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Clinical Review on Pelvic Congestion Syndrome (PCS): Diagnostic Imaging Can Alter the Management Plan

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Abstract

The pelvic congestion syndrome (PCS) is challenging and unfortunately misdiagnosed. For these reasons, the physicians seem to be not familiar with such condition due to overlap with other pathology of similar manifestations, lack of definitive diagnostic criteria, poorly understood underlying cause of this disorder. The condition affects a great number of women worldwide which demands a comprehensive approach to make an appropriate diagnosis and subsequently timely management. Despite the increasing availability of imaging modalities, yet there is limited information relating standardized diagnostic features that allow a definitive diagnosis from other diseases with similar presenting pelvic symptoms. The knowledge of these data is useful for decision making regarding the treatment course tailored on a case-by-case basis. On this account, we share our experience of challenging case who was suffering from gynecological symptoms of recurrent uterine bleeding and pelvic pain for long time, treated successfully with endovascular embolization after confirming the diagnoses of PCS by Computer tomography (CT) and magnetic resonance imaging (MRI).

Keywords: Pelvic congestion syndrome (PCS); Ultrasound (US); Computer tomography (CT); Magnetic resonance imaging (MRI); Embolotherapy.

Introduction

Pelvic congested syndrome (PCS), also called pelvic venous insufficiency (PVI), manifested with chronic pelvic pain. Because PCS is frequently a diagnosis of exclusion, an awareness of its prevalence and symptoms within the gynecologist and primary care physicians can ultimately improve the referral to appropriate vascular specialists for further workup. Many research studies investigate the radiological modalities to diagnosis PVI as pelvic US, CT/ MRI or venography. Once the diagnosis of PCS confirmed, treatment strategy decision (embolotherapy vs conservative medical therapy) will be chosen depending on the radiological findings, underlying causes and severity of symptoms.

Case Presentation

36 years old female with history of menorrhagia and chronic pelvic pain in the past 8 years. The pain increases with long standing. It also increases during the menstruation. The pain is 10/10 with disturbance of sleep. The patient also has dyspareunia with occasional blood spotting. Her obstetrical history included three full term normal vaginal deliveries. Unremarkable medical and surgical history. The patient had computed tomography (CT) examination of the abdomen and pelvis with contrast agent, which showed bilateral dilated ovarian veins (Figure 1). This is connected to dilated tortuous pelvic veins in the Para uterine region with congested edematous uterus and vagina (Figure 2). The patient and her husband were counseled about the nature of the disease and treatment options including the transcatheter venous embolization of the ovarian veins to stop the reflux and congestion. They agreed to proceed. The patient underwent bilateral ovarian veins embolization using sand witch technique with coils with Ethanolamine Oleate 5% sclerosant foam on the right side (Figure 3) and coils with Glubran glue on the left side (Figure 4) on two different sessions due to technical issues. The patient was reported a response to treatment with 70% reduction in the pain and resolution of the menorrhagia. The patient was able to sleep comfortably. The dyspareunia has reduced.

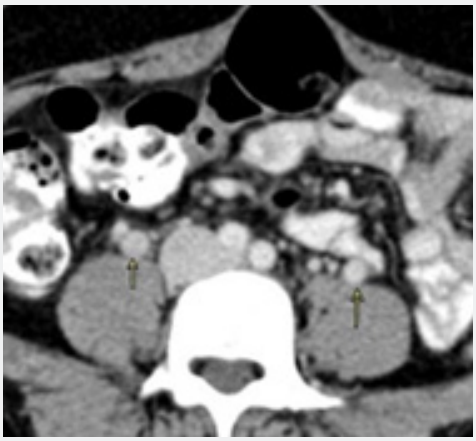

Figure 1: Computed Tomography axial image at the level of aortic bifurcation shows dilated bilateral gonadal veins (arrows) and dilated inferior vena cava.

