



Pelvic Congestion Syndrome: Diagnostic Challenge and Endovascular Treatment

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Abstract

Pelvic congestion syndrome (PCS) is comprised of a constellation of symptoms including non-cyclical pelvic pain, pelvic varicosities, dysmenorrhea, and dyspareunia. There is a higher incidence of PCS in young, multiparous, pre-menopausal women in the age range of 20-40 years. Symptoms worsen through the day and are exacerbated by standing and increased physical activity. Patients often experience relief in supine position. The diagnosis of PCS should be considered when a pre-menopausal multiparous woman presents with pelvic pain of greater than 6 months' duration and is found to have pelvic varices on non-invasive imaging (MRV, transvaginal ultrasound). The diagnosis is typically confirmed by venography demonstrating dilatation of and reflux within the ovarian vein, which occurs more commonly on the left side due to its drainage into the left renal vein (often considered the female equivalent of scrotal varicoceles). Ovarian vein venography and embolization to prevent further reflux is the first-line treatment with resolution of symptoms seen in 70-90% of patients. Here, we report the case of a patient who presented with the classic signs of PCS and underwent ovarian vein embolization therapy.

Case Presentation

A 35-year-old G4P4 woman presented to the interventional radiology clinic for evaluation of chronic pelvic pain. Her pain initially developed three years ago following the delivery of her last child and became progressively more severe. Her pain was localized to the mid-suprapubic and perineal regions. The pain was exacerbated by standing up and alleviated by lying supine. She also complained of deep pelvic pain during intercourse. In addition, she reported having palpable blood vessels in the pelvic and perineal regions. Her daily activities were limited as a result of her symptoms.

The patient previously had varicose vein sclerosis in her left lower extremity, which partially improved her symptoms. However, she intermittently continued to experience symptoms consistent with venous distension. After addressing her concern about her symptoms with her gynecologist, pelvic ultrasound was performed and demonstrated no evidence of fibroids or other adnexal pathology. Physical exam at the time of presentation was negative for venous prominence in the abdomen and pelvis. However, there were some dilated veins noted over the left inner thigh and vulvar area. There was no tenderness over the abdomen and pelvis.

Because the patient's presentation was worrisome for pelvic congestion syndrome, she was advised to undergo angiographic venogram of the pelvis and possible ovarian vein embolization in case of significant reflux. The left renal and ovarian veins were accessed and catheterized via the right common femoral vein. Venograms demonstrated significant reflux of contrast from the left renal vein into the left ovarian vein. The entire left renal vein and the left ovarian vein were dilated and opacified up to the level of the ovaries. Figures 1-4 show significant contrast reflux from the left renal vein into the left ovarian vein down to the level of the ovaries.

Numerous collaterals were observed along the dilated venous channel. On the basis of the patient's symptoms and significant radiographic findings, embolization of the left ovarian vein using several VortX-185-12 mm microcoils (Boston Scientific, Natick, MA), was performed. Approximately 7 cm length of vein was embolized. Embolization extended from the iliac brim to the level of L2 vertebral body. Figures 5-7 reveal embolization of the left ovarian vein using microcoils reaching the level of L2 vertebral body.

A subsequent venogram exhibited no further reflux to the level of the ovaries. Right ovarian venogram and bilateral internal iliac venograms were then performed which demonstrated no

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Received Date: 01 Jan 2017

Accepted Date: 20 Apr 2017

Published Date: 25 Apr 2017

Citation:

Salomon M, Goldman J, Contractor S. Pelvic Congestion Syndrome: Diagnostic Challenge and Endovascular Treatment. *Ann Clin Case Rep.* 2017; 2: 1344.

ISSN: 2474-1655

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Figure 1: Contrast reflux descending from the left renal vein into the left ovarian vein.



Figure 4: Contrast continues descent and reaches the level of the ovaries.



Figure 2: Contrast reflux continues descent down the left ovarian vein.



Figure 5: Ovarian vein embolized after microcoil insertion.



Figure 3: Contrast continues descent and reaches the level of the ovaries.

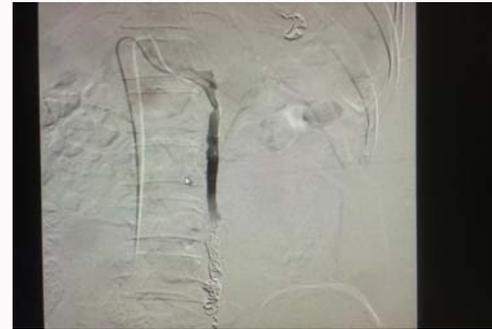


Figure 6: Ovarian vein embolized after microcoil insertion.

significant pelvic collaterals or reflux back to the uterus and ovaries.

She was discharged home that same evening and was seen in a subsequent clinic follow up visit at 4 weeks. Her pain is down from a score of 8/10 to 2/10. She states her lifestyle is much improved and she is able to perform her daily activities without pain.

