Arachnoiditis: Diagnosis and Treatment
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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 (cont’d)

- 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")

Cauda equina in spinal canal

The precursor or initiator of arachnoiditis is inflammation of the nerves in the cauda equina.
Normal Axial View on MRI
L1–L3
L3–L4

L4–L5
L5–S1

Normal L-1—L-2
Normal L-4—S-1

46 Y/O Male Postlumbar Fusion With Constant Disabling Pain and Partially Paralyzed Left Leg
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, AAAT
- 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 (cont’d)

- 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
### References

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