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United Kingdom without totally being accepted by the American academic and practicing community.

ETIOLOGY

The possible etiologies of chronic pelvic pain caused by pelvic congestion have been classified by El-Minawi. They are classified into 5 categories. These are not considered to be complete and do not singularly explain all the clinical findings of pelvic congestion, each failing in some respect.

Anatomic Dysfunction

Pelvic varicosities are thought to be the effect of gravity on an incompetent venous valvular system. The resultant stasis produces the congestion and pain that is associated with this condition. Pregnancy increases the capacity of the pelvic veins by 60%. When combined with venous kinking of a malpositioned gravid uterus, this is likely to lead to the venous stagnation, flow reversal, and varicosities seen. Parity is a known risk factor in the development of this syndrome. Allen and Master’s controver-sial theory regarding a “fascial defect” producing uterine malposition and congestion has been discounted. However, a relationship has been established between retroversion of the uterus with pelvic pain and dilated pelvic veins.

Orgasmic Dysfunction

When the female is sexually stimulated up to, but not reaching, orgasm (the plateau phase of female sexual response), some pain caused by the vasocongestion may be felt in the pelvic viscera. Whether this can produce permanent vascular changes in unknown.

Psychosomatic Dysfunction

Taylor wrote that “psychiatric disturbances, usually of an emotional character, are a common accompaniment of pelvic congestion. . . .” It was his opinion that an important factor in the etiology of pelvic congestion was “the effect of a primary state of emotional tension” on the smooth muscle and secretory cells of the pelvis in producing psychosomatic disturbances. This caused pelvic congestion to be looked at as a purely psychiatric condition (pelipathia vegetativa). Beard and colleagues partially confirmed this by finding that women with pelvic congestion tended to be more neurotic and in less satisfying relationships. As El-Minawi points out that this proposition brings up the old saw regarding the “chick-en and the egg.” It is true that these women will have some psychological overlay, but we have learned from our study of chronic pain in men and women that the stress of chronic pain itself induces many of these social and psychological consequences.

Hormonal Dysfunction

Women with pelvic congestion have a higher incidence of multicystic ovaries, enlarged uteri, and thickened endometrium, which all may be hormonally induced. Taylor and Beard mentioned the possibility that this condition might be related to hormonal sensitivity because it is virtually unknown in the postmenopausal female. Reginald found that by inhibiting estrogen’s effect with medroxyprogesterone acetate (MPA) a venographically demonstrable diminution of pelvic congestion occurred. The majority of these women experienced good relief of their symptoms when compared with controls.

Iatrogenically Induced Dysfunction

In 1 series, 60% of patients with pelvic congestion were found to have had a tubal ligation. These patients were also found to have a greater volume of peritoneal transudate, and this fluid contained higher levels of 6 keto-prostaglandin alpha than that in controls. These patients were symptomatic 16% to 39% of the time. Another possible iatrogenic cause is the use of intrauterine devices. One study demonstrated venographically (95%) and laparoscopically (52%) an association between PCS and the Lippes loop. Larger studies have yet to verify any of these causes.

PATHOPHYSIOLOGY

The rich anastomotic plexuses of the pelvic viscera include ovarian, paraovarian, uterine, vesicle, rectal, and vulvar veins. The vulvar and uterine veins normally drain into the internal iliac vessels. The left ovarian vein drains into the left renal vein, and the right ovarian vein drains into the vena cava directly. Vascular connections exist between the vesicle and rectal venous complexes as well as the upper thigh. These channels are relatively valveless and are gravity and vascular-tone dependent for their circulation. Anatomic studies have shown that 15% to 15% of women lack valves in the left ovarian vein; the
corresponding figure for the right vein is 6%. When present, 43% of the valves on the left and 35% to 41% on the right are incompetent. Mean values of ovarian venous diameter are 3.8 mm in the presence of competent valves and 7.5 mm when the valves are incompetent. The upper limit of normal diameter for ovarian veins is 5 mm.\textsuperscript{11}

In PCS, the vessels are not only enlarged, but the flow through them is retarded. Reginald\textsuperscript{10} showed that these changes can be temporarily reversed with dihydroergotamine intravenously by documenting pelvic venography and symptoms before and after injection.

