Common Complaints in Spinal Cord Injury Population in Primary Care setting and Emergency Room

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Disclosure

• Nothing to disclose
Learning Objectives

- To recognize common complaints of the spinal cord injury population
- To able to work up for differential diagnoses of common complaints of the spinal cord injury population
- To able to manage common complaints of the spinal cord injury population
SCI Concepts in Care

• “Some clinical entities...affect multiple body systems and require the coordinated skills and knowledge of many different disciplines working as a team to provide effective and coordinated care. Spinal Cord Injury is such an entity.”

Thomas J. Paul, Spinal Cord Injury
Spectrum of SCI care

• Acute emergent care
• Intensive care/Post op care
• Acute rehabilitation/ventilator weaning
• Continuum of care
VA Health care SCI system - Eligibility

• Traumatic/nontraumatic SCI, MS - lifelong care
• 24 SCI centers in US
• 3 in California
• Palo Alto > Sacramento/Fresno
• Long Beach
• San Diego
Re-hospitalization

- GU
- Respiratory
- Skin
- MSK
- Bowel
Fever/Sepsis

- **DDX:**
  1. Urinary source: UTI, Ureteral obstruction
  2. Pneumonia
  3. Pressure injury infection
  4. GI: Colitis, cholecystitis, appendicitis
Case #1

• 58 year old male with traumatic spinal cord injury T1 ASIA Impairment Scale C presents to primary care office.

• He complains increased sediments. Denies leakage, no change in spasticity, no malodor. He requests antibiotics.

• UA

URINE BLOOD (-), URINE NITRITE (+)
LEUKOCYTE ESTERASE, 3+
URINE WBC >50 H, URINE BACTERIA many

• How would you manage?
Neurogenic Bladder

- Parasympathetic
  - Bladder contraction
- Sympathetic Store
  - Bladder relaxation
  - Urethral smooth muscle constriction
- Somatic
  - External sphincter muscle constriction
Catheters—Need to Drain

Indwelling or Straight catheter
Anatomy

• Upper Tract
  • Kidneys
  • Ureters
    • Narrowing junctions: Ureteropelvic /ureter-iliac junction/ureterovesical

• Lower Tract
  • Bladder
  • Urethra
Bacteruria

• Asymptomatic, treatment indicated if:
  • High grade VUR
  • Prior to urologic procedure
  • Hydronephrosis

• Symptomatic = foul smelling urine, spasticity, change in bladder pattern (incontinence, urgency, frequency)
  • 10-14 day course for complicated cystitis.
Case #2

• 58 year old male with traumatic spinal cord injury T1 ASIA Impairment Scale C presents to primary care office.

• He reports large amount of leakage between intermittent catheterization, increased leg spasm, malodor.

• UA

  URINE BLOOD (-), URINE NITRITE (+)
  LEUKOCYTE ESTERASE, 3+
  URINE WBC >50 H, URINE BACTERIA many

• How would you manage?
Case #3

• 58 year old male with traumatic spinal cord injury T1 ASIA Impairment Scale C presents to primary care office.
• He manages bladder with intermittent catherization 3 times a day and reports headache which is relieved by catheterization.
• How would you manage?
Autonomic Dysreflexia-Medical Emergency

• Signs and Symptoms
• Neurological level T6 level or above
• Hypertension
• Bradycardia
• Headache
• Flushing, diaphoresis, piloerection above injury level
• Nasal congestion
=> Stroke, Seizure
• Pathophysiology

Management

- Check BP, pulse q2-5 min
- Sit up
- Loosen tight clothing
- Check bladder management
- Check bowel
- Use medication: nitropaste if SBP>150, wipe off <130.
Case #4

- 58 year old male with traumatic spinal cord injury C4 ASIA Impairment Scale C presents to ED with BP 170/100, HR 45, T98.5.
- He manages bladder with indwelling catheter.
- How would you manage?
Management
• Check BP, pulse q2-5 min
• Sit up
• Loosen tight clothing
• Check bladder management
• Check bowel
• Use medication: nitropaste if SBP>150, wipe off <130.
Case #5

• 58 year old male with traumatic spinal cord injury C5 ASIA Impairment Scale C presents to primary care office.

• He reports cough with sputum. He is breathing with accessory muscle.

