Complications of COVID-19 , a case with both neurological and dermatological complications.

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Case Report

Keywords: COVID-19 , ophthalmoplegia , skin lesions , baboon syndrome

Posted Date: September 9th, 2020

DOI: <https://doi.org/10.21203/rs.3.rs-71357/v1>

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Abstract

Recently, different complications and clinical manifestations of COVID-19 have been reported such as neurological or dermatological complications, We present a confirmed COVID-19 case of diplopia and ophthalmoplegia presenting skin lesions at the same time .

Introduction

From the onset of the COVID-19 pandemic , various non-respiratory presentations have been reported, including dermatologic and neurologic presentations.

In this case report, a patient will be presented with both dermatologic and neurologic symptoms.

Of the neurologic symptoms of COVID-19 ,

Headache and anosmia are common manifestations, and less common symptoms include seizure, stroke and isolated cases of Guillain-Barre syndrome (GBS). (1)

Of the dermatologic symptoms of COVID-19 ,

maculopapular exanthem , papulovesicular rash , urticaria , painful acral red purple papules , livedo reticularis lesions and petechiae .

The lesions were mostly localized on the trunk . The development occurred before the onset of respiratory symptoms, and according to the majority of studies , lesions were not related to the severity of the disease .(2)

Case Presentation

In June, 2020, a 47-year-old man presented with fever and chills, cough, diarrhea, headache and then mild dyspnea . He was diagnosed with COVID-19 after a nasal swab for SARS-CoV-2 PCR was positive.

Laboratory test on admission showed increased D-dimer and inflammatory markers such as CPK, LDH, ESR and CRP.

In an outpatient setting , hydroxychloroquine started for the patient with a dose of 600 mg twice a day for one day, followed by 400 mg daily for four days . He was also treated with azithromycin and subcutaneous enoxaparin and naproxen 500 .

After 5 days, he returned with presentation of a rare hypersensitivity syndrome called baboon syndrome , erythrodermic non pruritic skin lesions in the inguinal area, axilla and also around his neck . This is considered as a nonimmediate hypersensitivity reaction, which is very rarely reported.(3, 4)

A therapy with antihistamine (hydroxyzine10) started for the patient and after 3 days, he presented with diplopia and ophthalmoplegia .

At referral to the neurologist, it was the 15th day after the onset of his first symptoms. The patient was awake and completely oriented, with normal language and speech examination. Cranial nerve examination showed right side 6th nerve palsy leading to patient diplopia. All other cranial nerves were normal. Sensory motor and cerebellar examinations were normal. The only other abnormal exam was lost left side Achill reflex, which was compatible with a previous history of old left side S1 radiculopathy. There was no papilledema or ptosis. He had no headache, vision loss, nausea, vertigo, or history of seizure or other neurologic complaints.

Brain MRI with and without contrast was performed that was completely normal and showed no abnormal meningeal or cranial nerve enhancement at that stage.

Electrodiagnostic studies (EDX) including needle electromyography (needle EMG) and nerve conduction studies (NCS), were performed to search for polyneuropathies, including GBS and its variant Miller Fisher syndrome, but there was no conduction block, decreased conduction velocity, increased distal latency, ongoing denervation potentials including fibrillations or positive sharp waves or sensory loss in all examined nerve CMAPs and SNAPs and muscle MUAPs to suggest such a diagnosis. The only positive findings in the EDX study were chronic neurogenic findings, such as polyphasic long duration MUAPS in L5 and S1 innervated muscles bilaterally, which was in favor of old radiculopathy. The EDX study report is attached.

Regarding normal brain MRI and no obvious peripheral polyneuropathy, cranial mononeuropathy was considered, and treatment with IV corticosteroid (2 doses of intramuscular dexamethasone 5 days apart) was started which resulted in complete improvement of the patient's neurologic symptoms.

After 20 days , there were no neurologic or dermatologic symptoms remained.