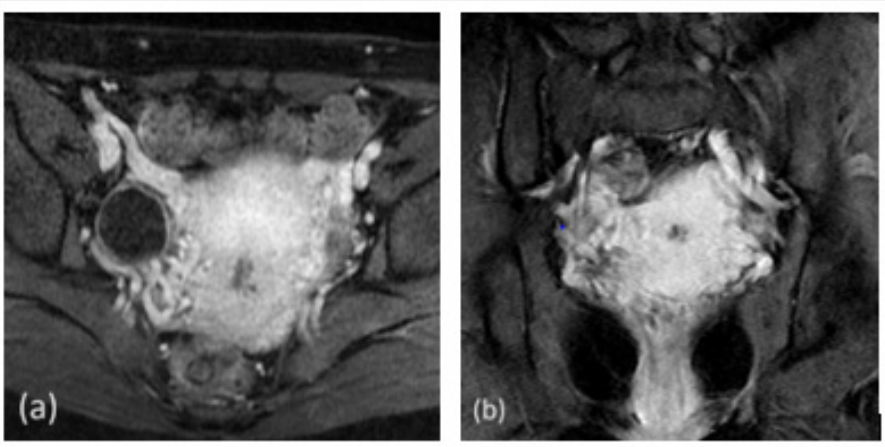

Figure 2: MRI post contrast T1 axial (a) and coronal (B) images shows dilated bilateral parauterine vessels . The right ovary shows simple cyst.

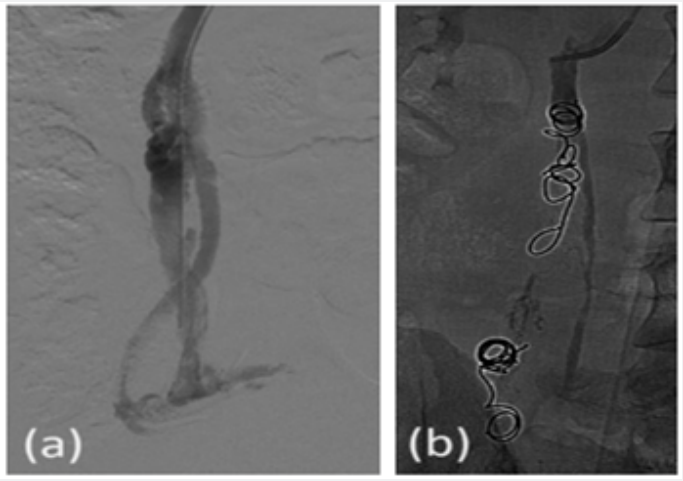

Figure 3: Right gonadal vein embolization using sand witch technique with coils and 5% Ethanolamine Oleate foam sclerosant agent.

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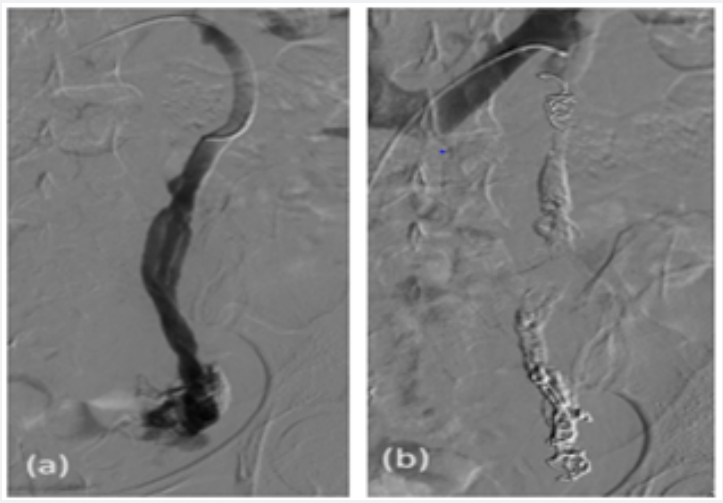

Figure 4: Left gonadal vein embolization using sand witch technique with coils and n-Butyl Cyanoacrylate adhesive glue.

Though, the patient has reported recurrence of the pelvic discomfort after six months, but it was less than the pre-operative level. We have repeated the pelvis MRI which showed residual left para-uterine and iliac veins dilatation (Figure 5). We have counseled the patient about the conservative versus endovascular options, she asked for another session of embolization. The patient underwent left internal iliac vein coil embolization (Figure 6). The patient reported improvement of the symptoms with residual pain around 4/10 and dyspareunia with occasional blood spotting. We further evaluated her with MRI pelvis and pelvic arteriogram for arteriovenous malformation and shunting and both were negative. The patient is treated conservatively now for her residual symptoms.

