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PELVIC CONGESTION SYNDROME

Case Ms. P

- 43 female, G4P4, tearful
- 13 year history of lower extremity varicose veins
  - Worsening with each pregnancy
  - Increased vulvar varicosities
  - Dyspareunia for ~ 6 months
  - Pelvic “fullness”
- PMHx:
  - 1 x episode of STP, no DVT
- PSHx:
  - Stab phlebectomies 2 years prior to presentation
  - C-section (2005)
- Meds: none
- Exam: + varicose veins bilat, also present in the medial upper thigh and vulvar area
- U/S: Bilat GSV Reflux, no DVT

Case (cont.)

- Gyn consult: normal
- Pelvic u/s: normal uterus/ovaries. No myoma. + prominent pelvic veins, Lt>Rt
- MR venography: enlarged pelvic veins bilaterally of unclear etiology. No pelvic mass/retropertoneal mass.

Case (cont)

- Dx: Pelvic congestion syndrome (PCS)
- Course: venography and ovarian vein embolization
History

- 1857: Richet validated the term “varicocèle tubo-ovarien” (“tuboovarian varicocele”)
- 1949: Taylor described the symptoms
  - “emotional tension” affecting venous smooth muscles cells, worsening the condition which in turn worsens emotional disturbances

Controversy remains

“The widely variable symptoms and the strong association with psychological disturbances have caused many gynecologists to question the legitimacy of this condition”

Societal Burden

- 1/3 women will experience pain in the lower abdomen at some point in their life
- “Chronic pelvic pain” accounts for 15% of outpatients gynecological visits
- Women with PCS are typically <45 yo and in their child-bearing years
  - Unusual in nulliparous women; largely follows multiple pregnancies
  - More common in South America vs USA


Chronic Pelvic Pain

- Endometriosis (39%)
- Pelvic Congestion Syndrome (31%)
- Pelvic Inflammatory Disease (11%)
- Adhesions (10%)
- Fibroids (4%)
- Other (5%)

Soysal et al, Hum Reprod 2001
History and O/E

- Multiparous women 20-50 yo
- Dull pain, typically unilateral, worst with standing/sitting
- Dyspareunia/post-coital pain
- Dysuria/dysmenorrhea/menorrhagia
- Symptoms > 6 months for dx
- O/E: valvar varicosities, bimanual exam, r/o other cases

Exacerbation of symptoms with menstruation, sexual activity and ovulation suggests increased arterial flow to the pelvis at these times. This results in pooling of venous blood in the pelvic varicosities.

Primary vs Secondary PCS

- Primary:
  - Multiparity
  - Congenital incompetence related to absent valves

- Secondary: mechanical/obstruction
  - Abdominal/retoperitoneal mass
  - Retroaortic left renal vein
  - Left ovarian vein or renal vein compression by SMA – Nutcracker syndrome
  - Compression of the left CIV from right CIA can cause iliofem DVT (May-Thurner syndrome) and pelvic varices

Primary PCS

In a series of 50 symptomatic patients

- Ovarian vein reflux (71%)
  - Left : right (24:9)
- Internal iliac vein reflux alone (10%)
- Segmental pelvic vein reflux (10%)
- Sapheno-femoral tributaries (10%)

Table 3: Causes of PCS among patients after initial investigations

<table>
<thead>
<tr>
<th>Morphopathological anomaly</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reflux in CIV vs. and/or rV tributaries</td>
<td>42</td>
</tr>
<tr>
<td>UV compression without VV reflux</td>
<td>34</td>
</tr>
<tr>
<td>UV compression with VV reflux</td>
<td>11</td>
</tr>
<tr>
<td>Combined UV and VV compression with UV vs. and/or VV reflux</td>
<td>10</td>
</tr>
<tr>
<td>Post-natal UV reflux</td>
<td>1</td>
</tr>
</tbody>
</table>

Richardson GD. Handbook of Venous Disease. Management of pelvic venous congestion and perineal varicosities.
Etiology of Reflux in PCS

- Massive enlargement of the ovarian veins draining the pregnant uterus (vein capacity can increase by 60%)
- Ovarian veins: 1-2 valves

Ovarian veins competent during pregnancy

Ovarian veins incompetent after pregnancy

Pelvic varices with or without pelvic escape veins

- Pelvic escape veins: connections from perineal and buttock varices to the pelvis. Tributaries include:
  - 1) Anterior and posterior divisions of the internal iliac veins
    - Obturator vein
    - Internal pudendal vein
  - 2) Round ligament veins
    - Vulva and upper medial thigh
  - 3) Buttock and posterior thigh veins
    - Sciatica-like symptoms