• How would you manage?
Respiratory Insufficiency

**Muscles of inspiration**

**Accessory**
- Sternocleidomastoid (elevates sternum)
- Scalenes Group (elevate upper ribs)
- Not shown: Pectoralis minor

**Principal**
- External intercostals
- Intercostal part of internal intercostals (also elevates ribs)
- Diaphragm (dome descends, thus increasing vertical dimension of thoracic cavity; also elevates lower ribs)

**Muscles of expiration**

**Quiet breathing**
Expiration results from passive, elastic recoil of the lungs, diaphragm and rib cage.

**Active breathing**
- Internal intercostals, except interchondral part (pull ribs down)
- Abdominals (pull ribs down, compress abdominal contents, thus pushing diaphragm up)

Note shown: Quadratus lumborum (pulls ribs down)
Modality

Intrapulmonary Percussive Ventilator

Cough Assist Device
Medications

**Mucolytic**
- Bicarb
- Acetylcysteine
- Hypertonic saline
- Dornase alpha

**Bronchodilator**
- Albuterol
- Ipratropium
Case #6

- 58 year old male with traumatic spinal cord injury T1 ASIA Impairment Scale C presents to primary care office.
- He reports new wound at buttock.
- How would you manage this?
Pressure Injury
Extrinsic factors for tissue injury

• Pressure
• Shear forces
• Friction
• Immobility
• Moisture
Pressure injury

Management

• Facilitate repairs and replacement of defective equipment.
• For poor posture, refer to a seating clinic.
• Treat incontinence, sweating, and any other factors that result in wet skin.
• Facilitate smoking cessation.
• Treat co-morbid health problems
• Treat spasticity if it interferes with safe transfers and/or results in abrasion/trauma.
Case #7

• 58 year old male with traumatic spinal cord injury T1 ASIA Impairment Scale C presents to primary care office.
• He reports nausea, bloating, loose stool, increased spasm.
• What would you recommend?
Neurogenic Bowel

- Decreased gastric emptying
- Prolonged mouth to cecum transit time
- Delayed transit time in colon
- Loss of abdominal muscle control
  - Valsalva maneuver impaired
Bowel program

• Maintenance program
  - Digital stimulation/Suppository
  - Stool softener
  - Prokinetic
• Bowel clean out
  - Magnesium citrate or Golytely
+ Soap suds enema
Case #8

• 58 year old male with traumatic spinal cord injury T1 ASIA Impairment Scale C presents to primary care office.

• He reports worse spasm in the legs recently, requesting to increase medication for spasm.

• How would you manage?
Spasticity

• Hyperactive spinal reflexes of SCI
• Spasms, muscle hypertonicity, and clonus.
What is the goal for spasticity management?

- Improve discomfort
- Improve sleep
- Improve ease of care
- Improve hygiene
Worsening spasm

• Elimination of noxious stimulus
  • Range of motion and static muscle stretching
  • Oral spasmolytic medication
  • Neurolytic blocks
  • Intrathecal medication infusion
Case #9

• 58 year old male with traumatic spinal cord injury T1 ASIA Impairment Scale C presents to primary care office.

• He reports worsening neuropathic pain and decreased sensation of arms for last 2 months. Past week, he also noticed weakness of hand.

• What is your differential?
Neurologic Decline

DDX

• Post-traumatic syringomyelia
• Spinal stenosis
• Herniated nucleus pulposus
• Peripheral Neuropathy
• Other neurological disease (motor neuron disease, MS, etc)
Management

• Neurosurgery referral for decompression, shunting, un-tethering
• Peripheral nerve entrapment: splinting, surgical decompression.
• Neurology referral for other neurological process
Case #10

• 58 year old male with traumatic spinal cord injury T1 ASIA Impairment Scale C presents to primary care office.
• He reports worse shooting/burning pain in the legs recently, requesting to increase medication for pain.
• What would you recommend?
Neuropathic Pain

Management

• Psychosocial interventions
• co-morbid conditions
• Medications :
  - Anti-seizure medications (gabapentin, pregabalin)
  - Antidepressants (amitriptyline, nortriptyline, venlafaxine)
Case #11

• 58 year old male with traumatic spinal cord injury T1 ASIA Impairment Scale C presents to primary care office.

• He complains of lightheadedness after moving from bed to chair. He also reports vision fading in the afternoon while sitting in the chair.

• What would you recommend?
Orthostatic Hypotension

Causes of orthostatic hypotension
• Absent sympathetic reflex responses
• Bed rest
• Decreased fluid intake
• Inflammatory illness causing vasodilation.
Management

• Hydration
• Increased salt intake
• Use of an abdominal binder when out of bed
• Use of elastic stockings when out of bed
• Pharmacologic adjuncts: midodrine, pseudoephedrine, fludrocortisone
Questions?

• Palo Alto>Sacramento/Fresno
• Long Beach
• San Diego
Thank you.

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References
