Urologic symptoms and Interstitial Cystitis in Pudendal Neuropathy

Stanley Antolak, Jr., MD
Woodbury, Minnesota, USA

ALS Aix-en-Provence
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Experience in Minnesota, USA

Antolak

• 58.3% of pudendal neuropathy patients seen in 2005 had voiding complaints.

“...by far, the majority of LUT symptoms... and pelvic pain syndromes remain unexplained by existing theories.”


A simple explanation.

by far, the majority of LUT symptoms... and pelvic pain syndromes are caused by three peripheral neuropathies

Today I will discuss peripheral neuropathies that affect pelvic pain and voiding complaints.

The discussion will include “Urologic symptoms and Interstitial Cystitis in Pudendal Neuropathy.”

Goals

• Discuss Interstitial cystitis briefly
• Review some aspects of pudendal neuralgia
  – Diagnostic and therapeutic benefits of PNPI
  – Responses measured using symptom scores
• Discuss painful bladder symptoms
  – in patients with pudendal neuropathy
  – associated with Maigne syndrome
  – associated with middle cluneal neuropathy
• Review a patient cohort with IC and PN
Interstitial cystitis is a controversial diagnosis with multiple synonyms.

- Painful bladder syndrome
- Bladder pain syndrome
- Female urethral syndrome
- Prostate pain syndrome
- Irritable bladder
- Et cetera

Drs. Karseny & Haab will explain.

In 2007 IC was described in broad terms.

- “IC may consist of: Frequency only, urgency only, pain only, but [symptoms] often are a combination”
- “Pain can be anywhere in the pelvis or perineum”.
- “Pain may not necessarily be perceived as originating in the bladder.”

This description of IC seems much too broad. Do the editors actually describe pudendal neuropathy?

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The role of pudendal neuropathy and IC-like symptoms was established in 1915.

- Patients with urinary urgency, urethral pressure, and normal urinalyses
- are found to have extraordinary cutaneous hypersensitivity
- in a rhomboid from above the symphysis pubis to the mid sacrum and to the lateral borders of the perineum.
- This hyperalgasia identifies the cases as pudendal neuralgia.

Zuelzer G. Reizung des nervus pudendus (neuralgie). Berlin Klin Wochen 1915;52;1260-61

Diagnosis of pudendal neuropathy

| Patient with typical pain |
| Examination: Pinprick sensation is most important |
| Neurophysiological tests confirm neuropathy |
| PNTMLT: Pudendal Nerve Terminal Motor Latency Test |
| WDT: Warm Detection Threshold test (a Quantitative Sensory Test) |
| It is imperative to do this test. |

Pudendal neuropathy: Patients’ observations of bladder symptoms.

- Irritable bladder often precedes pain by about 4 to 8 weeks.
- Voiding complaints usually improve with treatment.
- Urine flow improves; frequency & nocturia decrease.
- May last hours to weeks after a single pudendal nerve perineural injection (PNPI).
- Bladder complaints may occur during examination (Valleix phenomenon)
- During testing (Warm Temperature threshold and PNTMLT)
- During needle placement for perineural injections (PNPI)

Example: bladder pain and urgency occurred during warm temperature detection threshold testing of right inferior rectal branch.

<table>
<thead>
<tr>
<th>PN patient Value @1C increments</th>
</tr>
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<tbody>
<tr>
<td>Right</td>
</tr>
<tr>
<td>Left</td>
</tr>
<tr>
<td>Cilitoris 39.0</td>
</tr>
<tr>
<td>Labia 36.5</td>
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<tr>
<td>Peri- 43.5</td>
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<tr>
<td>anal</td>
</tr>
</tbody>
</table>

Bleustein CB J Urol 2003; 169: 2266

Example: bladder pain and urgency occurred during warm temperature detection threshold testing of right inferior rectal branch.

Physitemp NTE 2A, USA
- Beco uses MSA, Somedic, SW
Perineural infiltrations or Pudendal Nerve Blocks (PNPI)

Define the symptoms of pudendal neuropathy

- Relieve neuritic pain symptoms
- Relieve sphincter obstruction
  - urinary...reduced hesitancy; increased flow
  - anal...relief of obstructed defecation; fewer or no enemas
- Relieve irritable bladder and bowel symptoms
  - Reduced urgency, frequency, and nocturia. (measured using symptom scores)
  - fewer bowel movements per day
- Orgasms may return; improved lubrication in females
- PNPI are durable: hours, weeks, months; max >6 yr.

Antolak: Western Section American Urological Association, Kauai, Hawaii, USA 2002

Pudendal nerve perineurial injections (PNPI) define symptoms of pudendal neuropathy

- Pudendal neuropathy
  - Bensignor
  - Amarenco
  - Thoumas
  - Bautrant
  - MacDonald (USA)
  - Hough, Antolak (USA; Mayo Clinic)

- We evaluate response 2 hours after each block and review symptom changes of the past 4 weeks.

