

Brachial plexopathy after proning during COVID-19 ICU admissions

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Case Diagnosis

Confirmed brachial plexopathies in two patients with recent COVID-19 ICU admissions following prolonged intubations.

Case Description

Two similar cases of patients who developed unilateral arm weakness with EMG findings of axonal brachial plexus injuries following COVID-19 infection.

Case 1

A 48-year-old male with 0/5 muscle motor strength following a 51-day ICU admission due to COVID-19. The patient's hospital course included intubation, tracheostomy and PEG tube placement and frequent proning maneuvers. A central cause of weakness was ruled out. EMG study performed on hospital day#51 showed electrodiagnostic evidence of partial axonal left brachial plexopathy involving mainly the lower trunk.

Case 2

A 50-year-old female in acute rehab with notable left upper extremity flaccid weakness following a 13-day intubation for COVID-19 infection. Patient believed her weakness was from a stroke although all brain imaging was negative for CVA. NCS/EMG showed electrodiagnostic evidence of partial axonal left brachial plexus injury.

Side	Muscle	Nerve	Root	Ins Act	Fibs	Psw
Left	Deltoid	Axillary	C5-6	Nml	0	0
Left	Biceps	Musculocut	C5-6	Nml	0	0
Left	Triceps	Radial	C6-7-8	Nml	0	0
Left	1stDorInt	Ulnar	C8-T1	Nml	2+	0
Left	Abd Poll Brev	Median	C8-T1	Nml	2+	0
Left	CervPara Lower	Rami		Nml	0	0
Left	FlexDigSuper	Median	C7-8	Nml	2+	0
Left	ExtIndicis	Radial (Post Int)	C7-8	Nml	2+	0
Left	PronatorTeret	Median	C6-7	Nml	2+	0
Left	ABD Dig Min	Ulnar	C8-T1	Nml	2+	0
Left	Supraspinatus	SupraScap	C5-6	Nml	0	0

Case 1: Needle EMG results showing brachial plexopathy affecting mainly lower trunk

Side	Muscle	Nerve	Root	Ins Act	Fibs	Psw
Left	Deltoid	Axillary	C5-6	Nml	0	0
Left	Biceps	Musculocut	C5-6	Nml	2+	3+
Left	Triceps	Radial	C6-7-8	Nml	3+	2+
Left	PronatorTeret	Median	C6-7	Nml	2+	3+
Left	1stDorInt	Ulnar	C8-T1	Nml	0	0
Left	Abd Poll Brev	Median	C8-T1	Nml	1+	2+
Left	CervPara Upper	Rami		Nml	0	0
Left	CervPara Middle	Rami		Nml	0	0
Left	CervPara Lower	Rami		Nml	0	0
Left	Supraspinatus	SupraScap	C5-6	Nml	0	0
Left	BrachioRad	Radial	C5-6	Nml	2+	2+
Left	FlexDigProf	Ulnar	C8-T1	Nml	0	0
Right	Abd Poll Brev	Median	C8-T1	Nml	0	0

Case 2: Needle EMG results with diffuse brachial plexus injury

Discussion

Critical illness myopathy may be regarded as the most common neuromuscular injury found following COVID-19 intensive care admissions, however, attention must be turned to the less typical occurrence of brachial plexus injuries. Brachial plexopathies present as unilateral deficits in strength or sensation and can be confirmed by electrodiagnostic testing. These injuries may be iatrogenic and related to the proning technique which is frequently used in the management of ARDS due to COVID-19 pneumonia. Proning has been found to improve oxygenation levels and survival rates in intubated patients, however, preventive strategies must be taken to provide proper positioning and avoid prolonged pressure which can lead to peripheral nerve injuries.

Conclusion

While the incidence of iatrogenic neurological injuries including brachial plexus injuries has been studied when prone positioning is used during surgical procedures, little research is available on patients who developed these deficits following prolonged malpositioning such as the proning maneuver which is frequently used during COVID-19 ICU admissions.

References:

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