- + pelvic escape veins: congestion dissipated to the vulva, buttocks or legs
- - pelvic escape veins: aching/heaviness in pelvis

Presence of cross-over veins can cause confusion, leading to increased symptoms on the right side despite a more prominent left ovarian vein

Investigations

- First step: r/o pelvic pathology
- Standard pelvic u/s
- Duplex u/s assessment of the pelvic, ovarian, groin and lower limb veins
- MRI, CT
- Selective venography
- Laparoscopy to exclude other causes (in conjunction with GYN)
  - Patient head down for gyne laparoscopy should be tilted “head up” to visualize ovarian and broad ligament veins distention

Ultrasound

- No consensus
- Beard et al, Lancet 1984
  - Dilated ovarian veins > 4mm in diameter
  - Dilated tortuous arcuate veins in the myometrium that communicate with bilateral pelvic vv
  - Slow blood flow (less than 3cm/s), and reversed caudal or retrograde venous blood flow particularly in the left ovarian veins
American Venous Forum:
- Dilated vv in broad ligament
  - Mild: (< 5mm)
  - Moderate (5-7mm)
  - Marked (8-10mm)
- Distension of veins when patients is tilted head up by 60%

Other signs
- Ovarian vein > 6mm
- Pelvic varicosities >5mm
- Reversed or sluggish flow
- Tortuous venous plexuses

MRV/CT
- Good sensitivity, fair specificity
- ** Supine position can decrease size
- Criteria
  - ≥4 tortuous parauterine veins
  - Parauterine veins > 4mm
  - Ovarian vein diameter > 8mm

Venography
- Should be preceded by u/s imaging
- Optimal for confirmation of diagnosis combined with endovascular treatment
- Left renal venography followed by selective ovarian venography
- May carry selective iliac venograms

Treatment – remains elusive
- Psychotherapy
- Hormonal therapy
  - Ovarian suppression
- TAH-BSO
- Ovarian Vein Ligation
- Percutaneous embolization
- Perineal varicosities
  - Sclerotherapy
  - Phlebectomy
  - Internal iliac vein varicosity embolization

Findings:
- Ovarian vein diameter >6mm
- Retrograde ovarian/pelvic venous flow
- Tortuous collateral pelvic venous pathways
- Delayed/stagnant clearance of contrast

Clinical Practice Guidelines, SVS, JVS 2011
Hormonal therapy
- Goal: suppress estrogen
  - increases NO, smooth muscle relaxation, ovarian/int iliac vein dilation
- Medroxyprogesterone – MPA (progestin)
- GnRH agonists: suppression ovarian function and/or increase venous contraction
  - Zoladex (goserelin)
  - Lupron (leuprolide)

Side effects - bloating, weight gain, hot flashes, vaginal dryness, night sweats, mood changes

Non-surgical interventions for the management of chronic pelvic pain (Review)
Cheong YC, Smets E, Williams ACDC

- RCTs on non-surgical management for chronic pelvic pain secondary to PCS or adhesions (not other pathologies)
  - 13 RCTs included (750 women with interventions, 406 controls)
  - Treatment assessed:
    - Lifestyle
    - Physical
    - Medical
    - Psychological interventions

Medical Treatment (Cochrane, 2014)
- Medical vs placebo
  - Progestogen
    - more effective at improving pain
    - OR= 3.00, 95% CI 1.70-5.31
    - more adverse effects
  - Head-to-head comparisons of medical treatments
    - Goserelin better than progestogen for pain
    - No more side effects
    - Gabapentin better than amitriptyline

Medical Treatment (Cochrane, 2014)
- Psychological Treatment
  - Reassurance u/s + counselling better than “wait and see”
    - OR 6.77, CI 2.83-16.19

Other
- Distension of painful pelvic structures better than counselling

- Magnetic therapy not helpful
47 patients with PCS
- u/s, venography (before and after), laparoscopy, psychological and sexual functioning questionnaires
- Randomized to goserelin acetate (3.6mg/month) vs MPA (30mg/day) x 6 months
- Significant improvement from baseline for venographic and questionnaire scores for both drugs
- Goserelin significantly better than medroxyprogesterone (p<0.001)

Ovarian Vein Ligation
- First developed by Rundqvist in the 1980s
- Technique
  - “Sympathectomy” incision
  - Muscle-splitting extraperitoneal approach to the ureter and adjacent ovarian vein→ligated
  - Suture used for traction to enable multiple ligations that finish ~2cm from left renal vein
  - Unilateral vs bilateral, based on u/s
- Results (Richardson 2006)
  - 72 patients
  - f/u 33 months
  - Pelvic heaviness improved in 70% of patients (in 56% almost complete)
  - 13% little/no improvement
  - Dyspareunia improved in 84% (50% completed recovery)
- Laparoscopic ligation also described

