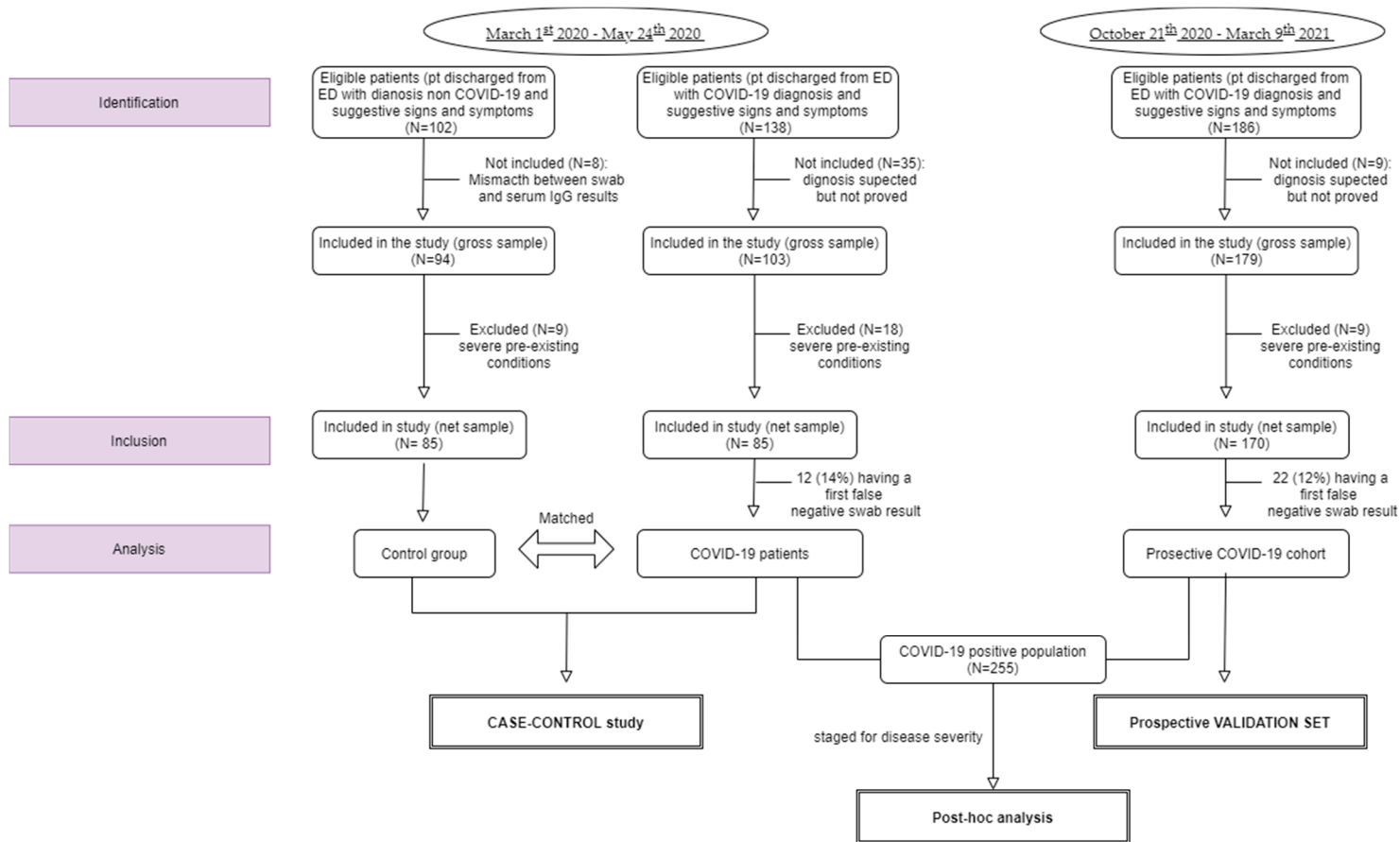


**SUPPLEMENTARY MATERIAL**

**Figure S1. Patients' flow-chart.**

Diagnosis was suspected but not proven when swabs results were doubtful and was not possible to obtain a certain diagnosis in ED, or when patients died at admission before performing COVID-19 swab. Even if these patients showed typical signs and symptoms or chest imaging suggestive for COVID-19 disease, they were excluded from further analysis due to uncertain diagnosis. For negative controls, mismatch between swab results and serum immunoglobulin tests was intended as negative swab with SARS-COV-2 IgM and/or IgG found positive. These patients were unlikely to be considered totally COVID-19 free and were excluded.



**Table S1. Etiology of admission in ED of control group.** COPD, chronic obstructive pulmonary disease; URTI, Upper respiratory tract infections; ORL, otorinolaryngoiatric; CNS, central nervous system; EBM, Epstein-Barr virus; CMV, cytomegalovirus; UTI, urinary tract infection.

