Chronic Pelvic Pain: Evaluation & Management

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Today’s Goals…

- Epidemiology & Importance of Chronic Pelvic Pain
- Discuss Central Mechanisms involved in the perpetuation of CPP
- Functional Anatomy of MSK Pelvis & Pelvic Floor
- Evaluation of Pelvic Floor Muscle Pain Conditions
- Multidisciplinary treatment options
“When I first learned that men and women have significantly different ways of thinking, I said, ‘Excellent! This calls for a drink!’”
Clinical Pain Conditions with Predominance in Women

- Chronic pelvic pain
- Interstitial cystitis
- Irritable bowel
- Fibromyalgia
- Migraine
- TMJ disorder
- Rheumatoid arthritis
- Knee osteoarthritis

Increasing evidence that sex hormonal differences may be driving force

*Fillingim FB, 2003*
Chronic Pelvic Pain

- Pain in lower abdomen, groin, upper thighs, vulva, post pelvis lasting >6 months
- Estimated >10 million US women
- 15% women aged 15-50 years
- Healthcare costs >$880 million MD visits
- 10% of all gynecologic office visits
- 20% of laparoscopies, 61% undiagnosed
- Many develop chronic pain syndrome

Mathias SD, 1996
Features of Chronic Pain Syndromes

- Impaired Function
- Altered Work and Family Roles
- Deconditioning
- Depression and Anxiety
- Sleep disturbance
- Pain unresponsive to “usual therapies”
- Requires intense multidisciplinary care

Pain out of proportion to pathology: Stress reactivity or Central Sensitization
Pelvic Pain and Sexual Trauma

Pain Syndromes Associated with Early Life Stress (ELS)

- Chronic Pelvic Pain
- Fibromyalgia Syndrome (FMS)
- Chronic Refractory Low Back Pain
- Headache/Migraine
- Irritable Bowel Syndrome (IBS)

Linda Carpenter, MD, Brown University Dept of Psychiatry
Neurobiological Consequences of Childhood Abuse and Neglect
53rd Annual Scientific Meeting of the American Headache Society
June 2, 2011
Depression does not account for the association

- National Comorbidity Survey
- Representative, community sample (n=5877)
- 10.6% reported history of childhood abuse
- More likely to have health problem in past year (37% vs. 22.5%; p<.01)
- Broad Array of Health Problems Associated with Childhood Abuse
- Depression and ELS independently predict PAIN

N. Sachs-Ericsson, 2007
Early Life Stress & Pain: HPA axis dysregulation

Chronic over-activation of stress responses systems

Diminished capacity for stress response in adulthood

Deleterious effects on neurophysiological body systems

Direct Action on Brain (insula) from Corticosteroids/Glutamate

Heim C et al., 2000

Implicated in fibromyalgia, chronic fatigue, depression, PTSD, insomnia, CPP, Persian Gulf Syndrome
Immune Mechanisms of Chronic Pain, Linda Carpenter
In Pain in Women: A Clinical Guide
Eds. Bailey & Bernstein
Chronic Pelvic Pain: (Partial) Differential Diagnosis

- **GYN:** endometriosis, ovarian cysts, adhesions, pelvic congestion syndrome
- **GI:** inflammatory bowel disease, GERD, cholecysitis, chronic appendicitis, IBS
- **GU:** interstitial cystitis, chronic prostatitis
- **Neuropathy:** ilioinguinal, genitofemoral, pudendal
- **Psych:** somatization, stress reactivity, h/o sexual abuse in 1/3 of CPP patients
- **MSK:** SIJ, pubic symphysis, hip, lumbar/thoracic referral patterns
Structural Approach to Visceral Disease

- Viscero-somatic convergence
- Somato-visceral convergence
- Structural Consequences
  - Myofascial restrictions
  - Structural Compensation patterns
- All accessible to surface palpation
- Palpation, Palpation, Palpation…
Animal Model of UteroSomatic Convergence

- Rats pretreated with Evans Blue Dye
- Noxious Uterine stimulation
- Extravasation of dye in tissue of
  - Lower abdomen
  - Sacrum
  - Perineum
- Due to neurogenic secretions in these regions causing plasma extravasation

*Wesselmann U, 1997*
**Neurogenic inflammation**

- **SP**
- **CGRP**
- **Na^+**
- **Ca^{2+}**
- **PG E_2**
- **Adenosine**
- **5-HT_3**
- **opioids**
- **TAXT-resistant (sensitization)** Na^+
- **TTX-sensitive**

**Purinergic receptor P2X_3**

**ATP**

**Na^+**

**H^+Capsaicin/Heat**

**Vanilloid receptor VR-1**

**KA/AMPA NMDA**
Painful Bladder Syndrome & Pelvic Floor Myofascial Pain
Importance of the Pelvis

- Interface between lower extremities & spine for force absorption and load transfer
- Body’s COG anterior to second sacral vertebra
- Functionally affects the entire kinetic chain
Pubic Symphysis

- Fibrocartilaginous joint
- Restricted motion
  - Vertical shift 2 mm
  - Rotation 1 degree
    - Walheim, 1984
- Rectus abdominis & Adductor longus
- X-rays from 1930’s showed increased displacement during pregnancy

