

## Case Diagnosis

**Sciatic neuropathy** with total axon loss likely attributed to a small clot affecting the vasa nervorum to the sciatic nerve in the proximal thigh in the setting of COVID-19 infection.

## Case Description

67-year-old female with recent COVID-19 pneumonia, septic shock and prolonged ICU stay was referred for electrodiagnosis of the right leg to rule out peroneal neuropathy. She reported numbness in the right foot, lateral leg, weakness and occasional pain. Sensation to light touch was absent in the right distal lateral leg, dorsum, plantar and lateral foot and decreased in the proximal lateral leg and medial foot. Reflexes were brisk in the knees and absent at ankles with absent Babinski response on the right. Muscle strength was 4-5/5 in the upper limbs and left lower limb, 0/5 in the right ankle and 3/5 in knee and hip flexion with normal hip abduction and adduction.

	ShAbd	ShIR	ShER	EF	EE	WF	APB	ADM	FDI
Left	5	5	4	5	5	5	4	4+	4+
Right	4	5	3	4+	4-	5	4	4	4

	HF	HABd	HAdd	KE	KF	DF	PF	Inv	Ev	EHL	EDL	FHL	FDL
Left	4-	5	5	4+	4-	4	4+	4	4	4	4	4	4+
Right	3	5	5	4-	3	0	0	0	0	0	0	0	0