Symptoms of admission (% on 85 controls)	Etiology	Frequency (n)	Percent (%)
Dyspnea (40%)	Pneumotorax	2	5,9
	Non cardiogenic pulmonary edema	3	8,8
	Pain attack	1	2,9
	Acute heart failure	4	11,8
	Bacterial pnemonia	11	32,4
	Pulmonary embolism	2	5,9
	COPD exacerbation	4	11,8
	Other viral pneumonia	4	11,8
	Pulmonary autoimmune disorders	2	5,9
	Anaphylaxis	1	2,9
	<b>Total</b>	<b>34</b>	<b>100,0</b>
Fever (34.1%)	URTI and ORL infections	4	13,8
	Colds	3	10,3
	Lung bacterial, viral of fungal infections	2	6,9
	Heart infections (pericarditis, endocarditis, myocarditis)	4	13,8
	CNS infections	1	3,4
	Systemic viral infections (EBV, CMV, flu)	6	20,7
	Sepsis of unknown origin	1	3,4
	Rheumatological disorders	2	6,9
	Haematological disorders	1	3,4
	UTI	4	13,8
	Soft tissues infections	1	3,4
		<b>Total</b>	<b>29</b>
Gastroenteric symptoms (21.2%)	Viral gastroenteritis	3	16,7
	Alimentary toxoinfections	2	11,1
	Acute abdominal infections	8	44,4
	Inflammatory bowel disease	1	5,6
	Cancer	1	5,6
	Renal infection	3	16,7
		<b>Total</b>	<b>18</b>
Aspecific flu-like symptoms with Covid-like pattern at chest CT-scan (4.7%)	Atypical Pneumonia	2	50
	Alveolitis	2	50
	<b>Total</b>	<b>4</b>	<b>100,00</b>

**Table S2. Univariate analysis of all hematological parameters performed.** AST, aspartate aminotransferase; ALT, alanine aminotransferase; GGT, gamma glutamyl transpeptidase; CPK, creatine phosphokinase ; HSCT, high-sensitivity cardiac troponin T; PT sec, prothrombin time (seconds); PT%, prothrombin time percentage; INR, international normalized ratio; PTT sec, partial prothrombin time (seconds); PTT%, partial prothrombin time in percentage; WLR, absolute count of white blood cells to absolute count of lymphocytes ratio; NLR, absolute count of neutrophils to absolute count of lymphocytes ratio; DELR, d-dimer to the sum of lymphocytes percentage and eosinophils percentage ratio; WBC, white blood cell count; RBC, red blood cell count; MCV, mean corpuscular volume; MCH, mean corpuscular hemoglobin; MCHC, mean corpuscular hemoglobin concentration; RDW, red cell distribution width; LUC, large unstained cells; HDW, hemoglobin distribution width.