Discussion

In conclusion, some cases of neurological or dermatological complications of COVID-19 have been reported so far, but we presented a rare case of a patient who had both neurological and dermatological symptoms at the same time in addition to his respiratory symptoms.

There is a need to diagnose these non respiratory manifestations at the earliest stage to prevent long-term sequelae as much as possible . Much research is needed to explore the role of SARS-CoV-2 in

causing these neurological and dermatological manifestations and also the risk factors of their development(5)

Declarations

The study was approved by the local ethic committee.

The patients gave informed consent and approved the publication of the manuscript.

The authors declare no conflict of interest.

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Tables

Summary EMG data

Motor CV

Test	Stimulation site	Lat., ms	Ampl., mV	Dur., ms	Area, mV×ms	Stim., mA	Stim., ms	Dist., mm	Time, ms	Vel., m/s	Vel. norm, m/s	Vel. dev., %
R, Abductor digiti minimi, Ulnaris, C8 T1												
3	wrist	2.2	9.6	5.72	26.6	57	0.2	80				
	elbow	6.9	8.9	6.16	26.2	57	0.2	220	4.68	57.0	60.0	(N)
	arm	8.0	8.6	6.28	24.8	57	0.2	100	1.16	86.2	60.0	(N)
L, Abductor digiti minimi, Ulnaris, C8 T1												
11	wrist	2.1	8.0	5.56	25.2	37	0.2	80				
	elbow	6.8	8.6	5.72	25.7	37	0.2	250	4.72	53.0	60.0	(N)
	arm	8.3	8.3	5.8	25.4	37	0.2	100	1.44	69.4	60.0	(N)
R, Abductor pollicis brevis, Medianus, C8 T1												
1	wrist	3.6	9.4	6.56	35.9	47	0.2	120				
	elbow	7.7	9.4	7.27	35.8	47	0.2	250	4.13	60.6	60.0	(N)
L, Abductor pollicis brevis, Medianus, C8 T1												
8	wrist	3.3	10.4	6.24	40.5	61	0.2	80				
	elbow	8.0	10.2	6.32	36.7	65	0.2	250	4.68	53.4	60.0	(N)
R, Abductor hallucis, Tibialis, 14 L5 S1												
19	medial malleolus	5.7	4.8	5.4	12.4	100	0.2	70				
	popliteal fossa	16.1	4.5	6.83	12.4	100	0.2	420	10.4	40.5	50.0	(N)
L, Abductor hallucis, Tibialis, 14 L5 S1												
17	medial malleolus	6.0	6.1	6.92	13.5	100	0.2	70				
	popliteal fossa	15.3	3.8	7.48	9.5	100	0.2	420	9.28	45.3	50.0	(N)
R, Extensor digitorum brevis, Peroneus, 14 L5 S1												
21	sole of the foot	3.9	2.0	6.36	6.4	55	0.5	100				
	head of fibula	10.6	1.6	7.38	5.3	74	0.5	330	6.66	49.5	50.0	(N)
	popliteal fossa	12.3	1.6	7.56	6.2	100	0.5	90	1.69	53.1	50.0	(N)
L, Extensor digitorum brevis, Peroneus, 14 L5 S1												
15	sole of the foot	4.6	2.1	6.37	7.9	100	0.5	70				
	head of fibula	11.4	2.5	6.37	8.6	100	0.5	330	6.88	48.0	50.0	(N)
	popliteal fossa	13.3	2.3	6.83	8.4	100	0.5	90	1.91	47.2	50.0	(N)