Pudendal neuropathy: Bladder pain with full bladder and after voiding relieved after PNPI.

- Bilateral pudendal blocks changed bladder pain to "tingling" paresthesias
- Hypalgiesia inferior to dotted line.
- Ventral axial line is shifted superiorly and laterally (be alert to this anatomic variation).

How should we measure and monitor responses to treatment?

Many symptom indices are available.

- As a urologist I used two scores to monitor pudendal neuralgia patients for 9 years.
- 1. NIH-CPSI = Chronic Prostatitis Symptom Index
  - In actuality this is a pelvic pain symptom index
  - (Since 2000 we also use a female version)
  - Measures PAIN, VOIDING SYMPTOMS, QUALITY OF LIFE
- 2. IPSS = International Prostate Symptom Score
  (AUASI = American Urological Association Symptom Index)
- These are simple, rapid, and can be used weekly.

NIH-CPSI score of 18 or>18 is abnormal.
IPSS score of 7 or >7 = moderate symptoms.

Scores permit a rapid overview of individual patient’s treatment response (36 months).

Scores: measure responses weekly; PNPI (†)
Not practical with urodynamic testing.

Improvement in bladder pain syndrome after PNPI

“Luscious peeing”
Continued for 4 days after first PNPI.

No suprapubic pressure. Bladder felt empty. No frequency; voided every 2 to 3 hours. No obstruction…easy release, rapid flow. No pelvic pain

QUERY: “When was the last time you had “luscious peeing”
ANSWER: 25 years

Patients taught us the PN voiding symptoms. We know how to treat and monitor. Let us look at their responses.

• Male and female
  – Young and old

• PNPI and surgical decompression
  – Durable responses over 1-7 years after PNPI

• Only successes today
  – Treatment is available for failures of surgery.

• Cumulative responses

PNPI (†) : Durable @ 8 years (NIH-CPSI)

• Male: >7 yr. hx IC
  Later, urine retention.
  CIC for 3 years
After three PNPI

• Voids spontaneously
• No longer has ED
• No pain with / following ejaculation.

(Note decrease in voiding scores).
Voiding accounts for 10 of 43 points in NIH-CPSI score.
Male: Irritable Bladder Symptoms

34 y/o male, 33 months urgency/frequency
NIH-CPSI demonstrates voiding sx, not pain |=PNPI; Remains symptom free after 3 years

Female: Irritable Bladder Symptoms

14 year old female with pudendal neuropathy
Bladder pressure, urgency, frequency. "No" pain. Onset after promotion to varsity soccer.

Old

87 year old lady; Diagnosis PN 1992
JT Benson 2006, Indianapolis: Bilat demyelinization
Dr. Antolak 2007: she did not identify 43.5C bilat @ perianal skin.

81 y/o female; 4 years of pain and voiding complaints. Pain persists after: Bladder distention, hysterectomy, Failed Sacral nerve root stimulator (SNRS).
Abnormal warm detection threshold.

This lady is symptom free 48 months after her 3rd injection.

64 yr old nurse; 20 yr history of IC; many failed treatments.
Complains of urethral burning, bladder pressure. Urethral pain increased after orgasm
Abnormal WDT and PNTMLT. "Cure" at 42 months after PNPI

Failure of PNPI
Relief after decompression surgery

47 yr old male, >4 years pain, sexual dysfunction;
TUR Bladder neck for voiding complaints not helpful.
Radiation Neuritis
Brachytherapy: Chronic Pelvic Pain Syndrome
Seed in the pudendal canal; note edema
Pain, bladder symptoms relieved following PNPI.

Responses to treatment using only PNPI.
Failures proceeded to surgery.
Score is significantly improved.

Cumulative Results
Females with interstitial cystitis. Failures of PNPI.
Surgical decompression of the pudendal nerve (n=16)
Pain remains “moderate”. Voiding significantly improved.

Results: Decompression Surgery:
Males seen in consultation 2005
n=22 at 12 months; n=14 at 24 months
Cumulative NIH-CPSI averages
Changes in averages of scores

We have demonstrated
• Pudendal neuropathy is associated with voiding complaints including classic IC.
• IC symptoms can be resolved using pudendal nerve perineural injections (PNPI) and nerve decompression.
• Two symptom indices can measure treatment responses.
• Ventral axial line can extend into thoracolumbar distribution.

Two additional peripheral neuropathies affect voiding symptoms and bladder pain.
• 1. Maigne syndrome: a secondary peripheral neuropathy causing bladder complaints.
   – In my practice, this neuropathy is a major reason why “bladder pain” and voiding symptoms are not relieved after PNPI
• 2. Middle cluneal neuropathy: a common problem with occasional bladder complaints causing “failure” of PNPI.
• (Interstitial Cystitis due to Pudendal Neuropathy is the major cause of neuropathic bladder complaints).
Bladder pain with Maigne syndrome (Thoracolumbar junction syndrome)

- Skin rolling at RLQ causes urge to void
- Hyperalgesia bilaterally at T-11, 12
- Her urgency was relieved after subcutaneous infiltration with lidocaine and bupivacaine (field block).