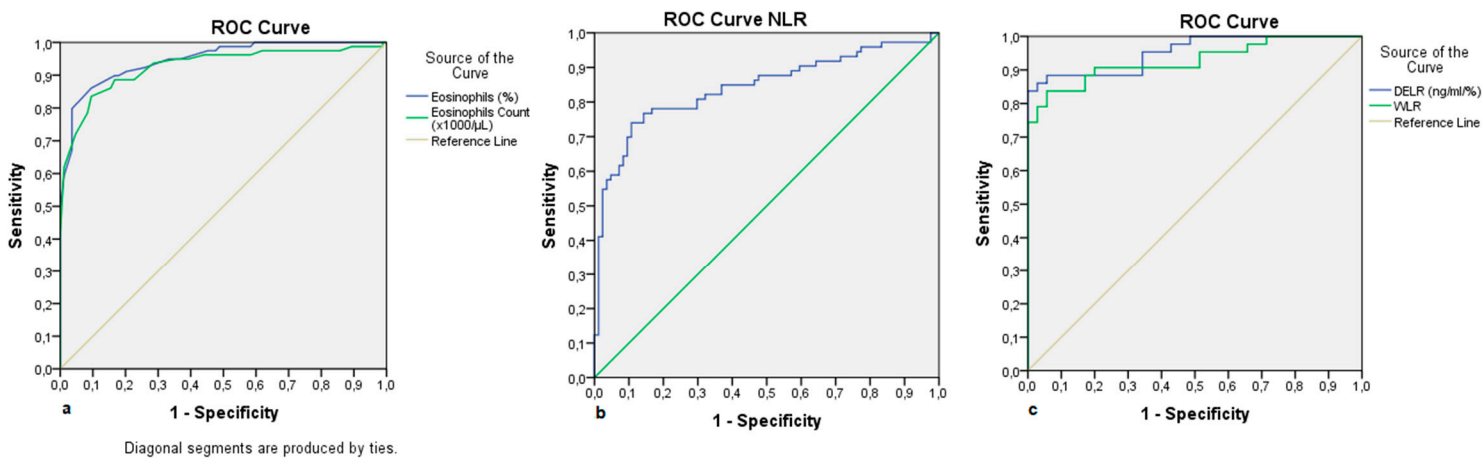
Analyte	Controls group			COVID-19 patients			P-value
	N	Mean	SD	N	Mean	SD	
Proteins (g/dl)	79	7.26	0.57	77	7.11	0.87	> 0.05
Albumin (g/dl)	70	3.71	0.45	74	3.1	0.58	< 0.001
Glycemia (mg/dl)	85	108	30	79	119	34	< 0.001
Blood Urea Nitrogen (mg/dl)	85	18.45	10.62	79	28.70	24.92	0.007
Creatinin (mg/dl)	85	0.87	0.29	76	1.08	0.51	0.004*
Uric acid (mg/dl)	46	5.25	1.67	39	5.11	2.26	< 0.05
Total bilirubin (mg/dl)	84	0.62	0.34	78	0.64	0.4	> 0.05
Direct bilirubin (mg/dl)	83	0.18	0.16	78	0.21	0.16	0.039*
AST (U/l)	84	26.86	16.33	78	41.09	30.89	< 0.001*
ALT (U/l)	84	33.68	22.77	78	38.63	34.69	> 0.05
Alkaline phosphatase (U/l)	63	76.38	25.18	61	77.23	28.98	> 0.05
Lactic dehydrogenasis (U/l)	79	209.46	72.08	84	329.82	136.45	< 0.001*
GGT (U/l)	75	37.59	38.47	73	46.97	52.58	> 0.05
CPK (U/l)	72	116.46	84.15	72	129.79	103.58	0.036
Cholinesterase (U/l)	59	11244	3061	58	10239	3725	> 0.05
Amylase (U/l)	81	58.07	21.87	80	58.69	29.65	> 0.05
Lipase (U/l)	82	137.80	92.93	74	163.26	91.66	0.022*
C reactive protein (mg/dl)	81	0.67	0.87	80	6.52	5.97	< 0.001*
Calcium (mg/dl)	74	8.89	0.45	73	8.49	0.62	< 0.001*
Phosphorus (mg/dl)	52	3.56	1.04	55	3.08	0.75	0.004*
Magnesium (mg/dl)	43	2.10	0.31	51	2.14	0.39	> 0.05
Sodium (mEq/L)	84	138.70	3.19	79	137.11	4.2	0.001
Potassium (mEq/l)	84	4.12	0.53	79	3.86	0.63	0.001*
Chloride (mEq/l)	84	105.08	4.56	80	101.99	6.30	< 0.001*
HSCT (ng/ml)	54	0.02	0.02	47	0.78	3.48	0.003
PT sec	79	12.17	1.18	77	13.87	3.97	< 0.001*
PT %	79	90.01	11.82	73	75.91	14.96	< 0.001*

INR	79	1.09	0.11	76	1.19	0.17	< 0.001*
PTT sec	79	32.55	4.02	78	34.68	7.86	> 0.05
PTT %	79	1.05	0.13	76	1.09	0.21	> 0.05
Fibrinogen (mg%)	66	329.39	119.62	75	569.48	197.41	< 0.001*
D-dimers (ng/ml)	36	125.14	91.56	49	1924.67	3477.69	< 0.001*
Procalcitonin (ng/ml)	18	0.10	0.23	72	0.3	0.49	< 0.001*
WLR	84	4.09	2.12	73	11.87	11.67	< 0.001
NLR	84	2.69	2.02	73	9.44	9.99	< 0.001
DLER	35	4.21	3.52	46	286.72	646.47	< 0.001
WBC (X10 <sup>3</sup> /μL)	84	7.65	2.27	76	7.75	3.8	0.003
RBC (x10 <sup>6</sup> /μL)	84	4.69	0.57	79	4.6	0.76	> 0.05
Hemoglobin (g/dl)	84	13.71	1.92	78	13.33	2.01	> 0.05
Hematocrit (%)	84	41.26	5.16	79	39.22	5.93	0.031*
MCV (fL)	84	88.17	7.04	78	86.43	4.92	0.005*
MCH (pg/cell)	84	29.88	6.8	80	29.05	2.35	0.032
MCHC (g/dL)	84	33.11	1.40	80	33.65	1.21	0.010*
RDW (%)	84	14.05	1.48	79	14.46	1.76	> 0.05
Platelets (x10 <sup>3</sup> /μL)	84	236.76	69.26	81	201.30	75.1	0.002
Neutrophils (%)	84	61.80	9.76	80	74.6	14.10	< 0.001*
Lymphocytes (%)	83	27.97	8.31	79	14.90	9.53	< 0.001*
Monocytes (%)	82	5.81	1.49	77	5.32	2.54	0.003
Eosinophils (%)	84	2.36	1.73	79	0.41	0.44	< 0.001*
Basophils (%)	84	0.47	0.22	79	0.45	0.38	0.009
LUC (%)	84	1.69	0.61	80	1.4	0.74	< 0.001*
Neutrophils Abs Count (x10 <sup>3</sup> /μL)	84	4.79	1.75	76	6.24	3.88	0.018
Lymphocytes Abs Count (x10 <sup>3</sup> /μL)	84	2.09	0.85	78	.87	0.38	< 0.001*
Monocytes Abs Count (x10 <sup>3</sup> /μL)	84	0.45	0.18	79	0.44	0.31	0.023
Eosinophils Abs Count (x10 <sup>3</sup> /μL)	84	0.18	0.14	81	0.05	0.09	< 0.001*
Basophils Abs Count (x10 <sup>3</sup> /μL)	84	0.04	0.04	80	0.03	0.04	> 0.05
LUC Abs Count (x10 <sup>3</sup> /μL)	84	0.12	0.05	80	0.1	0.05	< 0.001
HDW (g/dl)	84	2.69	0.38	79	2.91	0.37	< 0.001*