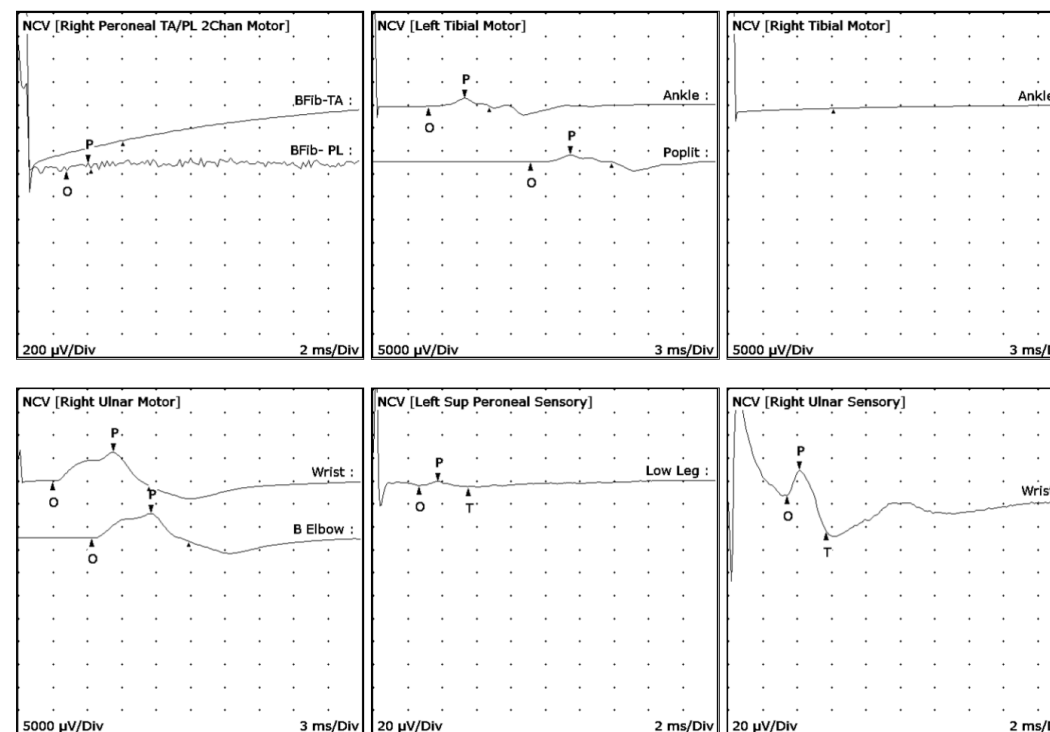
## Nerve Conduction Studies

### Motor Summary Table

Stim Site	NR	Onset (ms)	Norm Onset (ms)	O-P Amp (mV)	Norm O-P Amp	Neg Area (mVms)	Site1	Site2	Delta-0 (ms)	Dist (cm)	Vel (m/s)	Norm Vel (m/s)
Right Peroneal TA (TA) 33.2°C												
BFib-TA	NR		<4.2			>1.5						
Left Tibial Motor (Abd Hall Brev) 32.1°C												
Ankle		4.8	<4.8	1.9	>2	3.89	Poplit	Ankle	9.0	35.5	39	>40
Poplit		13.8		1.6		4.26						
Right Tibial Motor (Abd Hall Brev) 33.3°C												
Ankle	NR		<4.8			>2						
Right Ulnar Motor (Abd Dig Minimi) 32°C												
Wrist		3.0	<3.5	6.3	>4	27.58	B Elbow	Wrist	3.4	19.6	58	>49
B Elbow		6.4		5.4	>4	23.01						

### Sensory Summary Table

Stim Site	NR	Onset (ms)	Norm Onset (ms)	Peak (ms)	O-P Amp (µV)	P-T Amp (µV)	Norm P-T Amp	Site1	Site2	Delta-0 (ms)	Dist (cm)	Vel (m/s)	Norm Vel (m/s)
Left Sup Peroneal Sensory (Ant Lat Mall) 30.1°C													
Low Leg		2.7	<3.6	3.8	4.0	4.7	>5	Low Leg	Ant Lat Mall	2.7	14.0	52	>39
Right Ulnar Sensory (5th Digit) 32°C													
Wrist		3.4	<3.1	4.1	22.1	53.4	>18	Wrist	5th Digit	3.4	14.0	41	>40



## Electromyography

Side	Muscle	Ins Act	Fibs	Psw	Fascs	HF	Amp	Dur	Poly	Recrt	Int Pat	Comment
Right	Deltoid (Mid)	Nml	Nml	Nml	None	Nml	Nml/Small	Nml/1-	0	Nml	Complete	
Right	1stDorInt	Nml	Nml	Nml	None	Nml	Nml	Nml	0	Nml	Complete	
Right	Iliopsoas	Nml	Nml	Nml	None	Nml	Small/Nml	1-/Nml	0	1+	Complete	
Right	VastusMed	Nml	Nml	Nml	None	Nml	Nml	Nml	0	Nml	Complete	
Right	AntTibialis	Incr	Lrg/Sm	Large	None	Nml	Nml	Nml	0	Nml		No Activity
Left	AntTibialis	Incr	Large	Large	None	Nml	Nml	Nml	1+	Nml	Complete	
Right	TensorFasclat	Nml	Nml	Nml	None	Nml	Nml/Small	Nml/1-	0	Nml	Complete	
Right	BicepsFemL	Incr	Lrg/Sm	Lrg/Sm	None	Nml	Nml	Nml	0	Nml		No Activity
Left	Med Gastroc	Incr	Small	Lrg/Sm	None	Nml	Nml	Nml	1+	Nml	Complete	
Right	Med Gastroc	Incr	Lrg/Sm	Lrg/Sm	None	Nml	Nml	Nml	0	Nml		No Activity

## Discussion

The peroneal and tibial compound muscle action potentials were unobtainable. Increased insertional activity and fibrillation potentials or positive sharp waves were present in sciatic muscles. Concurrent axon loss peripheral polyneuropathy in the lower limbs and patchy myopathic process of the pelvic and shoulder girdle muscles was present likely related to long intensive care stay.

## Conclusion

The pathogenesis of hypercoagulability in COVID-19 is incompletely understood but has been a well-documented phenomenon and likely caused this patient's focal ischemia of the sciatic nerve with total axon loss. Prognosis for recovery of function is poor. This diagnosis should be considered in patients with concern for radiculopathy, plexopathy or peripheral neuropathy following acute intensive care stays and especially in the setting of the current global COVID-19 pandemic. Initiation of therapeutic-level anticoagulation remains controversial but should be considered for critically ill patients diagnosed with COVID-19 infection.

## References

1. Teuwen LA, Geldhof V, Pasut A, Carmeliet P. COVID-19: the vasculature unleashed. Nat Rev Immunol 2020; 20:389.
2. Lowenstein CJ, Solomon SD. Severe COVID-19 Is a Microvascular Disease. Circulation 2020; 142:1609.