Traumatic Motor Vehicle Accident Resulting in Chronic Triceps Weakness

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Introduction

Case History:

- 22-year-old Division 1 college basketball player referred for left upper extremity weakness
- Motor vehicle accident 1 year prior to referral, hospitalized with C6-ASIA C spinal cord injury
  - CT scan: T1 compression fracture with spinal cord contusion affecting C3-C7
- Underwent 2 months inpatient rehabilitation
  - Significant neurological recovery with the exception of difficulty with left elbow extension (bench press/push-ups).

Physical Examination:

- Atrophy of the left triceps and pectoralis in comparison to the right.
- Strength: 5/5 throughout all muscle groups on the right and left with the exception of left elbow extension 3/5, wrist extension 4/5, and digit 1-5 abduction 4/5.
- Sensation: Normal and intact throughout all dermatomes
- DTRs: 2+/4 in all extremities except the left triceps, 1+/4

Differential Diagnoses

- Cervical radiculopathy
- Brachial Plexopathy
- Radial mononeuropathy
- Cervical Myelopathy
- Cervical Myelomalacia

Imaging

Figure 1: Ultrasound image of C7 nerve rootlets

Figure 2: Fluoroscopic image of C7 interlaminar injection

Muscle	Insertional Activity	Recruitment	Fibrillations	Positive Sharp Waves
Triceps	increased	decreased	2+	2+
1st Dorsal Int	increased	decreased	1+	none
Abd Pol Brev	increased	decreased	1+	2+
Ext Dig Com	increased	decreased	1+	2+
Ext Ind Pro	increased	decreased	1+	none
Low Cerv Par	Increased	NT	2+	1+

Table 1. Selected results of left upper extremity electromyography

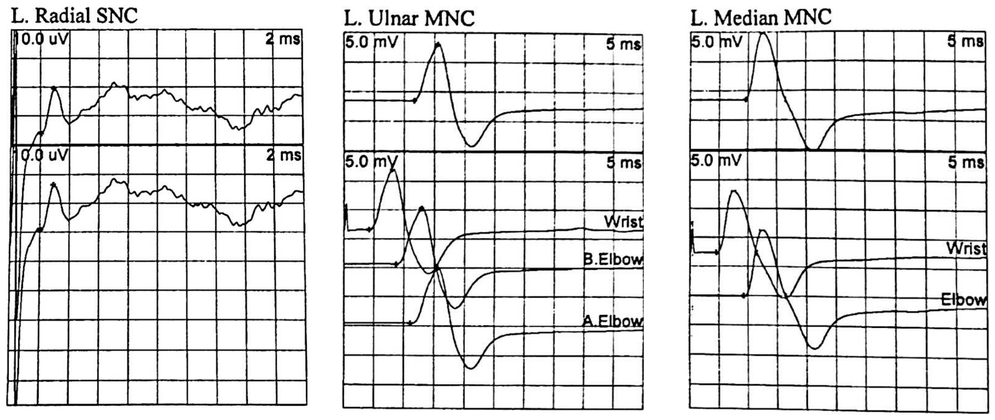

Figure 3. Selected results of left upper extremity nerve conduction studies

Tests & Results

- **MRI Cervical Spine** (4/16/2019): Decreased caliber and increased signal at the C5 level, more pronounced along the left hemicord. No noted canal or neuroforaminal nerve impingement. No change from original scan 3/23/2018.
- **Nerve Conduction Studies**: Normal bilateral motor and sensory nerve conduction study

Final Working Diagnosis

- Chronic, non-progressive, partial radiculopathy of the C7 and C8 nerve roots.

Discussion

- Weakness failed to improve following physical and occupational therapies
- Underwent a C7 ultrasound-guided perineural platelet lysate injection and interlaminar platelet lysate epidural injection, shown to improve function from a previous study and possibly allow for nerve regeneration.[1,2]

Outcome

- He reported mild improvement in coordination of movements in his left upper extremity
- Muscle strength testing revealed no change

Follow-Up

- Despite platelet lysate injections, still exhibits significant weakness
- He will undergo additional outpatient rehab.
- Will consider nerve grafting of the C7 nerve root

References

1. Centeno et al. The use of lumbar epidural injection of platelet lysate for treatment of radicular pain. Journal of Experimental Orthopaedics. (2017). doi: 10.1186/s40634-017-0113-5.
2. Ding et al. The effect of platelet-rich plasma on cavernous nerve regeneration in a rat model. Asian Journal of Andrology. (2009). doi: 10.1038/aja.2008.37

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