Stones\textsuperscript{12,13} has identified several neurotransmitters produced by these abnormal vessels. Adenosine 5’ triphosphate, substance P, endothelin, and vasopressin have been found to play a possible role. Calcitonin gene-related peptide and nitric oxide have also been implicated.\textsuperscript{14}

**SYMPTOMS**

Pain is the definitive symptom of PCS. It is usually described as a dull ache with intermittent acute exacerbations. Usually 1 side will predominate, but on careful questioning, the patient reveals that symptoms are felt occasionally on the nonpredominant side. The acute increases in pain will often have a sharp quality. Because irritable bowel syndrome and endometriosis can also be present, these pain generators may confuse the patient and clinician alike. Low backache is often present. All symptoms are aggravated by anything that increases venous pressure. Standing, walking, prolonged sitting, sexual intercourse, and vigorous sports activities will usually exacerbate the symptoms. These patients will learn to reduce their activity and will become deconditioned.

Both deep thrust dyspareunia (71% to 78%) and postcoital aching (65%) are common complaints. This will invariably produce sexual dysfunction and social-pathology. Patients may also develop penetration dyspareunia from vulvovestibulitis as a result of their chronic visceral pain.

Menstrual disorders, such as menorrhagia and menometrorrhagia, occur in up to 54% of patients. Intermenstrual bleeding may be present in up to 25%. Dysmenorrhea of the congestive type will usually begin up to 1 week before menses (89%) and is described as low lateral and cramping. This is very similar to the premenstrual phase of patients with endometriosis.

Gastrointestinal and urinary tract symptoms are common. Bloating, nausea, and diffuse abdominal cramping are common. Urinary frequency and urgency may be noted. These are probably a function of the venous engorgement of the peri-vesicle and rectal spaces. Headache, fatigue, and insomnia may be due to a general autonomic dysfunction. Fibromyalgia can be present.\textsuperscript{5,11}

Psychiatric disturbances may be manifested in a wide range of symptoms. Anxiety and depression are most common.

**PHYSICAL EXAMINATION**

An abdominal examination will produce tenderness over the ovarian points. This lies at the junction of the upper and middle third of a line drawn from the anterior superior iliac crest and the umbilicus. This point is at the level of the ovarian vein crossing into the bony pelvis, and compression increases the venous pressure, which exacerbates the ovarian tenderness.

On inspection of the external genitalia, superficial varicosities may be noted. Vulvovestibulitis may be present by Q-tip test.\textsuperscript{15} Visualization of the cervix may reveal cyanosis and an increase of cervical mucous. The uterus and ovaries are tender. The uterus may be retroverted. The combination of tenderness on abdominal palpation over the ovarian point and a history of postcoital ache was 94% sensitive and 77% specific for discriminating pelvic congestion from other causes of pelvic pain in Beard’s group. In contrast, Taylor\textsuperscript{3} reported the most reliable sign to be tenderness of the posterior parietal and the uterosacral ligaments (80%).\textsuperscript{11}

**DIAGNOSTIC STUDIES**

The twofold criteria of enlarged veins with reduced circulation require a dynamic diagnostic study that can measure both. That is why ultrasound, computerized tomography, magnetic resonance imaging, and radio-nuclear studies, to date, are inadequate to make an accurate diagnosis.

Laparoscopy is usually done in the Trendelenburg position with increased intraabdominal pressure. Therefore, venous collapse and a false negative impression will result. If an experienced observer will reverse the head down position and decrease the insufflation pressure, a more accurate picture can be achieved.
Venography should be considered the diagnostic study of choice. Pelvic venography can be performed transve-
nously or transvaginally (transuterine). Beard and col-
leagues\textsuperscript{16} described a transuterine venogram scoring sys-
tem. This permits an objective standard for pelvic venog-
raphy (Table 1). By measuring the maximum diameter
and the time necessary for the dye to clear, the score can
range from 3 to 9, with 3 or 4 being normal and 5 to 9
suggesting increasingly severe pelvic congestion. A trans-
vaginal, transuterine approach is much less expensive
and less invasive than a transvenous approach. The
patient is placed in the dorsal lithotomy position, and a
vaginal speculum exposes the cervical os. This is
cleansed with povidone antiseptic solution, and a special
double lumen needle (Rocket Needle, Rocket Co.,
London, England) is used. The needle is passed through
the cervix via a concentric metal sheath that covers all but
the final 0.5-cm tip. Twenty to 30 mL of water-soluble dye
is injected into the fundal myometrium under fluoro-
scopic guidance. Hyaluronidase may be infused first to
decrease the pressure required for myometrial injection. I
have found this step unnecessary. Some patients may
require conscious sedation for this procedure (about 10%
in my experience). This can be determined by the degree
of tenderness on pelvic examination and by the patient’s
observed response to pain. The first image is taken imme-
diately and then at 20-second intervals for up to 60 sec-
onds. We usually administer an oral antibiotic prophylac-
tically. Beard’s criteria for pelvic congestion is then used
to score the degree of congestion (normal, moderate, or
severe). A new disposable needle may be available short-
ly, which should decrease the risk of infection and sim-
plify the logistics of this procedure. Transuterine injection
is preferable because it demonstrates the uterine vein
component of PCS, which might continue even after
ovarian vein ligation or embolization. This could explain
why the therapies that address only the ovarian compo-
nent, and not the uterine component, of congestion
might produce inadequate pain relief.