Discussion

Chronic pelvic pain (CPP) represents a common complaint amongst young multiparous women. Establishing a cause for CPP remains a diagnostic challenge, as the differential diagnosis is vast. Disorders of the gynecologic, urinary, gastrointestinal, musculoskeletal, and neurological systems may give rise to CPP. Endometriosis, uterine leiomyomata, pelvic inflammatory disease, interstitial cystitis, irritable bowel syndrome, and pelvic neuralgia are among the common causes of CPP, but the differential may include many more conditions. In fact, the cause of CPP remains undiscovered in up to 61% of women, even after significant radiological and laparoscopic investigation [1-4,5]. Pelvic congestion syndrome (PCS)

should be considered in a young multiparous woman that presents with non-cyclical CPP for over 3 months. Patients will often complain of pelvic varicosities, abdominal/pelvic tenderness, and CPP that worsens with long periods of standing and is relieved by lying supine. A multi-disciplinary approach to the workup, involving Gynecology, Urology, Vascular Surgery, and Interventional Radiology, is often necessary to exclude other conditions and confirm the diagnosis in patients with PCS [1,4]. Anatomically, there are two distinct venous channels that give rise to pelvic venous insufficiency (PVI), the ovarian veins and the internal iliac veins. The ovarian veins are often comprised of multiple channels themselves, rather than solitary vessels. Additionally, they collateralize with the retroperitoneal and ascending lumbar veins. These two features require extensive embolization of a significant length of the ovarian veins as the retrograde reflux can reconstitute into the various channels/collaterals. The internal iliac veins receive blood flow from the utero-ovarian, hemorrhoidal, sacral, and vesicular venous beds and are also responsible for pelvic varices. PCS most commonly involves the left ovarian vein, due to its drainage into the left renal vein, and the right



Figure 7: Ovarian vein embolized after microcoil insertion.

internal iliac vein [6].

Ovarian vein incompetence is thought to occur in up to 10% of women and about 60% of those women will develop PCS. The pathophysiological mechanism by which it develops is considered multifactorial with genetics and pregnancy to be significant contributors. During pregnancy, increased blood volume and blood flow in the pelvis combined with mechanical compression from an enlarged uterus results in valvular injury and permanent dilatation of the pelvic veins, resulting in retrograde reflux. The same pathophysiological mechanism is implicated in varicose veins of the lower extremities, as well [6]. In fact, due to venous connections between the pelvis and lower extremities, it is possible that lower extremity varicose veins refractory to endovascular treatment can be treated the same way as PCS, with embolization of the internal iliac and ovarian veins. Additionally, it is important to distinguish increased blood flow into the ovaries from retrograde reflux into the ovaries. PCS must be a condition caused by the latter in order for ovarian vein embolization to be a successful treatment.

Diagnostic workup often includes abdominal/transvaginal ultrasound, CT/MRI, and venography. On CT/MRI, the findings of ovarian vein diameter >8 mm and 4 or more parauterine veins with a vein diameter of >4 mm support a PCS diagnosis. However, a

recent study published by Dos Santos et al indicates that there is no significant difference in diameter between competent and refluxing veins and therefore techniques that measure venous diameter may not be suitable for diagnosis of PVI [7]. CT/MRI are effective in excluding secondary causes of PVI, including Nutcracker syndrome and May-Thurner syndrome. However, it should be noted that because PVI is partially alleviated by lying supine, CT/MRI may lack sensitivity in detecting mild-moderate cases of PVI [6]. Laparoscopy is not considered a first-line diagnostic tool for PCS as CO2 insufflation can cause venous distension and PCS has reportedly been detected in only 20% of cases [1,4,8].

A variety of treatment options exist for PCS, including hormonal therapy (medroxyprogesterone and gonadotropin-releasing hormone analogs), operative management (surgical ligation of ovarian veins), and endovascular treatment. However, endovascular treatment has become the gold standard of therapy due to its effectiveness and minimal side-effect profile. The American Venous Forum guidelines recommend coil embolization and transcatheter sclerotherapy for confirmed PCS, with other treatment methods reserved for refractory cases [6].

A 2014 comprehensive review of 13 studies published between 1966 and July 2014 was conducted by Hansrani “et al.” [9] With 866 cases of transvenous-occlusion therapy for CPP reviewed. Interventions included femoral or jugular vein access to the ovarian veins and insertion of metallic coils, sclerosants, or glue; most of the cases used either metallic coils alone or foam sclerotherapy in combination with metallic coils. Subjective improvements in pain ratings were seen in all of the studies including in pelvic pain frequency, dysmenorrhea, and dyspareunia. There was a reported 4-17% symptom recurrence during the 1-5 year post-procedure period in five of the studies. There were 4 successful pregnancies reported post-embolization. Complete occlusion of veins that showed reflux was accomplished in 98-100% of cases. Mean right ovarian vein diameter, as measured by transvaginal ultrasound, reduced from 4.5mm to 3.19mm and mean left ovarian vein diameter reduced from 6.3mm to 4.5mm six months after sclerotherapy. Notably, there was no significant difference found

