Arachnoiditis: Diagnosis and Treatment

Forest Tennant MD, DrPH

Disclosures

- Editor: Practical Pain Management
- Speaker: Regenesis Biomedical
Learning Objectives

- Explain the major causes of arachnoiditis
- Describe the complications of arachnoiditis
- Identify which back pain patients have arachnoiditis
- Cite the 4 components of treatment

Current Common Diagnoses Applied to Chronic Low Back Pain

- Failed back surgery syndrome
- Degenerative spine disease
- Chronic lumbar strain
Neuroinflammatory Disorders of the Lower Spine

- Adhesive arachnoiditis (AA)—inflammation of lining (ICD 10-G03.9)
- Chronic cauda equina syndrome (CCES)—inflammation of nerve roots (ICD 10-G95.9)
- Tarlov cysts (TC)—cysts of nerve roots (ICD 10-355.9)

Characteristics of a Neuroinflammatory Disorder of the Lower Spine

- Constant pain
- Bladder dysfunction
- Patient demands prescription medication
- Positional pain relief
Characteristics of a Neuroinflammatory Disorder of the Lower Spine (cont’d)

- History of multiple invasive procedures
- Lower extremity symptoms of pain, weakness, burning, tremors
- Episodic heat and sweating

An Emerging Clinical Issue

- Arachnoiditis is clearly increasing in prevalence and being identified nationwide
  - Only 1000 cases were reported between 1950 and 2000
  - No longer so “RARE”—up 400% in past decade
An Emerging Clinical Issue

- Now have diagnostic and treatment tools
  - No longer hopeless
  - Treatment protocols can be implemented in ambulatory care

Cauda Equina is the Primary Focus

- The cauda equina ("horse tail") is part of the CNS
- It consists of about 2 dozen nerve roots hanging in the spinal canal—"thecal sac"
- They can become inflamed, form adhesions, and be a source of severe pain and disability
- Neuroinflammatory waste can produce autoimmune disorders
The Spinal Canal Thecal Sac Has a Lining Composed of 3 Layers:

- Dura—outside
- Arachoid—middle
- Pia mater—inner

Cauda equina (nerve roots) is below L-1
The Cauda Equina (“Horses Tail”)

The precursor or initiator of arachnoiditis is inflammation of the nerves in the cauda equina.

Cauda equina in spinal canal
Normal Axial View on MRI

- Stomach
- Vertebrae
- Nerve roots
- Arachnoid lining
- Spinal process
- Spinal fluid
- Back

L2-L3
L1–L3
L3–L4

L4–L5
L5–S1

Normal L-1—L-2
**Normal L-4—S-1**

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**46 Y/O Male Postlumbar Fusion With Constant Disabling Pain and Partially Paralyzed Left Leg**

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39 Y/O Female With Constant Crippling Back, Leg, and Foot Pain

CCES Constant Pain, Neurogenic Bladder, Right Leg Weakness
CCES

- Patient with constant pain, neurogenic bladder, allodynia, and weak legs. Nerve roots are displaced, enlarged, and show questionable clumping and adhesions.

Diagnosis of Neuroinflammatory Lower Spine Disease

**HISTORY:**
- heat/sweating episodes
- pain
- lower extremity impairments
- can’t sit or stand long
- burning feet

**PHYSICAL:**
- Lower extremity weakness
- Pain—straight leg raising
- Poor ROM

**Laboratory Findings:**
- CRP, ESR, MPO, TNF, AIAT
- Cortisol, pregnenolone, ACTH, DHEA

**MRI:**
- Nerve root enlargement, displacement, clumping, adhesions, scoliosis, herniated discs, spinal stenosis, Tarlov cysts

- AA or CCES
The 4 “legs” must be simultaneously administered to be optimally effective.

Neuroinflammation Control

“The Missing Link”
- Corticoids are essential. Required is low dose methylprednisolone, dexamethasone, or prednisone

- Microglial cell suppressors: ketorolac, indomethacin, minocycline, pentoxiphylline, metformin, acetazolamide, low dose naltrexone

**Dietary Supplements**

- Literature supports: carnitine, omega fatty acids

- Anecdotal: serrapeptase, curcurmin/turmeric
Pain Relief Is Symptomatic Standard Therapy

- Neuropathic agents (anticonvulsants, antidepressants)
- NMDA-antagonists (ketamine, other)
- Opioids
- Sleep aids
- Adrenergic agents (catecholamine analogues)
- Acupuncture/electromagnetic
- Neuroinflammation

*AA patients need rx for severe flares

Spinal Cord Exercises 2 Purposes

1. Relieve spinal fluid flow obstruction
2. Prevent adhesion formation
Shows Spinal Fluid Flow Obstruction
Empty Sac Appearance

Multiple Obstructions
Empty Sac Appearance

Empty Sac
Multiple Obstructions
Neurogenesis

- Hormone replacement: DHEA, cortisol, pregnenolone, estradiol, progesterone, thyroid, testosterone
- High protein anti-inflammatory diet
- Dietary supplements: B12, vitamins, minerals
Neurogenesis

- Pentoxifylline/vitamin E
- Human chorionic gonadotropin
- Oxytocin

Summary

- Patients who currently carry a diagnosis of failed back surgery or other may have AA or CCES
- AA and CCES are progressive neuroinflammatory diseases that may lead to lower extremity paralysis, bladder-bowel dysfunction, and autoimmune disorders
- Neuroinflammation must be specifically treated
- Neurogenesis appears possible
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