With the transvenous approach, sterile technique must be
strictly maintained. After the venous system is accessed
via the femoral or jugular veins, the left renal and subse-
quently left ovarian vein is cannulated. Water-soluble dye
is injected. The right ovarian vein is more difficult and
may require a different type catheter and guide. Unless
the patient is tilted head up, incomplete visualization of
the uterine and paraovarian veins may result. Kennedy
and Hemingway\textsuperscript{17} described the radiologic criteria for

| Table 1. Scoring system for assessing pelvic venography.\textsuperscript{16} |
|----------------------------------|---|---|---|
| Maximal diameter of ovarian veins (mm) | 1-4 | 5-8 | >8 |
| Time to disappearance of contrast medium after injection (seconds) | 0 | 20 | 40 |
| Ovarian plexus congestion | Normal | Moderate | Extensive |

congestion including: maximal diameter of the ovarian
veins of 10 mm, congestion of the ovarian venous
plexus, filling of the veins across the midline, or filling of
twulvar and thigh varicosities.

**TREATMENT**

**Medical Therapy**

Reginald\textsuperscript{10} found that dihydroergotamine decreased con-
gestion and pain. Because this effect is only transient, no
therapeutic modality has been able to take advantage of
this phenomenon.

Reginald\textsuperscript{10} treated 22 PCS patients with 30 mg of medrox-
yprogesterone acetate (MPA) daily. Seventeen achieved a
reduction in the pelvic venography score. Those reduc-
ing their score had a corresponding reduction in pain
score 75\% of the time. It is not known whether this is
due to the estrogen-blocking effect of MPA or whether
inhibition of the neurotransmitters occurred in these
abnormal veins. This form of therapy is even more suc-
cessful when combined with psychotherapy.\textsuperscript{18} Weight
gain and depression have been reported by those
patients not tolerating MPA.

**Surgical Therapy**

Although Taylor\textsuperscript{3} decried surgical treatment for PCS, lig-
ation of the ovarian veins can be successfully done
through a McBurney incision or may be performed laparoscopically. In the small number of patients report-
ed to have undergone this procedure, they received
good relief of pain.\textsuperscript{11} Uterine suspension should be per-
formed laparoscopically in patients with a retroverted
uterus and deep thrust dyspareunia. Hysterectomy with
bilateral salpingo-oophorectomy has been used successfully in some patients. Beard reported 36 women who had failed medical management and went on to hysterectomy with bilateral salpingo-oophorectomy. All patients except 1 experienced good pain relief at 1 year postoperation. However, because these patients are young, more conservative initial therapy is appropriate.

Embolotherapy

Edwards was the first to report radiologic transvenous embolization of the ovarian veins to treat PCS. In all, 56 patients have now been reported. The majority of these patients received good relief. The only complications have been hematoma at the puncture sight (1) and ovarian vein perforation (2). The procedure is similar to transvenous selective venography, but either enbucrilate (Histoacryl L Transparent, B. Braun, Melsungen, Germany) or small 5- to 15-mm stainless steel coils (Gianturco Coils, Cook Inc., Bloomington, IN), or the combination of the 2 are injected. Most experts do not recommend the use of sclerosing agents, to avoid inadvertent systemic dissemination.

CONCLUSION

The widely variable symptoms and the strong association with psychological disturbances have caused many gynecologists to question the legitimacy of this condition. The preponderance of evidence now favors its further investigation.

Pelvic congestion syndrome may not be as uncommon as previously assumed. In patients with chronic pelvic pain and no visible pathology at laparoscopy, pelvic venography should be performed. Also, those patients with other pain generators not responding to conventional therapy should be studied if indicated by history or physical examination. Women’s health care providers should become educated about this condition and approach its diagnosis and management with an open mind. Only then will we see a reduction in the suffering of these patients.

Pelvic venography should be available and the transuterine approach used when possible. Medical therapy with medroxyprogesterone acetate should be given for at least 3 months before surgical therapy is used. Laparoscopic venous ligation or embolotherapy should be selected for those patients not responding to MPA.

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