

# Pan-Brachial Plexopathy Following COVID-19 – A Longitudinal Overview

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**Case Diagnosis**  
Left pan-brachial plexopathy

**Case Description**  
The patient is a 47 year old male who presented with acute respiratory failure secondary to COVID-19. His course was complicated by intubation and new left upper extremity weakness and sensory loss upon extubation. Hospital workup including MRI brachial plexus was notable for left brachial plexitis. Further outpatient workup including electrodiagnostics (EDX) with left pan-brachial plexopathy. Upon neuromuscular evaluation, patient was suspected to have neurogenic amyotrophy (Parsonage-Turner syndrome) and treated with prednisone. Functionally, patient completed outpatient PT/OT and was fitted for a custom-fabricated shoulder-elbow-wrist-finger orthosis.

**Discussion**  
Neurogenic amyotrophy is thought to lead to a brachial plexopathy secondary to an immune-mediated process<sup>1</sup>. Antecedent events, such as infection, are common with patient’s clinical course classically following a stereotypical pattern of acute pain followed by frank weakness and atrophy<sup>1</sup>. Predicting functional recovery is still a point of investigation. In a cohort of 246 patients diagnosed with neurogenic amyotrophy, residual paresis, pain, and fatigue were common 3 years from diagnosis with only 7.7% of patients reporting full subjective recovery<sup>2</sup>. Treatment options are limited with some evidence supporting oral steroids. In one retrospective study of 50 patients, a 13 days course with prednisolone within one month of initial symptoms (median time to treatment – 8.5 days) led to improvements in pain and weakness within one month and improved functional recovery by one year<sup>3</sup>. The above patient was hospitalized 4/2020. He was treated with prednisone 60mg x 1 week with subsequent taper over 2 weeks in late 5/2020. Functionally, the patient started therapy in 6/2020 and worked on active and passive ROM, mirror therapy, and neuromuscular stimulation.

**Conclusion**  
The patient is a 47 year old male with left severe pan-brachial plexopathy thought to be secondary to neurogenic amyotrophy after COVID-19 infection.

EDX		
	Initial Assessment (6/2/20)	Most Recent (1/15/21)
NCS (Sensory)	Non-responsive	Non-responsive
NCS (Motor)	Ulnar (wrist): amplitude 0.1 Median (wrist): non-responsive	Ulnar (wrist): amplitude 1.4 Median (wrist): amplitude 0.2
EMG	PSW and fibs in myotomes C5-C8 Severe decrease to no recruitment in all muscles tested	PSW and fibs in myotomes C5-C8. Reinnervation in C5-C7. Mild to Severe decrease in recruitment in all muscles tested (tricep/ deltoid not tested)

Functional Recovery		
Action	Initial Assessment (6/5/20)	Most Recent (12/24/20)
Shoulder Abduction	0/5	5/5
Arm Flexion	1/5	5/5
Arm Extension	1/5	5/5
Wrist Flexion	0/5	3/5
Wrist Extension	2-/5	3/5
Finger Flexion	2-/5	3/5

**References:**

- [https://www-uptodate-com.ezproxy.rush.edu/contents/brachial-plexus-syndromes?search=parsonage%20turner%20syndrome&source=search\\_result&selectedTitle=1~26&usage\\_type=default&display\\_rank=1#H13](https://www-uptodate-com.ezproxy.rush.edu/contents/brachial-plexus-syndromes?search=parsonage%20turner%20syndrome&source=search_result&selectedTitle=1~26&usage_type=default&display_rank=1#H13)
- Alfen, Nens van, and Baziel G. M. van Engelen. "The Clinical Spectrum of Neuralgic Amyotrophy in 246 Cases." *Brain* 129, no. 2 (February 1, 2006): 438–50.
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