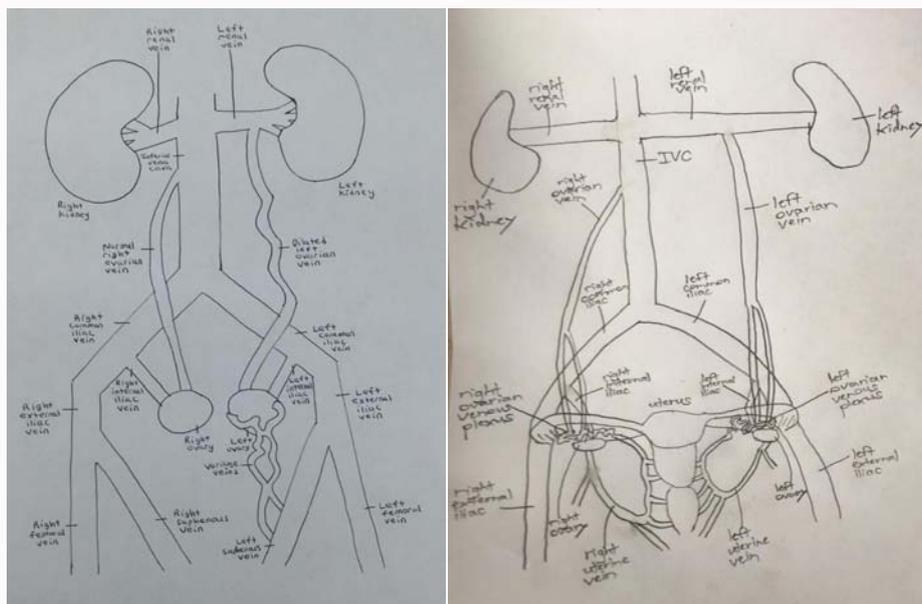


Figure 8: Schematic of pelvic venous anatomy showing tortuous ovarian venous channels that give rise to varices in PCS.

between success rates and occlusion material used. The procedure was found to be safe with few significant complications reported. Reported complications included 0.6% perforations or injuries to the target vein and 1.6% coil migration to the pulmonary artery or renal circulation. No long term complications or death were found in any of the studies.

Conclusion

Despite several studies reported on PCS, further research is necessary in order to establish diagnostic criteria for the condition. At this time, a consensus has not yet been established on the specific symptoms and the degree of venous distention required to make the diagnosis. Additionally, the pathophysiological relationship between CPP and pelvic venous insufficiency remains poorly understood. Prospective controlled trials remain necessary to establish a strong causal relationship between CPP and PVI [9]. Although it appears that ovarian vein embolization is effective in treating patients with CPP and PVI, the etiology responsible for the pain and the mechanism by which the treatment works are areas that require investigation [3].

References

1. Mahmoud O, Vikatmaa P, Aho P, Halmesmäki K, Albäck A, Rahkola-Soisalo P et al. Efficacy of endovascular treatment for pelvic congestion syndrome. *Journal of Vascular Surgery: Venous and Lymphatic Disorders*. 2016;4(3):355–70.
2. Durham JD, Machan L. Pelvic congestion syndrome. *Semin Intervent Radiol*. 2013;30(4):372-80.
3. Champaneria R, Shah L, Moss J, Gupta JK, Birch J, Middleton LJ, et al. The relationship between pelvic vein incompetence and chronic pelvic pain in women: Systematic reviews of diagnosis and treatment effectiveness. *Health Technol Assess*. 2016;20(5):1-108.
4. Borghi C, Dell'Atti L. Pelvic congestion syndrome: the current state of the literature. *Arch Gynecol Obstet*. 2016;293(2):291-301.
5. Daniels JP, Khan KS. Chronic pelvic pain in women. *BMJ*. 2010;341:c4834.
6. Koo Sonya, Chieh-Min Fan. Pelvic Congestion Syndrome and Pelvic Varicosities. *Tech Vasc Interv Radiol*. 2014;17(2):90–5.
7. Santos SJ Dos, Jm Holdstock, CC Harrison, AJ Lopez, MS Whiteley. Ovarian Vein Diameter Cannot Be Used as an Indicator of Ovarian Venous Reflux. *Eur J Vasc Endovasc Surg*. 2015;49(1):90–4.
8. Tu FF, Hahn D, Steege JF. Pelvic congestion syndrome-associated pelvic pain: a systematic review of diagnosis and management. *Obstet Gynecol Surv*. 2010;65(5):332-40.
9. Hansrani Vivak, Abeera Abbas, Sahil Bhandari, Ann-Louise Caress, Mourad Seif, Charles N Mccollum. Trans-venous occlusion of incompetent pelvic veins for chronic pelvic pain in women: a systematic review. *Eur J Obstet Gynecol Reprod Biol*. 2015;185:156–63.