Acute RUE Weakness

Case Report

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Case History

24 yo M current polysubstance abuse brought to hospital somnolent by his friends, was found to have rhabdomyolysis, as well as RUE weakness and sensory loss. Normal CTA head/neck, MRI brain. TTE with thickened non-coronary cusp. Transferred for further evaluation, with concern for epidural abscess.

- Onset 1 day, injected cocaine and heroin into his right hand. Awoke with his right arm "completely paralyzed" and numb. His face was spared. He had some discomfort in his right antecubital fossa and axilla, but no neck, back or shoulder pain, no headache, fever/chills, and pain was not a prominent feature of his presentation

- Variable exam limited by cooperation but clear RUE weakness, questionable RLE weakness, possible RUE sensory change

- WBC 7.8, HgB 12, plt 167, electrolytes wnl, BUN 7, Cr 0.78, Ca 8.8, glc 94, AST 68, ALT 69, CRP 30, CK 2219, Lyme/tick panel neg, HIV neg, Bcx 1:4 bottles staph epidermidis

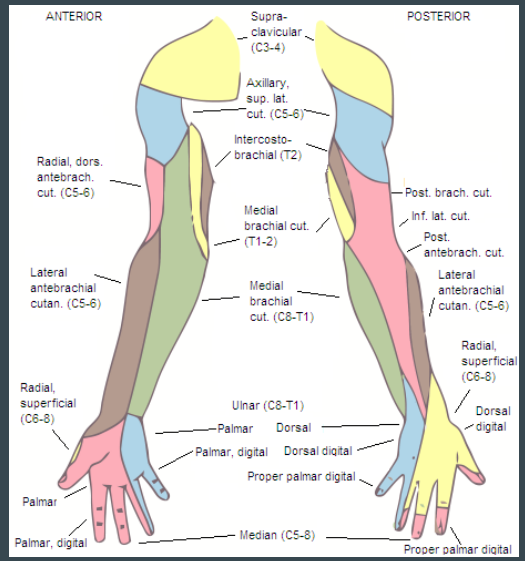
- One dose vanc/CTX, cont vanc/IVF, MRI C/T/L spine normal, neurology consulted hospital day 6

Physical Exam

BP 103/53, HR 67, T 36.5 °C (97.7 °F), RR 16, SpO2 100% | BMI 26.58 kg/m²
General appearance: appears older than stated age, in no acute distress
Mental Status: A/O, cognition and memory intact, no aphasia/dysarthria
Cranial nerves: visual fields w/o deficit, CN 2-12 intact
Motor: Decreased tone RUE, (+) atrophy R biceps, no muscle tenderness
- LUE/LLE/RLE: 5/5 distally and proximally
- RUE: 5/5 shoulder abduction, 5/5 elbow extension, 4-/5 elbow flexion, 5/5 pronation/supination, 4-/5 wrist extension, 5/5 wrist flexion, 4-/5 finger extension, 5/5 finger abduction, 5/5 finger flexion
DTRs:
- Right: 2+ triceps, 0 biceps, 0 brachioradialis, 2+ finger flexors, 2+ patella, 2+ ankle
- Left: 2+ triceps, 2+ biceps, 2+ brachioradialis, 2+ finger flexors, 2+ patella, 2+ ankle.
- Plantar: L/R toe downgoing
Sensory: Sensation is intact to light touch and pinprick on the LUE/LLE/RLE. Right arm w/ diminished sensation to light touch and pinprick in a circumferential pattern around his forearm, normal below the wrist and above the elbow
Coordination: No ataxia/dysmetria, intact rapid alternating movements
Gait: Normal. Able to walk on toes, heels and tandem without difficulty

Localization

- Lower motor neuron lesion, C5-6, upper/middle trunk, radial and musculocutaneous n.
- Etiology?: Compression, traumatic, infectious, vascular, demyelinating, malignancy, toxic, hereditary, idiopathic