Sensory CV

Test	Site	Lat., ms	Ampl., μ V	Dur., ms	Area, nV×s	Stim., mA	Stim., ms	Dist., mm	Time, ms	Vel., m/s	Vel. norm, m/s	Vel. dev., %
R, Ramus superficialis n. radialis, C5 C6												
7	Middle third of forearm	1.2	10.5	1.3	8.7	18	0.1	100	1.22	82.2	57.0	+44.1
R, n. Medianus III dig.												
6	middle of palm	2.6	28.9	3.1	19.7	27	0.1	70	2.65	66.5	60.0	(N)
L, n. Medianus III dig.												
10	wrist	2.8	21.2	2.3	12.9	22	0.1	140	2.8	50.0	60.0	(N)
R, n. Ulnaris V dig.												
5	wrist	2.0	19.3	2.6	14.4	20	0.1	120	1.96	61.2	60.0	(N)
L, n. Ulnaris V dig.												
13	wrist	2.3	9.0	2.1	5.8	51	0.1	130	2.33	55.8	60.0	(N)
R, n.Suralis, S1-S2												
23	1	2.8	7.4	1.9	4.9	23	0.1	130	2.76	47.1	50.0	(N)
L, n.Suralis, S1-S2												
26	1	3.5	10.4	2.0	11.7	30	0.1	130	3.52	36.9	50.0	-26.1

F-wave parameters

Test	Fmin lat., ms	M lat., ms	Fmin-M lat., ms	Max Vprox, m/s
R, Abductor digiti minimi, Ulnaris, C8 T1				
4	29.2	2.88	23.3	
L, Abductor digiti minimi, Ulnaris, C8 T1				
12	28.0	2.76	23.2	
R, Abductor pollicis brevis, Medianus, C8 T1				
2	27.3	3.84	23.5	
L, Abductor pollicis brevis, Medianus, C8 T1				
9	29.8	3.84	23.0	
R, Abductor hallucis, Tibialis, l4 L5 S1				
20	58.6	6.04	52.6	
L, Abductor hallucis, Tibialis, l4 L5 S1				
18	55.4	6.12	49.3	
R, Extensor digitorum brevis, Peroneus, l4 L5 S1				
22	non	3.92	0	
L, Extensor digitorum brevis, Peroneus, l4 L5 S1				
16	53.1	4.76	48.3	

H-reflex

Test		Threshold stim., mA	Max wave stim., mA	Max wave lat, ms	Max ampl., mV	Max area, mV×ms	Max H/M, %	Index H, cm ² /mc ²
R, Gastrocnemius, Tibialis, S1-S2								
24	H-reflex	22.0	31.0	35.0	0.638	1.6	6.1	
	M-wave	15.0	39.0	6.16	10.5	24.8		
L, Gastrocnemius, Tibialis, S1-S2								
25	H-reflex	36.0	42.0	33.4	1.09	3.5	74.9	
	M-wave	42.0	47.0	6.08	1.45	3.2		

Electromyography

1 13 Interference

Site	Spont. activity	Fasciculations	MUP amplitude	MUP duration	MUP polyphasicity	Pattern
R, Biceps brachii, Musculocutaneus, C5 C6	N	N	N	N	N	N
L, Biceps brachii, Musculocutaneus, C5 C6	N	N	N	N	N	N
R, Flexor carpi radialis, Medianus, C6-C7	N	N	N	N	i N	N
L, Flexor carpi radialis, Medianus, C6-C7	N	N	N	N	N	N
R, Interosseus I, Ulnaris, C8 T1	N	N	N	N	N	N
L, Interosseus I, Ulnaris, C8 T1	N	N	N	N	N	N
R, Vastus lateralis, Femoralis, L2-L4	N	N	N	N	N	N
L, Vastus lateralis, Femoralis, L2-L4	N	N	N	N	N	N
R, Tibialis anterior, Peroneus, L4 L5 s1	N	N	N	increased	increased	neurogenic
L, Tibialis anterior, Peroneus, L4 L5 s1	N	N	N	increased	increased	neurogenic
R, Gastrocnemius, Tibialis, S1-S2	N	N	greatly increased	greatly increased	greatly increased	neurogenic
L, Gastrocnemius, Tibialis, S1-S2	N	N	N	increased	greatly increased	neurogenic

Figures

Figure 1

dermatologic presentation