Dr. Frank Willard
University of New England
Pubic Symphysis Diastasis
Sacroiliac Joint

- Synovial Joint
- Joint capsule
- Strong binding ligaments
  - Anterior
    - Anterior sacroiliac ligament
    - Lumbosacral ligament
    - Iliolumbar ligament
  - Posterior
    - Long dorsal ligament
    - Sacrospinous ligament
    - Sacrotuberous ligament
- 4 degrees rotation, 1.6 mm translation (Sturesson 1989)
Sacroiliac Joint

- C-shaped or L-shaped
- Optimal for load transfer
- Vulnerable to vertical shear loads
- Ligaments important for stability
- Surrounding muscles provide compression
Primary Principle of Joint Stability

- **Form Closure**: Intrinsic factors (joint shape, friction, ligamentous integrity)
- **Force Closure**: Extrinsic factors (muscle strength and coordination)
- Decrease in form closure requires extra work from muscles providing force closure
- Muscles then vulnerable to overuse injuries
- Muscle injury/weakness leads to joint dysfunction
- PFM contribute to stiffness of the sacroiliac joints
  - Hodges PW, 2007

- Transversus abdominis contraction decreases SIJ laxity
  - Richardson CA, 2002
Pelvic Floor Muscles

- Levator Ani
- Pubococcygeus
- Puborectalis
- Iliococcygeus
- Coccygeus
Importance of the Pelvic Floor Muscles

- Key role in most of life’s basic functions:
  - Storage & Elimination of urine and feces
  - Sexual function & reproduction
  - Structural support of pelvic organs
  - Posture & biomechanics
  - Respiration
“It appears that the function of respiration is not confined to a single location in the spinal cord, but extends to wide areas on its egress nerves, so that man’s trunk is a respiratory apparatus closed at the proximal and distal end by a diaphragm—both actively involved in respiratory movement.”

Dr. Byron Robinson, 1906  
The Medical Standard

Hodges PW, 2007  
Neurourol Urodyn
# Types of Pelvic Floor Dysfunction

<table>
<thead>
<tr>
<th>Pelvic floor weakness</th>
<th>Pelvic floor hypertonicity</th>
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</thead>
<tbody>
<tr>
<td>• Neuromuscular injury</td>
<td>• Chronic pelvic pain</td>
</tr>
<tr>
<td>• Stress incontinence</td>
<td>• Dyspareunia</td>
</tr>
<tr>
<td>• Fecal incontinence</td>
<td>• Urinary retention</td>
</tr>
<tr>
<td>• Pelvic organ prolapse</td>
<td>• Bladder pain syndromes</td>
</tr>
<tr>
<td>• May lead to pelvic floor hypertonicity</td>
<td>• Mixed Incontinence</td>
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<td></td>
<td>• Constipation</td>
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## Causes of PFM Dysfunction

- Muscle trauma
  - Pregnancy
  - Vaginal delivery
  - Surgery
- Repetitive injury
  - Gymnastics/dance
  - Jumping Sports
- Pelvic Girdle Pain
  - Structural
  - Postural
- Sexual Abuse/Assault
  - Early Life Stress
  - PTSD
- Visceral to Somatic
  - Endometriosis
  - Bladder disorders
  - Bowel disorders
- Respiratory disorders
  - COPD/Asthma
10-15% of primiparous women sustain serious levator injuries
Pubococcygeus stretches 3.26 times its normal length during vaginal delivery (Delancey, Jo)
At 12 weeks pp, 80% show evidence of some pudendal nerve denervation.
Pudendal Neuralgia

- Arise from S2-4 nerve roots
- Inferior rectal nerve supplies external anal sphincter
- Sensation to perianal skin, clitoris, labia & outer 1/3 vagina
- Entrapped by piriformis and obturator internus
Obturator Internus

- Hip external rotator
- Surrounds and covers the obturator foramen
- Exits pelvis through lesser sciatic foramen b/t sacrospinous & sacrotuberous ligs
- May result in internal symptoms (dyspareunia)
- Cause of sciatica
- Pain, numbness, paresthesias of medial thigh without weakness
Female Athletes and the Pelvic Floor

- 40 female subjects
  - 10 Handball
  - 10 Volleyball
  - 10 Basketball
  - 10 Non-athletes
- Athletes generated lower pelvic floor contraction strength as measured by perineometer
- 7-38% of women who exercise regularly report problems with leaking

da Silva Borin LCM, 2013
PM&R
PFM Physical Exam

- Intravaginal/intrarectal- digital examination of all perineum, levator ani, obturators
- Muscle length, tenderness, symmetry, atrophy, hypertonus, spasm, TrP’s
- Qualify and quantify pain location/type
- Strength; grade (Laycock scale 0-5), endurance, speed, coordination, ability to release and lengthen
Pelvic Girdle Pain

- PGP is a specific form of LBP
- Arises in relation to pregnancy, trauma and/or arthritis; point prevalence 20%
- Located between posterior iliac crest and gluteal fold, especially in region of SIJ
- May radiate into posterior thigh; separately or in conjunction with symphysis pain

Physical Exam is KEY to diagnosis!

