

Vol 3, No 3 (2024)

DOI: [10.4081/btvb.2024.145](https://doi.org/10.4081/btvb.2024.145)

SUPPLEMENTARY MATERIAL

Thrombin generation assay in COVID-19 patients shows a hypocoagulable pattern

**Giovanni L. Tiscia,¹ Donatella Colaizzo,¹ Antonio De Lorenzo,¹ Filomena Cappucci,¹
Lucia Fischetti,¹ Elena Chinni,¹ Mario Mastroianno,² Giovanni Favuzzi,¹
Massimo Carella,² Elvira Grandone^{1,3}**

¹Unit of Thrombosis and Haemostasis, IRCCS Ospedale Casa Sollievo della Sofferenza, San Giovanni Rotondo (FG)

²Scientific Department, IRCCS Casa Sollievo della Sofferenza, San Giovanni Rotondo (FG)

³Obstetrics and Gynaecology, University of Foggia, Italy

Correspondence: Prof. Elvira Grandone, Unit of Thrombosis and Haemostasis, IRCCS Casa Sollievo della Sofferenza, San Giovanni Rotondo (FG), Obstetrics and Gynaecology, University of Foggia, Italy. E-mail: e.grandone@operapadrepio.it, elvira.grandone@unifg.it

Key words: COVID-19; coagulation; thrombin generation assay; coagulopathy.

Supplementary Table 1. Comorbidities in ICU and MW patients.

Comorbidities	ICU, n=27	MW, n=40
Diabetes, n (%)	3 (11.1)	10 (25.0)
Hypertension, n (%)	7 (26.0)	15 (37.5)
History of cancer and/or active cancer, n (%)	2 (7.5)	4 (10.0)
Cerebrovascular disease, n (%)	0	1 (2.5)
Cardiovascular disease, n (%)	6 (22.2)	7 (17.5)
Chronic kidney disease, n (%)	2 (7.5)	3 (7.5)

Supplementary Table 2 Baseline blood parameters in ICU and MW patients

Variables	ICU, n=27	MW, n=40	<i>p</i>
Hemoglobin (g/dL), median (IQR)	12.6 (11.9-13.8)	11.3 (11.0-13.9)	ns
Platelet count (x10 ⁹ /L), median (IQR)	267.0 (175.3-346.0)	213.0 (161.0-328.0)	ns
Prothrombin Time (International Normalized Ratio), median (IQR)	1.1 (1.0-1.2)	1.0 (1.0-1.2)	ns
activated Partial Thromboplastin Time (s), median (IQR)	23.5 (21.3-26.6)	24.7 (21.6-26.5)	ns
Fibrinogen (mg/dL), median (IQR)	414.0 (332.0-533.0)	351.0 (351.0-691.5)	ns
LDH (U/L), median (IQR)	545.0 (255.0-814.5)	246.0 (191.7-404.0)	0.03
D-dimer (ng/mL), median (IQR)	5,259.0 (982.0-25,118.0)	1,191.0 (526.0-2,987.0)	0.03
Creatinine (mg/dL), median (IQR)	0.7 (0.6-1.0)	0.6 (0.6-1.0)	ns
C-reactive protein (mg/L), median (IQR)	19.3 (15.0-22.6)	2.6 (0.8-7.9)	0.01
NLR, median (IQR)	13.8 (7.7-20.0)	3.6 (2.5-7.9)	<0.0001
Pulse oximeter O2 saturation, median (IQR)	90.0 (87.5-93.5)	93.0 (90.0-96.0)	0.0002

Supplementary Table 3 Baseline blood parameters and clinical signs according to survival

