

Severe bilateral motor-predominant lumbosacral radiculopathy following cardiac arrest: a rare case of anterior ramus ischemia

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INTRODUCTION	RESULTS	DISCUSSION																																																																																																																																																																																																																																																																																																																																																																																				
- Lumbosacral radiculopathy =mixed motor and sensory deficits. - Sensory symptoms and EMG findings often precede motor findings¹. - We present a rare, severe, and likely ischemic case of isolated motor-predominant radiculopathy following cardiac arrest, confirmed by electrodiagnostic evidence of ventral ramus injury with sparing of sensory pathways.	- Bilateral LE NCV: Motor and sensory WNL - Lower Extremity EMG: Widespread denervation in L4-S2 anterior rami muscles - Paraspinal EMG: Minimal abnormality.	Interpretation: Multilevel lumbosacral radiculopathy with selective anterior ramus motor axon loss . Sparing of dorsal ramus fibers. Atypical for a compressive radiculopathy, suggesting preganglionic ventral root or anterior ramus injury, possibly due to prolonged ischemia due to CPR period.																																																																																																																																																																																																																																																																																																																																																																																				
CASE DESCRIPTION	FIGURES	This rare case of bilateral, motor-predominant lumbosacral radiculopathy likely reflects selective ischemic injury to centrally located ventral root fibers. Literature suggests motor fibers may lie centrally within the spinal root and are more vulnerable to ischemia due to relative metabolic demand, size, and perfusion patterns ²⁻⁴ . Understanding this fiber-selective vulnerability may help interventional physicians recognize atypical post-resuscitation radiculopathies and consider nerve root perfusion risks on prolonged surgical position or critical care scenarios.																																																																																																																																																																																																																																																																																																																																																																																				
37-year-old non-binary individual with bipolar disorder, substance use, and suspected overdose was admitted following out-of-hospital cardiac arrest with prolonged downtime. ROSC in ICU at 35 minutes, eventual admission to acute inpatient rehabilitation - Course complicated by persistent bilateral ankle dorsiflexion weakness, without sensory loss. Exertional-only back pain. No compressive lesions on imaging. - Electrodiagnostic evaluation was obtained due to bilateral foot drop and subjective paresthesia. - This case report does not contain identifiable patient information and is exempt from IRB review under NYU and NYC-HHC policy. Informed consent was obtained from the patient for academic presentation.	Table 1: <i>Anti Sensory NCS</i> <table><tr><th>Stim Site</th><th>Onset (ms)</th><th>P-T Amp (µV)</th><th>Norm P-T Amp</th><th>Delta-0 (ms)</th><th>Dist (cm)</th><th>Vel (m/s)</th></tr><tr><td>Left Peroneal Anti Sensory (Foot)</td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>Leg</td><td>2.5</td><td>15.4</td><td>>10.0</td><td>2.5</td><td>11.0</td><td>44</td></tr><tr><td>Right Peroneal Anti Sensory (Foot)</td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>Leg</td><td>2.3</td><td>38.1</td><td>>10.0</td><td>2.3</td><td>10.0</td><td>43</td></tr><tr><td>Left Sural Anti Sensory (Ankle)</td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>Calf</td><td>1.7</td><td>25.4</td><td>>10.0</td><td>1.7</td><td>8.0</td><td>47</td></tr><tr><td>Right Sural Anti Sensory (Ankle)</td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>Calf</td><td>2.0</td><td>20.2</td><td>>10.0</td><td>2.0</td><td>8.0</td><td>40</td></tr></table> Table 2: <i>Motor NCS</i> <table><tr><th>Stim Site</th><th>Onset (ms)</th><th>Norm Onset (ms)</th><th>P-T Amp (mV)</th><th>Norm P-T Amp</th><th>Full Dur (ms)</th><th>Site 1</th><th>Site 2</th><th>Delta-0 (ms)</th><th>Dist (cm)</th><th>Vel (m/s)</th><th>Norm Vel (m/s)</th></tr><tr><td>Left Peroneal Motor (Ext Dig Brev)</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>Ankle</td><td>3.8</td><td><6.0</td><td>2.0</td><td>>0.9</td><td>7.19</td><td>Fib Head</td><td>Ankle</td><td>7.3</td><td>34.0</td><td>49</td><td>>39.9</td></tr><tr><td>Fib Head</td><td>11.1</td><td></td><td>1.7</td><td></td><td>7.34</td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>Right Peroneal Motor (Ext Dig Brev)</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>Ankle</td><td>3.9</td><td><6.0</td><td>7.2</td><td>>0.8</td><td>6.25</td><td>Fib 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		- Mondelli M, Aretini A, Arriguucci U, Ginanneschi F, Greco G, Sicurelli F. Clinical findings and electrodiagnostic testing in 108 consecutive cases of lumbosacral radiculopathy due to herniated disc. <i>Neurophysiol Clin.</i> 2013;43(4):205-215. doi:10.1016/j.neucl.2013.05.004 - Gelfan S, Tarlov IM. Physiology of spinal cord, nerve root and peripheral nerve compression. <i>Am J Physiol.</i> 1956;185(1):217-229. doi:10.1152/ajplegacy.1956.185.1.217 - Hamad MN, Boroda N, Echenique DB, Dieter RA, Amirouche FML, Gonzalez MH and Kerns JM (2022) Compound Motor Action Potentials During a Modest Nerve Crush. <i>Front. Cell. Neurosci.</i> 16:798203. doi: 10.3389/fncel.2022.798203 - Duggal N, Lach B. Selective vulnerability of the lumbosacral spinal cord after cardiac arrest and hypotension. <i>Stroke.</i> 2002;33(1):116-121. doi:10.1161/hs0102.101923																																																																																																																																																																																																																																																																																																																																																																																				

