PELVIC CONGESTION SYNDROME – FINDINGS ON MULTI-DETECTOR ROW COMPUTERIZED TOMOGRAPHY: A CASE REPORT

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Chronic pelvic pain is a common gynecologic complaint, sometimes without any obvious etiology. We report a case of pelvic congestion syndrome with chronic pelvic pain. The diagnosis can be overlooked by clinical physicians but diagnosed using multi-detector row computerized tomography. This method seems to be an effective and non-invasive imaging modality.

Key Words: pelvic congestion syndrome, computerized tomography, pelvic pain

Pelvic congestion syndrome is a condition of chronic pelvic pain typically affecting young multiparous females. It is a conditioned reflex in dilated, incompetent ovarian veins. Until recently, physicians had difficulty diagnosing pelvic congestion syndrome. Results of traditional investigations such as ultrasonography and laparoscopy can remain normal. Periuterine and selective renal venography are more invasive diagnostic methods. We demonstrated that multi-detector row computerized tomography (MDCT) was an effective, non-invasive imaging modality for detecting this pathology.

CASE PRESENTATION

A 40-year-old woman, gravida 3, para 3, complained of chronic dull pain in the lower abdomen for about 1 year. Squatting or lifting exacerbated the symptoms. Clinical physicians treated her for pelvic inflammatory disease, but the symptoms failed to improve after medication. Physical examination demonstrated a well developed, alert, and oriented female in moderate distress with moderate pelvic pain. Pelvic examination disclosed normal external genitalia, normal vaginal rugae, and a normal-sized uterus with anteversion. There was mild bilateral tenderness in the adnexa. Laboratory blood and urine examinations were within normal limits. A gastroenterologist suggested abdominal computerized tomography (CT) under the suspicion of bowel adhesion. Initial CT showed an abnormally dilated left ovarian vein and uterus varicose veins on venous phase. According to the clinical symptoms and initial CT findings, pelvic congestion syndrome was suspected and MDCT was arranged. MDCT using a Somatom Sensation 16 (Siemens, Forchheim, Germany) was started 30 seconds after onset of an intravenous bolus injection (3 mL/sec; total volume, 120 mL) of iodine contrast medium (Iopamiro 300, Bracco, Milan, Italy) to achieve a late arterial phase. Scanning parameters were as follows: gantry rotation speed, 0.5 seconds; collimation, 0.75 mm × 16 detector array; reconstructed slice width, 1.0 mm; matrix, 512 × 512; 120 mA; 120 kVp; and total scan time, 20 seconds. Late arterial phase MDCT was performed while the patient held a deep breath (Valsalva maneuver), which increased
abdominal pressure, resulting in reflux from the renal veins into the incompetent left ovarian veins. MDCT volumetric data sets were transferred to a post-processing workstation (Syngo, Siemens).

MDCT scan clearly showed contrast-filled pelvic varicosities surrounding the uterus (Figure 1A) and a dilated left ovarian vein (Figure 1B). We reformatted the left ovarian vein on two-dimensional (2D) reconstruction images (Figure 2) and three-dimensional (3D) angiography using the volume-rendering technique (Figure 3).

Transabdominal ultrasonography was performed with the patient supine and holding a deep breath. Power Doppler imaging showed enlarged bilateral adnexal vessels (Figure 4). Vessels were confirmed to show typical venous waveforms. Radiologic images and clinical symptoms confirmed the diagnosis of pelvic congestion syndrome. The left ovarian vein was embolized using stainless steel coils (Figure 5). The patient was symptom-free after therapy.

**DISCUSSION**

Chronic pelvic pain is a frequent complaint in women of childbearing age. In some women, it is associated with the presence of ovarian and pelvic varicose veins. Taylor first defined the diagnosis of pelvic congestion syndrome in 1949 [1].

Pelvic congestion syndrome is clinically defined as cyclic pelvic pain of greater than 6 months’ duration. The pain is exacerbated by movements that cause a sudden increase in intra-abdominal pressure and is often brought on by walking, bending, or lifting. Other signs include dyspareunia, dysmenorrhea, urgency, and vulval and lower-extremity varicosities; emotional instability is also often described. Pelvic congestion is often found in women of childbearing age who are multiparous [2].

**Figure 1.** (A) Abdominal computerized tomography (CT) shows a dilated left ovarian vein (arrow). The inferior vena cava is not yet opacified, suggesting retrograde filling of the ovarian vein from the left renal vein. (B) CT of the lower abdomen shows multiple varicose veins (arrows) around the uterus in the late arterial phase.

**Figure 2.** Two-dimensional computerized tomography (coronal reformation) shows the early opacifying left ovarian vein (arrows) due to retrograde flow from the left renal vein.
Physical examination is characterized by ovarian point tenderness on abdominal palpation. The diagnosis of pelvic congestion syndrome should be made when a thorough pelvic examination reveals no endometriosis, fibroids, or uterine prolapse, and if there are no obvious signs of inflammation or other abnormalities.

The pathophysiology is not yet fully understood. Some authors have claimed congenital absence of ovarian valves [3]. Valvular incompetence may also progress due to increased venous flow during pregnancy, especially in the left ovarian vein. Others have suggested fibrosis of the subperitoneal tissue due to pelvic inflammatory disease.

Diagnostic modalities include ultrasonography, CT, and more invasive methods such as laparoscopy and periuterine or selective renal venography. We have found that late arterial phase MDCT performed in deep breath-hold is effective in the diagnosis of pelvic congestion syndrome. This technique increases abdominal pressure, causing reflux from the renal veins into the incompetent ovarian veins. CT diagnostic criteria include varicose veins around the uterus and retrograde contrast medium filling of dilated ovarian veins [4].

However, not all females with varicose ovarian veins have pelvic congestion syndrome. It has been reported that 10% of the general population have ovarian varicose veins [5]. More than half of these patients have pelvic congestion syndrome [5]. Passive reflux from the left renal vein to the left gonadal vein can occur in asymptomatic women. Diagnosis of pelvic congestion syndrome depends heavily on the corresponding clinical history [6]. An isolated imaging finding without symptoms should not be associated with pelvic congestion syndrome [7].
Variable methods to treat pelvic congestion syndrome have been reported [2]. Medical, surgical, and endovascular therapies have been effective in reducing the congestion and alleviating the pain.

Because of the difficulty of diagnosing underlying causes of chronic pelvic pain, pelvic congestion syndrome frequently goes undiagnosed and untreated, or incorrectly diagnosed and inappropriately treated. We demonstrated that late arterial phase MDCT was an effective and non-invasive method to confirm the clinical diagnosis of pelvic congestion syndrome.

REFERENCES