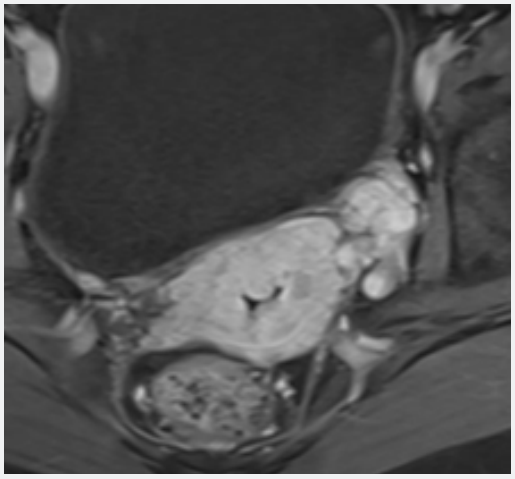

Figure 5: Post contrast axial MRI image at the level of the uterus shows left sided residual dilated parauterine vessels. The right ovarian cyst has resolved.

Discussion

Historically, pelvic congestion syndrome (PCS), since its introduction in 1857 by Richet who clinically identified of ovarian varix during autopsy of young women dead of massive hemorrhage [1] and documentation the existences of pelvic varicosities as "pelvic congestion syndrome'' by Taylor in 1949 [2]. There were several studies on this complex entity has been conducted and reported widely. Although the knowledge that has been gained regarding the clinical features of these complex gynecologic problems, the (PCS) remains an underdiagnosed and their optimal

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management is still challenging and needs to be judged carefully on a case-by-case basis. The pelvic congestion syndrome (PCS) is affecting up to 40% of the female population during their lifetime and often associated with negative cognitive and behavioral consequences affect the quality of life of the patients [3]. Bearing in mind that (PCS) was been long recognized as purely gynecological disorders that accompanied by great variance in level of pelvic pain, dysmenorrhea or dyspareunia [4]. In addition, it was associated with patients complain of bladder urgency, generalized lethargy, fullness in the legs and/or nonspecific gastrointestinal symptoms such as bloating and constipation [5]. Because the broader spectrum of symptoms of these conditions it can be challenging to pinpoint the diagnosis clinically. Although its prevalence ranges from 10-30% of gynecologic outpatient's visits in the United States complain of chronic pelvic pain for longer than 6 months [6]., yet many cases affected by (PCS) were misdiagnosed due to its pelvic vascular anomaly background. This is compatible with our case which dismissed as differential diagnosis of (PCS) despite on the patient chronic symptomatic pelvic. The natural history or the exact mechanism for inducing the pathogenesis that increase risk (PCS) of pelvic venous insufficiency, yet have not elucidated. Nevertheless, most of the investigators proposed that female sex hormones (estrogen and progesterone) play a role in increased dilatation of veins and weaknesses venous valves in the pelvic veins, respectively, [7]. Hence, the pelvic venous insufficiency occurs mostly in multiparous women due to pregnancy and post-partum is still controversial, a more recent study conducted by Szary et al., found the pregnancy an associated risk with other factors of chronic venous insufficiencies [8]. Multiparty was a factor found in our patient, and likely linked with her chronic pain. This is also consistent with Kuligowska et al who documented that [9]. Therefore, a careful counselling of multiparous women harboring these chronic pelvic pains is important. With availability of advanced diagnostic imaging resources, there has been an exponential increase for using medical imaging to supports the diagnosis of (PCS). The diagnostic modalities often include ultrasound (US), computer tomography (CT), Magnetic Resonance Imaging (MRI), and venography.