\*two-sided P-value. Alfa significance < 0.05

**Figure S2. ROC curves for eosinophil percentage and absolute count, NLR, DELR, and WLR.**

**a.** ROC curve for eosinophil percentage and for eosinophil absolute count. **b** ROC curve for NLR. **c** ROC curve for DELR and for WLR.

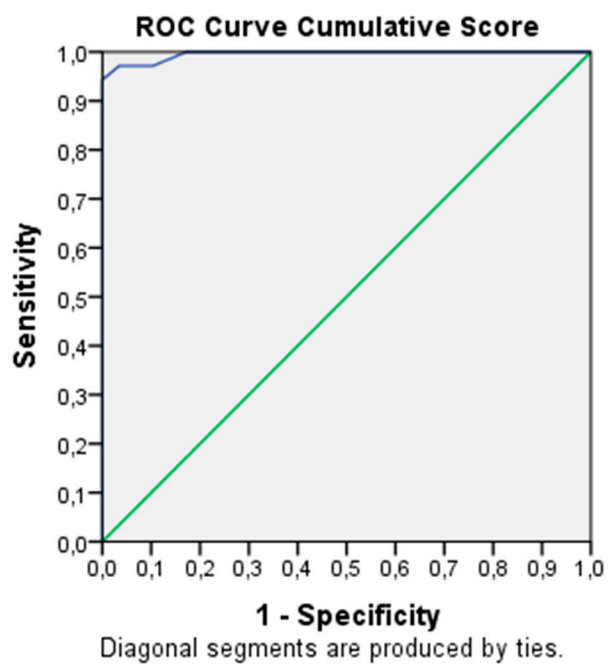


**Figure S2. ROC curve analysis for eosinophils percentage and absolute count, NLR, DELR, WLR.**

**Table S3. Kendall's tau B non-parametric bivariate correlation.** Correlation coefficients between the analysed haematological 2yparameters and COVID-19, where a coefficient = 1 indicates a perfect positive correlation. All values examined were statistically significant at a 2-tailed P-value < 0.001. The cut-offs used are standard laboratory cut-offs where available and thresholds found through ROC curve analysis for eosinophil percentage and absolute count, NLR, WLR, and DELR.

Parameter	N	Kendall's tau B Correlation coefficient	Sig. (two-tailed)
COVID 19	170	1	
Hypoalbuminemia	145	0.519	<0.0001
Hyperglycemia	164	0.279	<0.0001
Increased BUN	164	0.230	0.003
Increased LDH	163	0.452	<0.0001
Increased CRP	161	0.665	<0.0001
Decreased PT percentage	152	0.347	<0.0001
Increased fibrinogen	142	0.561	<0.0001
Increased d-dimers	85	0.608	<0.0001
Increased neutrophils percentage	164	0.536	<0.0001
Decreased lymphocyte percentage	162	0.635	<0.0001
Decreased eosinophil percentage	163	0.767	<0.0001
Decreased lymphocyte count	162	0.588	<0.0001
Decreased eosinophil count	165	0.723	<0.0001
Increased NLR	157	0.644	<0.0001
Increased WLR	157	0.655	<0.0001
Increased DELR	81	0.841	<0.0001

**Figure S3. ROC curve for Cumulative score in case-control study.** ROC curve for CS: AUC of 0.966; SE 0.005; asymptotic  $P < 0.001$ ; 95%CI: 0.986-1.000; optimal threshold 6.5 (Youden's index 0.94).



**Figure S3. ROC curve for CS in case-control study**