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Long COVID-19: Challenges in the diagnosis and proposed diagnostic criteria



Reports from various parts of the world show that significant proportion of people who recovered from COVID-19 suffers from various health issues which are collectively called “long COVID-19” or post COVID-19 syndrome. The common symptoms include fatigue, breathlessness, cough, joint pain, chest pain, muscle aches, headaches and so on. Even though collectively called long COVID-19, researchers identified that it is a collection of at least 4 distinct clinical entities which are post-intensive care syndrome, post-viral fatigue syndrome, permanent organ damage, and long-term COVID-19 syndrome [1]. In our experience in addition to these we identified that drug related side effects, complications of COVID-19 (like pneumothorax, pneumomediastinum, vascular thrombosis leading to pulmonary thromboembolism, myocardial infarction, stroke etc), post-COVID-19 psychological issues and other infections (bacterial, other viral, fungal or re-infection with SARS-CoV-2 itself) can also cause similar symptoms in COVID-19 recovered patients. Careful evaluation to rule out causes unrelated to COVID-19 is important to offer correct treatment.

In people infected with SARS-CoV-2, 80% of infections are mild or asymptomatic, 15% are severe infection and 5% are critical infections [2]. Usually in people with mild disease symptoms resolve within 2 weeks, where as in severe illness it may persist for 3–6

weeks [3]. Presence of long COVID-19 challenges the assumption that “mild” disease recover within 2 weeks [4].

There are lots of challenges in the diagnosis of long COVID-19. Those who had history of typical symptoms of acute COVID-19 with positive throat swab RT-PCR, presenting with long duration symptoms, the diagnosis of long COVID is straight forward. But those with acute COVID-19 symptoms and negative throat swab RT-PCR, presenting with long symptoms pose real challenge in day to day clinical practice. Significant proportions of SARS-CoV-2 infected individuals are asymptomatic. And development of long COVID-19 symptoms in those asymptomatic individuals adds to the diagnostic confusion. Similarly the duration of acute symptoms vary in patients again adding confusion to differentiate acute COVID-19 from long COVID-19. Based on our experience and after reviewing relevant literature, we are proposing criteria for the diagnosis of long COVID-19 (Table 1).

Clinical criteria (symptoms of Long COVID-19) after defined time period in presence of essential criteria (evidence of preceding SARS-CoV-2 infection) helps to categorise long COVID-19 as confirmed, probable, possible or doubtful long COVID-19 syndrome (Table 2).

Table 1
Proposed Diagnostic criteria for Long COVID-19.

Proposed Diagnostic criteria for Long COVID-19

A. ESSENTIAL CRITERIA (Evidence of preceding infection with SARS-CoV-2 within last 2–4 weeks)

Symptomatic

Confirmed

Clinical features consistent with COVID-19, with positive throat swab RT-PCR

Clinical features consistent with COVID-19, with negative throat swab RT-PCR, with positive antibody testing

Probable

Clinical features consistent with COVID-19, with negative throat swab RT-PCR and antibody testing, with CT thorax or chest X ray consistent with COVID-19 in presence of contact with confirmed or suspected case of COVID-19 within 2 weeks of onset of symptoms

Clinical features consistent with COVID-19, with negative throat swab RT-PCR, antibody testing and negative CT thorax and chest X ray in presence of contact with confirmed or suspected case of COVID-19 within 2 weeks of onset of symptoms

Possible

Clinical features consistent with COVID-19, with negative throat swab RT-PCR and antibody testing, with CT thorax or chest X ray consistent with COVID-19 in the absence of contact with confirmed or suspected case of COVID-19 within 2 weeks of onset of symptoms, in the setting of community transmission

Clinical features consistent with COVID-19, with negative throat swab RT-PCR, antibody testing and negative CT thorax and chest X ray in the absence of contact with confirmed or suspected case of COVID-19 within 2 weeks of onset of symptoms, in the setting of community transmission

Doubtful

Clinical features consistent with COVID-19, with negative throat swab RT-PCR, antibody testing and negative CT thorax and chest X ray in the absence of contact with confirmed or suspected case of COVID-19 within 2 weeks of onset of symptoms in the absence of community transmission

Asymptomatic

Confirmed

Either positive throat swab RT-PCR or positive antibody testing or both

(continued on next page)

Table 1 (continued)

Proposed Diagnostic criteria for Long COVID-19	
Probable	Negative throat swab RT-PCR and antibody testing with CT thorax, chest X ray consistent with COVID-19 in presence of contact with confirmed or suspected case of COVID-19
Possible	Negative throat swab RT-PCR, antibody testing and negative CT thorax and chest X ray in presence of contact with confirmed or suspected case of COVID-19
Doubtful	Negative throat swab RT-PCR, antibody testing and negative CT thorax and chest X ray in the absence of contact with confirmed or suspected case of COVID-19 in the setting of community transmission
B.CLINICAL CRITERIA	
Symptoms of Long COVID-19	
Presence of symptoms (new or persistent) like fatigue, breathlessness, cough, joint pain, chest pain, muscle aches, headache and so on which could not be attributed to any other cause	
C.DURATION CRITERIA	
Duration	
In SARS-CoV-2 infected symptomatic individuals, presence of symptoms	
More than 2 weeks in mild disease	
More than 4 weeks in moderate/severe illness	
More than 6 weeks in critical illness	
In SARS-CoV-2 infected asymptomatic individuals, presence of symptoms	
Appearance of symptoms after 2 weeks of RT-PCR positivity	
Appearance of symptoms after 1 weeks of antibody positivity	
Appearance of symptoms after 2 weeks of positive CT thorax or chest X ray	
Appearance of symptoms after 2 weeks after contact with suspected or positive case of COVID-19	
Anytime in doubtful cases	

(Note: Those who did not undergo throat swab RT-PCR or antibody testing also considered as test negative).

Table 2

Proposed Diagnostic criteria for Long COVID-19.

Clinical category	Clinical features	Throat swab RT-PCR	SARS-CoV-2 antibody	Chest X ray/CT thorax	History of contact with confirmed/suspected case of COVID-19	Community spread	Clinical status of previous SARS-CoV-2 infection	Long COVID-19 symptom duration
Symptomatic	+	+	±	±	±	±	Confirmed	More than 2 weeks in mild disease
	+	-	+	±	±	±	Probable	More than 4 weeks in moderate/severe illness
	+	-	-	+	+	±		More than 6 weeks in critical illness
	+	-	-	-	-	+	Possible	
	+	-	-	-	-	+		
	+	-	-	-	-	-		
Asymptomatic	-	+	±	±	±	±	Doubtful	
	-	-	+	±	±	±	Confirmed	Appearance of symptoms after 2 weeks of positive RT-PCR or 1 week of positive antibody testing
	-	-	-	+	+	±	Probable	Appearance of symptoms after 2 weeks of positive result or contact
	-	-	-	-	+	±	Possible	Appearance of symptoms after 2 weeks of contact with positive case
	-	-	-	-	-	+	Doubtful	Anytime

References

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[3] World Health Organization (WHO). Report of the WHO-China joint mission on coronavirus disease 2019 (COVID-19): 16–24 february 2020. Geneva: World Health Organization; 2020 [cited 2020 Jul 06]. Available from: <https://www.who.int/docs/default-source/coronaviruse/who-china-joint-mission-on-covid-19-final-report.pdf>.

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