Variables	Non-survivors, n=23	Survivors, n=44	p
Hemoglobin (g/dL), median (IQR)	11.8 (10.7-13.1)	12.7(11.2-14.8)	ns
Platelet count (x10 ⁹ /L), median (IQR)	267.0 (218.0-310.0)	280.0 (244.0-328.0)	ns
Prothrombin Time (International Normalized Ratio), median (IQR)	1.1(1.1-1.2)	1.2 (1.2-1.3)	ns
activated Partial Thromboplastin Time (s), median (IQR)	24.6 (21.3-26.5)	23.8 (21.2-26.4)	ns
Fibrinogen (mg/dL), median (IQR)	641.5 (534.2-748.7)	427.0 (343.5-597.5)	ns
LDH (U/L), median (IQR)	419.0 (314.0-379.0)	210.0 (192.0-228.0)	<0.01
D-dimer (ng/mL), median (IQR)	4,369.0 (1,130.0-4,369.0)	449.0 (215.0-1,047.0)	<0.01
Creatinine (mg/dL), median (IQR)	1.0 (0.6-1.3)	0.6 (0.5-0.6)	ns
C-reactive protein (mg/L), median (IQR)	3.2 (2.6-3.2)	1.6 (0.3-2.3)	0.03
NLR, median (IQR)	14.5 (10.3-19.0)	3.6 (2.5-7.4)	<0.00001
Lag-time (min)	4.5 (3.1-5.1)	4.3 (3.5-5.1)	ns
ETP (nM/min)	1,043.7 (750.7-1,339.0)	997.2 (812.5-1,315.1)	ns
Peak (nM)	101.8 (76.9-145.5)	125.6 (58.3-179.3)	ns
ttPeak (min)	9.8 (9.0-12.3)	10.3 (7.3-12.8)	ns
Pulse oximeter O2 saturation, median (IQR)	91.5 (89.0-96.0)	91.0 (89.0-96.0)	ns

Supplementary Table 4 Blood parameters and clinical signs in non survivors according to clinical ward

Variables	ICU, n=16	MW, n=7	<i>p</i>
Hemoglobin (g/dL), median (IQR)	12.6 (11.6-13.8)	11.8 (10.7-13.4)	ns
Platelet count (x10 ⁹ /L), median (IQR)	267.0 (169.0-420.0)	267.0 (218.0-310.0)	ns
Prothrombin Time (International Normalized Ratio), median (IQR)	1.1 (1.0-1.2)	1.1 (1.0-1.2)	ns
activated Partial Thromboplastin Time (s), median (IQR)	24.1 (22.3-26.7)	24.6 (21.3-26.5)	ns
Fibrinogen (mg/dL), median (IQR)	438.0 (365.0-592.0)	641.5 (534.2-748.7)	ns
LDH (U/L), median (IQR)	705.0 (625.0-778.0)	319.0 (313.5-378.5)	ns
D-dimer (ng/mL), median (IQR)	11786.0 (1155.0-25118.2)	1534.0 (1130.0-4369.0)	ns
Creatinine (mg/dL), median (IQR)	0.7 (0.6-1.1)	1.0 (0.6-1.3)	ns
C-reactive protein (mg/L), median (IQR)	19.3 (15.0-22.6)	2.7 (2.6-3.2)	ns
NLR, median (IQR)	14.5 (12.0-24.3)	9.2 (5.9-17.0)	ns
Pulse oximeter O2 saturation, median (IQR)	89.0 (82.5-90.0)	96.5 (94.5-97.5)	0.01

Supplementary Table 5 TG parameters according to pneumonia and tracheostomy in the overall COVID-19 patients group

Variables			<i>p</i>
<i>Pneumonia</i>	Yes	No	
Lag-time (min)	4.1 (3.3-5.5)	4.3 (3.7-4.7)	ns
ETP (nM/min)	946.7 (760.8-1,241.7)	1,031.5 (849.0-1,253.7)	ns
Peak (nM)	108.7 (63.3-165.3)	129.7 (64.1-176.8)	ns
ttPeak (min)	9.8 (7.4-11.6)	10.9 (6.9-12.5)	ns
<i>Tracheostomy</i>	Yes	No	
Lag-time (min)	4.0 (3.0-5.3)	4.3 (3.5-5.3)	ns
ETP (nM/min)	901.8 (747.5-1,034.7)	1,031.4 (806.3-1,321.6)	ns
Peak (nM)	108.0 (69.9-145.0)	124.3 (59.8-168.2)	ns
ttPeak (min)	8.0 (7.0-10.75)	10.4 (8.4-12.8)	ns