Structure	Principal Muscles Involved	Sensory Distribution	Diminished Reflexes
Upper trunk	Supraspinatus[b] Infraspinatus[b] Deltoid[b] Brachioradialis[b] Biceps[b] Triceps Pronator teres Extensor carpi radialis Flexor carpi radialis	Lateral upper arm and forearm and first one to two digits	Biceps, brachioradialis
Lower trunk	Triceps Extensor digitorum[b] Extensor indicis[a] Flexor digitorum profundus[b] Flexor pollicis longus[b] Abductor pollicis brevis[b] Interossei[b]	Medial forearm and hand, fourth and fifth digits	None
Middle trunk	Triceps[b] Flexor carpi radialis[b] Extensor carpi radialis[b] Pronator teres[b] Extensor digitorum[b] Flexor digitorum[b] Flexor pollicis longus[b]	Centermost portion of the distal forearm and third digit	Triceps
Lateral cord	Biceps[b] Pronator teres[b] Flexor carpi radialis[b] Flexor digitorum[b] Flexor pollicis longus[b]	Lateral forearm, palmar hand and first three digits	Biceps
Medial cord	Flexor digitorum[b] Flexor pollicis longus[b] Abductor pollicis brevis[b] Interossei[b]	Medial forearm and hand, fourth and fifth digits	None
Posterior cord	Deltoid[b] Teres minor[b] Brachioradialis[b] Triceps[b] Extensor carpi radialis[b] Extensor digitorum[b] Extensor indicis[b]	Dorsal aspect of upper arm, forearm, lateral hand, and the first three digits	Triceps, brachioradialis

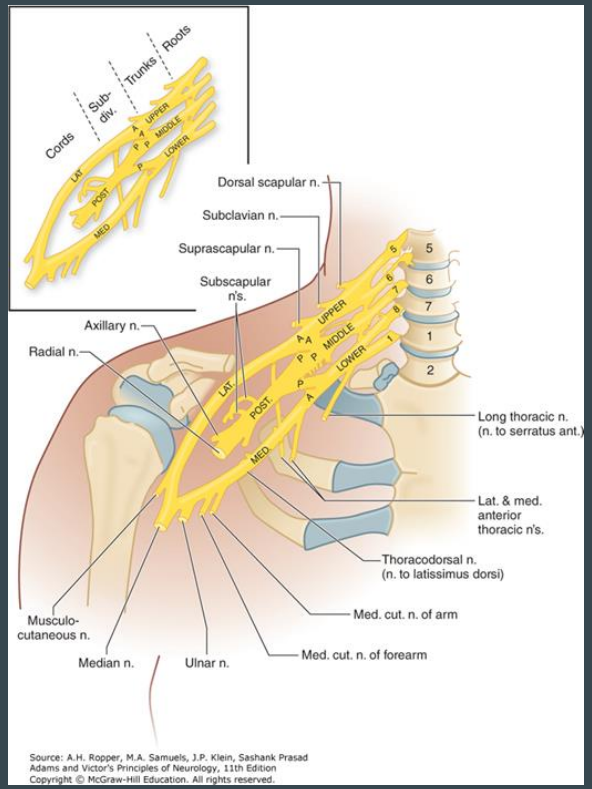
[a] Modified with permission from London ZN.[1] © 2019 American Academy of Neurology.
[b] Muscle may be more prominently involved.

Brachial Plexopathy

- Root (C5-T1)
- Trunk (sup, mid, inf)
- Division (ant, post)
- Cord (lat, post, med)
- Branch (musc, med, uln, axial, rad)

Etiology:

- Infectious (HIV, VZV, lyme), tumor, compression/trauma, radiation, Paget-Schrötter syndrome, Parsonage-Turner Syndrome
- Heredofamilial Brachial Plexopathy (SEPN1, PMP22)
- Toxic (heavy metals, **drugs**), inflammatory



Given the acute onset of plexopathy after IV heroin use, lack of association with significant pain, and spontaneous recovery, this presentation is most consistent with a **heroin-induced plexopathy.**

Heroin-Induced Plexopathy

Neurologic Complications of Heroin Use: Spongiform leukoencephalopathy, seizures, stroke, transverse myelitis, and neuromuscular complications such mononeuropathy, plexopathy, AIDP, rhabdomyolysis, fibrosing myopathy, acute bacterial myopathy

- IV injection (or intranasal), acute onset, complete/partial plexopathy with varied amount of impaired sensation, and hyporeflexia of affected limb
  - Brachial plexus, lumbosacral plexus, can involve more than one limb
  - CMAP/SNAP decreased amplitudes, decreased recruitment, positive sharp waves, fibrillations
- Commonly associated with rhabdomyolysis
  - Direct toxic effect, compression, inflammation, acidosis, hypoxia
  - Immunological effects of the drug or its contaminants
  - Lead poisoning, other illicit drugs
- Treatment:
  - Supportive
  - Steroids hasten recovery?
- Prognosis:
  - Often good, recover within weeks to few months, but can last up to a year

Citations

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Thank you