Maigne syndrome (Thoracolumbar junction syndrome)

- Pain at 3 sites in distribution of spinal nerves T12 and L1
  1. Inguinal or suprapubic pains
  2. Low back pain over iliac crest
  3. “Hip” pain near greater trochanter; anterior thigh
- Never complain of pain at level of TLJ
- Diagnosis requires a systematic examination
  – “Skin rolling” over abdominal wall and flank
  – Pressure over thoracolumbar vertebrae is painful
  – Lateral pressure on spinous process produces “vertebral” pain at TLJ

Dorsal Ramus Syndrome

Man with left inguinal and suprapubic pain
Low back and sacral pain.

Gentle squeeze; roll from flank to hypochondrium

No pain No pain Pain
Right hand +++ Left hand +

Maigne syndrome in male with pudendal neuropathy

- Cutaneous hypersensitivity at T-11,12 bilaterally
- Vertebral tenderness T-10 and T-11
- Pressure at 2 sites at border of left rectus muscle causes urge to void

Maigne syndrome: IC symptoms (frequency, pressure, urgency) persist after PNPI for pudendal neuropathy

- Suprapubic cellulalgia (painful skin rolling)
- Skin rolling reproduces voiding complaints
- Infiltration of subcutaneous fat relieved symptoms for several days
- Bupivacaine 0.25%, 20cc and lidocaine 1%, 20cc
Maigne syndrome + pudendal neuropathy
Cellulalgia persists after PNPI

- 15 year history of pelvic pain & voiding symptoms
- 15 months of intravesical therapies
- One month after first PNPI followed by injection of cellulalgia she felt “wonderful”
- Intravesical therapies are not required.

Infiltrations relieve Maigne syndrome
(1% lidocaine and 0.25% bupivacaine)

- Directly into painful skin roll.
- Into broad area of cellulalgia (Field block)
- Posteriorly, 1.5 cm lateral to spinous processes of T10 – L1.
- Lidocaine produces immediate response.

Dorsal Ramus Syndrome
Maigne syndrome: Paraspinal infiltration of lidocaine and bupivacaine

Infiltration of medications reproduced “bladder pain” on each side.
Almost immediate relief of pain.
Able to bend to tie shoes pain free.
Able to rise from chair without pain.

Dorsal Ramus Syndrome
Middle cluneal neuropathy

- Posterior rami of S 2-3-4; (middle cluneal nerves)
- [Same cord levels as other pelvic pain generators]
- May be associated with a fat hernia called a “back mouse” or episacroiliac lipoma.

Can cause sacral (low back), thigh, foot, inguinal, genital, perineal and suprapubic pain.

- These nerves are not mentioned in most English language anatomy, neurology, orthopedic, or neurosurgery textbooks.

Dorsal Ramus Syndrome
Common sacral origin affects pudendal nerve symptoms even after successful PNPI

- Back mouse (Episacroiliac lipoma) or middle cluneal neuropathy.
One “Back Mouse”... but pressure at 2 sites causes symptoms. S-2 thigh and S.P.; S-3 perineal pain & urgency

Dorsal Ramus Syndrome
Middle cluneal neuropathy affects scrotum and perineum (post op PN decompression)

One month post op (PN decompression)
Note previous back surgery scar
This case is NOT A SURGICAL FAILURE but pain caused by a second peripheral neuropathy.
Back Mouse
Anesthetic blockade
Lidocaine + bupivacaine

Marking
“X” at tender site right S-3.

Injection:
The needle is advanced until pains are reproduced; aspirated; injected.
Immediate relief of pain.

Back mouse. Excision with repair of fascial defect.
I now excise a 1 to 2 cm portion of the nerve.
Need to try radiofrequency or cryo ablation.

Large lipoma or “back mouse”
Nerve in vessel loop.

Surgical “failure” RX Post op Heparin PNPI,
8 weekly injections; Right side only
Betamethasone added to Heparin weeks 1 and 5;

Ketamine infusion: 20mg I.V. over 20 min.
q 2 weeks X 3; then q 4 weeks

• 62 year old female
• IC
• Pudendal neuropathy
  – Surgical “failure”
  – Transient relief from post-op PNPI
• Maigne syndrome
• Middle cluneal neuropathy
• = Maximum possible scores

SUMMARY
Voiding symptoms; painful bladder

• Caused by 3 peripheral neuropathies
• Long-term cures of pudendal neuropathy are possible
  – Nerve protection (self-care)
  – PNPI (Pudendal Nerve Perineural Injections)
  – Decompression and transposition surgery
• Maigne syndrome and middle cluneal neuropathy are challenges to treat.