

# Very High Clinical Likelihood (VHCL) Of COVID-19 Infection: Peering Beyond A Negative Nasopharyngeal Swab

Akshay Khatri, MBBS, MD; Sarah Flannery, MD; Vansha Singh, MD; Aradhana Khameraj, RN; Prashant Malhotra, MD; Bruce Farber, MD  
Charles L. Kast, MD; Michael Gitman, MD; Mathew Foley, MD; David H. Hirschwerk, MD



Division of Infectious Diseases, Department of Medicine; Department of Medicine; Department of Emergency Medicine, Manhasset, NY, USA



## INTRODUCTION

- COVID-19 infection diagnosed by RT-PCR assays for SARS-CoV-2 on nasopharyngeal swab (NPS).
- Sensitivity depends on illness duration and operator performance.
- 10-30% false negative rate of RT-PCR.
- We formulated and applied a clinical prediction tool for COVID-19 diagnosis [Table 1].

## METHODS

- Retrospective descriptive study (03/2020–04/2020) conducted at a tertiary hospital in suburban New York.
- Admitted pts. with ≥2 consecutive negative NPS COVID-19 RT-PCR tests assessed.
- Pts. meeting all 5 criteria for VHCL of COVID-19 infection [Table 1] included.
- Additional data collected from electronic records.

No	CLINICAL CRITERION
1	1a. Temperature >38.3 C in first 24 hours of hospitalization <u>OR</u>
	1b. Subjective fevers leading into hospitalization
2	New Respiratory Symptoms
3	Lymphocytopenia (lymphocyte count less than 1.25/mm <sup>3</sup> ).
4	Bilateral infiltrates without pleural effusions on chest imaging
5	Lack of more likely diagnosis after inpatient monitoring for a minimum of 72 hours

Table 1: Clinical criteria for VHCL of COVID-19 Infection.

PARAMETER	MEDIAN VALUE
Men	69.6%
Age [years]	60
Aspartate transaminase (AST) [u/L]	41
Alanine transaminase (ALT) [u/L]	33
Lymphocyte count (LYMPH) [cells/mm <sup>3</sup> ]	0.84
Procalcitonin level (PROCAL) [ng/mL]	0.15
Ferritin level (FERR) [ng/mL]	700
C-Reactive Protein (CRP) [mg/dL]	10.06
Lactate dehydrogenase level (LDH) [U/L]	365
SYMP (symptom duration prior to presentation) [days]	7

Table 2: Demographic and Median Lab Data of VHCL COVID-19 patients.

Pt	Age/Sex	AST/ALT	LYMPH	PROCAL	FERR	CRP	LDH	SYMP
1	69/M*	63/83	0.57	0.12	737	2.69	241	4
2	39/F*	20/13	1.05	0.06	410	2.92	NA	7
3	48/M*	55/53	0.79	0.08	4910	1.65	360	10
4	70/M	41/18	0.75	0.56	3515	16.9	249	14
5	55/M*	238/197	0.72	0.19	3204	9.42	413	7
6	23/F*	34/31	1.14	0.05	248	10.98	599	7
7	55/M*	30/33	0.47	0.12	506	4.79	336	10
8	54/M	27/35	0.73	0.16	700	10.06	397	1
9	78/M	17/10	0.88	0.09	1306	11.22	333	20
10	71/M*	100/167	0.13	2.42	2143	8.30	371	8
11	61/M	148/76	0.89	0.19	3374	13.8	325	5
12	31/F	25/17	0.36	3.67	488	60.19	313	12
13	60/F	21/26	1.22	0.07	383	9.63	379	7
14	57/F*	107/87	1.16	0.08	1145	5.08	602	7
15	84/F	31/23	1.20	0.15	795	5.40	259	14
16	61/M	49/39	0.40	0.04	475	10.46	475	7
17	28/M*	41/32	0.89	0.19	263	6.81	333	5
18	71/M	27/29	1.06	0.16	1110	25.3	355	21
19	56/M	25/16	1.14	0.09	363	11.0	327	7
20	89/M	42/15	1.02	0.60	409	27.9	417	1
21	78/M	69/34	0.27	2.22	332	17.78	518	21
22	61/M	75/111	0.84	0.42	1303	23	597	7
23	25/F	121/121	0.60	0.04	343	3.27	448	6

Table 3: Clinical and laboratory characteristics of VHCL COVID-19 patients. Abbreviations and units of laboratory tests same as Table 2. Bolded rows: patients with 3<sup>rd</sup> NPS swab that was positive (#1,4,5,10,11,13,17). \*: Patients had negative respiratory viral panel testing.

## RESULTS & DISCUSSION

- 1,855 pts admitted in study period.
- 23 pts had ≥2 negative RT-PCR tests but met criteria for VHCL [Tables 2,3].
- These 23 pts. had median 7 days of symptoms, lymphocytopenia; elevated PROCAL, FERR, CRP levels [Table 2].
- 7 had 3<sup>rd</sup> positive RT-PCR [Table 3].
- Pts with high clinical suspicion of COVID-19 with negative testing have been reported. Strict clinical criteria may help diagnosis.
- Incorporating clinical criteria in diagnostic algorithms in a pandemic can:
  - a) optimize infection control
  - b) identify pts for emerging therapeutics
  - c) aid in contact tracing to help reduce nosocomial/community transmission

## CONCLUSION

Clinical criteria (such as VHCL COVID-19) can supplement laboratory testing for appropriate diagnosis and treatment, contact notification and infection control.

## BIBLIOGRAPHY

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