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# Post Covid-19 Infection Multisystem Inflammatory Syndrome in Adults Presenting with Pain, Ascending Weakness, and Paresthesias: A Case Report

Beaumont

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## Case Description

**Setting:** Major academic and referral center with level 1 adult trauma.

**Disclosure:** None

Patient with documented COVID-19 infection five weeks prior to arrival and presented with pain, paresthesias, and weakness in the bilateral lower extremities. Symptoms began shortly after patient recovered from COVID-19 infection, however, patient developed ascending weakness extending into the hands with left sided chest pain, prompting patient to present for evaluation.

## Assessment/Results

Lumbar puncture and cerebrospinal fluid studies were not suggestive of Guillain-Barré syndrome. Imaging of the entire neuraxis was unremarkable. Echocardiogram revealed new onset heart failure with reduced ejection fraction of 35% consistent with non-ischemic cardiomyopathy and cardiac imaging was not suggestive of amyloidosis. EMG was consistent with primarily axonal greater than motor peripheral polyneuropathy. Further inflammatory workup revealed elevated erythrocyte sedimentation rate and C reactive protein. Paraneoplastic workup was unremarkable. Patient was started on intravenous immunoglobulin (IVIG) for suspected Multisystem Inflammatory Syndrome in Adults (MIS-A) and completed five treatments with improvement in bilateral lower extremity paresthesias and weakness. Patient was discharged home from the inpatient rehabilitation unit walking ten feet with rolling walker with minimal assistance, touch assistance for transfers, and modified independent for bed mobility. Patient was seen in the outpatient resident psychiatry clinic three months following discharge walking short household distances modified independent with rolling walker, independent for transfers, and modified independent for bed mobility with further improvement in bilateral lower extremity paresthesias and weakness. Ejection fraction improved on follow up echocardiogram to 60% at three month cardiology follow up.

## F-Wave Analysis

Right tibial motor nerve with distal latency of 50 ms with 100% penetrance (8/8).

Left tibial motor nerve with distal latency of 53 ms with 100% penetrance (8/8).

Table 1. Electromyogram

Muscle	Innervation	Nerve Roots	PSWs	Fibs	Fasic	Activation	Recruitment	Amplitude	Duration	Phases
<b>LEFT</b>										
VMO	Femoral	L2-4	0	0	0	NL	NL	NL	NL	NL
Gastrocnemius	Tibial	S1-2	IIA	IIA	0	*	*	*	*	*

**Patient deferred further EMG testing**

NL = Normal Limits IIA = Increased insertional activity \* = Patient with limited activation

Table 2. Nerve Conduction Studies

Nerve	Distal Latency (ms)	Ref Values	Amplitude	Ref Values	CV (m/s)	Temp. (°C)
<b>LEFT</b>						
Um to ADM (AE/BE/W)	2.8	<4.2	9.7/9.4/10.3 mV	3-5 mV	60/59	
Rs to D1	Unobtainable	<2.8	Unobtainable	> 7 (micro V)		
MS to D1	Unobtainable	<2.9	Unobtainable	> 25 (micro V)		
MS to D2	Unobtainable	<3.6	Unobtainable	> 25 (micro V)		
Us to D5*	4.9*	<3.6	38* (micro V)	> 15 (micro V)		32.5

\* = Questionable motor response rather than a true sensory response

Nerve	Distal Latency (ms)	Ref Values	Amplitude	Ref Values	CV (m/s)	Temp. (°C)
<b>Right</b>						
Tm to AH	4.4	<6.0	2.2/2.9 mV	> 2 mV	40	
Pm to EDB (AK/BK/A)	4.3	<6.0	1.5/1.6/2.0 mV	> 1.2 mV	41/43	
Sural s	3.2*	<4.5	12* (micro V)	> 5 (micro V)		30.2
Sup Peroneal s	Unobtainable	<4.2	Unobtainable	> 5 (micro V)		30.3
<b>LEFT</b>						
Tm to AH	4.3	<6.0	3.1/4.4 mV	> 2 mV	36	
Pm to EDB (AK/BK/A)	4.0	<6.0	1.7/2.1/2.5 mV	> 1.2 (micro V)	48/44	
Sural S	3.9	<4.5	3 (micro V)	> 5 (micro V)		29.4
Sup Peroneal S	Unobtainable	<4.2	Unobtainable	> 5 (micro V)		30

\* = Questionably absent sensory conduction

## Discussion

Post Covid-19 multisystem inflammatory syndrome is seen more commonly in children than in adults per literature review. Clinicians must be mindful of potential MIS-A in adult patients with symptoms mimicking Guillain-Barré syndrome with negative workup and imaging, especially with concomitant cardiovascular compromise and elevated inflammatory markers. This case demonstrates one of the various presentations documented of MIS-A and is important for accurate diagnosis of this syndrome in the future.

## Conclusion

Post Covid-19 patients presenting with symptoms similar to Guillain-Barré syndrome with negative workup should be evaluated for MIS-A as this syndrome can affect multiple organ systems simultaneously, such as the nervous system and cardiovascular system as seen in this patient.

## References

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