Vleeming, A, European Spine Journal, 2008
Physical Exam
The key to diagnosis

- Pain provocation tests
  - FABER test
  - Ganslensen’s
  - Modified Trendelenburg
  - Posterior pelvic pain provocation test

- Pain palpation tests
  - Long dorsal ligament
  - Pubic symphysis

- Functional tests
  - Active straight leg raise
Posterior Pelvic Compression

- Patient lies supine with hip and knee flexed to 90 degrees
- Force applied through the femur
- Positive test=familiar pain is provoked in ipsilateral posterior pelvic girdle
Active Straight Leg Raise

- Patient raises one leg at a time 30 degrees above the table
- Positive test=difficulty (often pain) with lifting leg, improves with compressive force to the bilateral illia
Pelvic Pain: Treatment Options

- Physical/Occupational therapy (external to internal treatments, myofascial release, estim/biofeedback)
- Manual therapy (correct alignment, MFR)
- Injections (TPIs, Nerve blocks, SIJ, symphysis)
- Medications (TCAs, SSNRIs, tizanidine, gabapentin)
- Acupuncture (systemic/visceral, sensitization)
- Exercise: yoga, Tai Chi, pool, stationary bike
- Psychology: CBT, relaxation techniques
- Psychiatry: Psychopharmacology
- Referral to other specialties: Gyn, Urology, GI
Cochrane Database CPP
7 studies, 4 of good quality

- Progestagen associated with pain relief during treatment
- Patient counseling supported by US assoc with decreased pain & improved mood
- Adhesiolysis only when adhesions severe
- Multidisciplinary treatment assoc with improvement in multiple outcomes
Role of Physical Therapy

- Primary role in management
- Address MSK system and potential contributing factors
- Provide much needed patient education
- “Women’s Health” Physical Therapist
- Increasing in number but paucity exist
- APTA Women’s Health section is working to increase number specialists in this area
Why Women’s Health?

- APTA terminology: Women’s Health Physical Therapy
- Conditions that exclusively or primarily affect women
- List includes:
  - Pregnancy/postpartum issues
  - Pelvic floor muscle disorders
  - Disorders of continence
  - Breast cancer complications
Numerous problems with this terminology

- Poorly defined and non-specific
- Women’s Health PT specialists may treat some but not all of these conditions
  - Tendency to sub-specialize makes it even harder for patients to find appropriate provider
- Men are affected by pelvic floor disorders
  - Stigma being treated by “Women’s Health” PT
  - Physical therapists are all female
Pelvic Floor PT treatment: “short, tight” pelvic floor

- Myofascial release-internal (Thiele’s, ischemic/pressure) & external
- Stretching (hip, PF) with **gradual** progression to strengthening (core, trunk)
- Avoid Kegels (often clenchers)
- Vaginal dilators-desensitization, stretch
- Vaginal/Rectal Biofeedback for relaxation
- Diaphragmatic breathing
Physical Therapy Treatment: Education

- Behavioral modifications—pacing, periodic and repetitive “unclenching”, heat, stretching before intercourse, taking the time to void, dietary issues

- If urinary involvement—bladder diary, fluid schedule, behavioral training

- Frequency varies 4-20 visits, 1-3x/week
Pelvic floor muscle training

- Strong evidence to support supervised pelvic floor muscle exercise for SUI
  - Up to 70% improvement in most studies
  - Superior to unsupervised, patient education, leaflet-based instruction

- Evidence of benefit for prolapse
  - One stage improvement on 4 stage scale

- Beneficial in urge incontinence usually with electrical stimulation
Pharmacological Management

- Neuropathic & myofascial pain
- Start with low dose TCA unless contraindication (pt counseling important)
- SSNRI-if prominent mood component
- Gabapentin, Pregabalin, other agents
- “Muscle relaxers”-Tizanidine, Clonidine, Baclofen, Cyclobenzaprine, Benzodiazepines
- Vaginal diazepam suppositories
Potential Benefits of Acupuncture on CPP

- Hormonal Modulation
- Neuromodulatory Effects
- Joint Inflammation
- Visceral Homeostatic Regulation
- Psychological Effects
- Myofascial Release
Procedural treatments

- Trigger point injections
  - External: piriformis, obturators, abdominal
  - Internal: levator ani, OI

- Nerve Blocks
  - Pudendal
  - Ilioinguinal
  - Genitofemoral

- Botox injections
  - Piriformis syndrome
  - Neurogenic DO
  - Idiopathic DO
  - Anismus (puborectalis)
Sacral neuromodulation

- Fecal incontinence: 26% with >50% improvement, long term follow up of 50 pts: 80% maintained >50% reduction in symptoms over 7 year period
- Urge incontinence: at 1 month 87% with >50% improvement, at 5 yrs: down to 62%
- Insufficient evidence for PBS/CPP
Conclusions

- Pelvic pain disorders often multi-factorial etiology
- Myofascial pain common among all causes
- Multi-disciplinary & specialty management
- Strongly consider Pelvic Floor PT
- “All in your head” attitudes NOT helpful