Pelvic vein embolization therapy
- Revolutionized treatment of PCS
- First described by Edwards et al in 1993 in 40 yo woman

Ovarian Vein Incompetence: Endovascular Embolization
- Access right femoral vein or IJ

Ovarian Vein Incompetence: Endovascular Embolization

- Access right femoral vein or IJ
- Confirm ovarian vein reflux with selective left renal venogram
- Treatment of ovarian vein (coils, amplatz plug)
- Complications (<4-8%)
  - Embolization, migration and perforation of coils
  - Thrombophlebitis
  - Irritation of genitofemoral nerve
  - Recanalization

Results

50-80% improvement in symptoms
Retrospective analysis
- 32 patients with coil embolization (1999-2002)
- Both groups experienced a significant reduction in pelvic pain and satisfaction with treatment
- No differences between groups

Randomized trial - 106 women
- Ovarian vein embolization
- Lap hysterectomy + BSO + hormones
- Lab hysterectomy + USO
- Mean pain scores improved in ovarian vein embolization and lap hysterectomy + BSO, but not unilateral oophorectomy
- At 12 months, symptoms reduction greatest in the embolization group

Catheterization/angiography of bilateral ovarian veins and bilateral ovarian vein embolization
- Coils and 14mm Amplatz II (left)
- Coils and 12mm Amplatz II (right)

F/U 3 months:
- Decrease in fullness and congestion
- Improvement in her lower extremity symptoms
- Repeat u/s:
  - Right GSV (previously Grade 3 reflux): no reflux in SFJ, +1 in GSV mid-thigh
  - Left GSV (previously Grade 3 reflux): no residual reflux
- No further interventions required

American Venous Forum
1) PCS should NOT be a diagnosis of exclusion, but suspected by typical symptoms and a past history of vulvar veins in pregnancy
2) Visible perineal varices confirm at least a component of PCS
3) U/S confirms the presence, and in skilled hands can determine the cause, of pelvic varices
Clinical Practice Guidelines - American Venous Forum

4) Selective venography confirms the cause and anatomical features, to then proceed to endovenous ablative treatment by coils with or without sclerotherapy.

5) Both surgical and endovenous ablation of ovarian vein reflux are equally effective.

6) Coil treatment has greater patient acceptance, but long-term results, particularly possible recanalization, are unknown.

www.veinforum.org

Conclusions

- PCS represents a significant source of chronic pelvic pain
  - Keep a high index of suspicion
- Chronic pain induces psychological changes
  - We need to be sensitive and supportive
- Multidisciplinary approach
  - OBGYN
  - IR
- Good relief with endovascular techniques

SVS/American Venous Forum Guidelines, 2011

Guideline 14. Treatment of public venous veins

<table>
<thead>
<tr>
<th>Guideline No.</th>
<th>Treatment of public venous veins</th>
<th>GRADE of recommendation</th>
<th>Level of evidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>14.1</td>
<td>We recommend invasive imaging with transabdominal and/or transvaginal ultrasonography, or magnetic resonance venography in selected patients with symptoms of pelvic congestion syndrome or symptomatic veins in the distribution of the pubic, labia, perineum, or buttocks.</td>
<td>1</td>
<td>A, High quality evidence</td>
</tr>
<tr>
<td>14.2</td>
<td>We recommend retrogade venography in patient with public venous disease, confirmed or suspected by invasive imaging studies, in whom intervention is planned.</td>
<td>1</td>
<td>C</td>
</tr>
<tr>
<td>14.3</td>
<td>We suggest treatment of pelvic congestion syndrome and pelvic veins with cold photodynamic, plugging or transcateter sclerotherapy, used alone or in combination.</td>
<td>2</td>
<td>B</td>
</tr>
<tr>
<td>14.4</td>
<td>If surgical treatment is not available or has failed, we suggest surgical ligation and cautoin of ovarian veins to treat reflux.</td>
<td>2</td>
<td>B</td>
</tr>
</tbody>
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Glovczki et al, JVS 2011

Thank you
Diagnosis/treatment Algorithm

PCS ≠ Nutcracker syndrome

- Compression of the left renal vein between the abdominal aorta and the SMA
- Young, thin patient
- **Symptoms**
  - Left flank pain
  - Hematuria
  - Left varicocele
  - Orthostatic proteinuria
  - Chronic fatigue
  - Occasional PCS