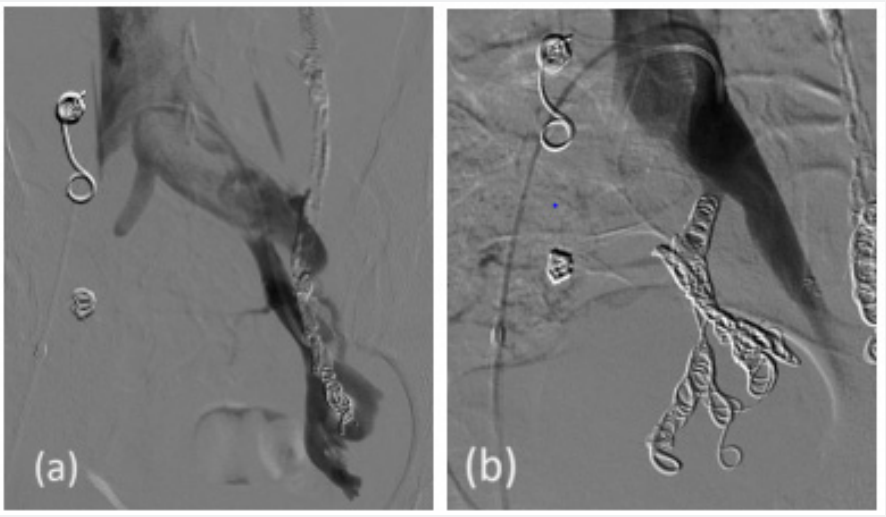

Figure 6: (a) Left internal iliac venogram shows dilated veins with no cross filling of the right pelvic system. (b) Post embolization left common iliac venogram shows coil embolization of the left internal iliac veins and no residual filling/reflux.

Pelvic US is a noninvasive modality assessing gynecological problems. Unlike Transvaginal ultrasound (TVU), abdominal/ Trans perineal ultrasound does allow to visualize and diagnosis the tortuous pelvic veins on a longer course. The sonographic features suggesting of varices include;1) dilated tortuous arcuate veins in the myometrium that communicate with bilateral pelvic varicose, 2) slow blood flow (< 3 cm/s) of dilated ovarian veins, 3) visualization of dilated ovarian vein (6-mm-diameter) as a cut-off diameter with 83.3% positive predictive value according to Park et al., [10-12]. In case of the diagnostic imaging by pelvic US is not-conclusive to assess the vascular abnormalities, CT/MRI another non-invasive modality should be considered as they have a higher sensitivity for lower pelvic varices and also yield more accurate anatomical information. This is comparable to our case, which diagnosed by CT to have ovarian vein varicosities. On CT/MRI, the findings support (PCS) diagnosis include at least 4 or more ipsilateral parauterine veins with a vein diameter of >4 mm, or the diameter of the ovarian vein >8 mm (13,14). However, it should be noted that the pelvic venous insufficiency is partially alleviated by lying down and because CT/MRI are normally conducted while the patients are placed in the supine position, these studies may have limited value for detection / underestimate data on the extent of

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collateral networks or ovarian vein enlargement (15). Considering of venography, a "gold standard" approach for diagnosis of (PCS) it used should be reserved, being an invasive procedure, for patients whose diagnostic imaging as CT and MRI are non-conclusive or necessitating intervention [16]. The transcatheter pelvic vein embolization is one of the important treatment options for cases with (PCS) being less invasive compared to the open surgery with a low incidence of morbidity and using a variety of embolic agents as foams or coils. In our patient, the embolization treatment was the decision taken for better care with uneventful outcome. Hence, the unilateral vs bilateral ovarian vein embolization is still debatable. Based on recent systematic review, the difference is not statistically significant in the comparison of unilateral and bilateral embolization [17]. Clinically speaking, we suggest the decision to treat one or both ovarian veins should depend on clinical judgment. According to long-term monitoring, there was no negative influence on menstrual period or fertility [18].

Conclusion

Pelvic congested syndrome is more common than is generally realized. Treatment strategy must tailor to each individual based on specific circumstances of PCS. Patients harboring pelvic venous insufficiency who are clinically symptomatic can be managed safely by embolization technique. The stepwise approach of ovarian vein embolization unilaterally versus bilaterally is advice. To proceed with internal iliac vein embolization as second step if residual symptoms persist. Overall, we tried to highlight the role of CT and MRI as non-invasive tools in the diagnosis and assessment of cases with PCS in a woman with chronic pelvic pain at the reproductive age.

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