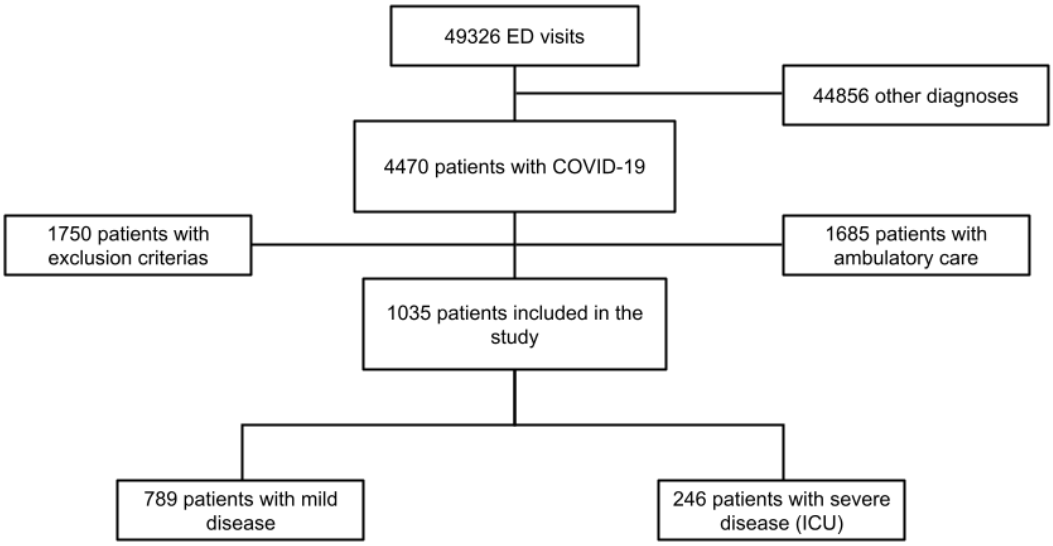
Tables and Figures

Figure 1: Flowchart of the study



Abbreviations: ED: Emergency Department, ICU: intensive care unit

Table 1: Demographic, baseline and laboratory characteristics of patients with COVID-19

	All patients N=1035	Moderate N=789	Severe N=246	p
General characteristics				
Age (years)	69 [58-79]	70 [58-81]	66 [57.3-72]	<0.001*
Gender male	609 (58.8)	433 (54.9)	176 (71.5)	<0.001*
Obesity (BMI ≥30)	281 (36.9)	193 (35.0)	88 (41.9)	0.076
Chronic medical illness				
Hypertension	587 (56.7)	453 (57.4)	134 (54.5)	0.416
Diabetes mellitus	275 (26.7)	202 (25.6)	73 (26.6)	0.207
CKD	237 (23.2)	199 (25.5)	38 (15.8)	0.002*
Cardiovascular illness	357 (34.5)	291 (36.9)	66 (26.8)	0.004*
Total Autonomy	796 (77.2)	569 (72.4)	227 (92.7)	<0.001*
Respiratory illness	203 (19.6)	151 (19.1)	52 (21.1)	0.490
Laboratory findings				
CRP (mg/L)	81 [39-142.3]	68 [33-128]	124 [76-192]	<0.001*
Lymphocyte ($\times 10^9$/L)	870 [630-1200]	900 [640-1220]	780 [590-1122]	0.003*
Lymphocyte H24 ($\times 10^9$/L)	940 [670-1300]	1010 [710-1360]	800 [570-1110]	<0.001*
Neutrophil ($\times 10^9$/L)	4930 [3430- 6932]	4730 [3370-6620]	5510 [3760-8160]	<0.001*
Neutrophil H24 ($\times 10^9$/L)	4680 [3300-6765]	4395 [3005-6175]	6010 [4130-8210]	<0.001*
Admission NLR	5.4 [3.5-9.3]	5.2 [3.2-8.7]	6.6 [4.1-11.1]	<0.001*
H-24 NLR	5 [3.1-8.2]	4.4 [2.7-7]	7.4 [4.7-12.5]	<0.001*
ΔNLR >0 (%)	334 (41.3)	211 (35.3)	123 (58.0)	<0.001*
Δ NLR	-0.64 [-2.88-1.29]	-0.88 [-3.09-0.79]	0.48 [-1.78-3.72]	<0.001*
Outcome				
Hospital stay (days)	10 [7-17.3]	8 [6-12]	24 [17-38]	<0.001*
Intra-hospital mortality	139 (13.6)	82 (10.4)	57 (24.1)	<0.001*

Data are all expressed in median [Q1–Q3] n (%) where n is the total number of patients with available data. * $p < 0.05$.

Abbreviations: BMI = body mass index, CKD= Chronic kidney disease, ED= Emergency Department, O2= oxygen, °C=Celsius degree, CRP=C reactive protein, NLR= neutrophil to lymphocyte ratio, ΔNLR = difference between NLR (NLR H-24 - NLR at admission).

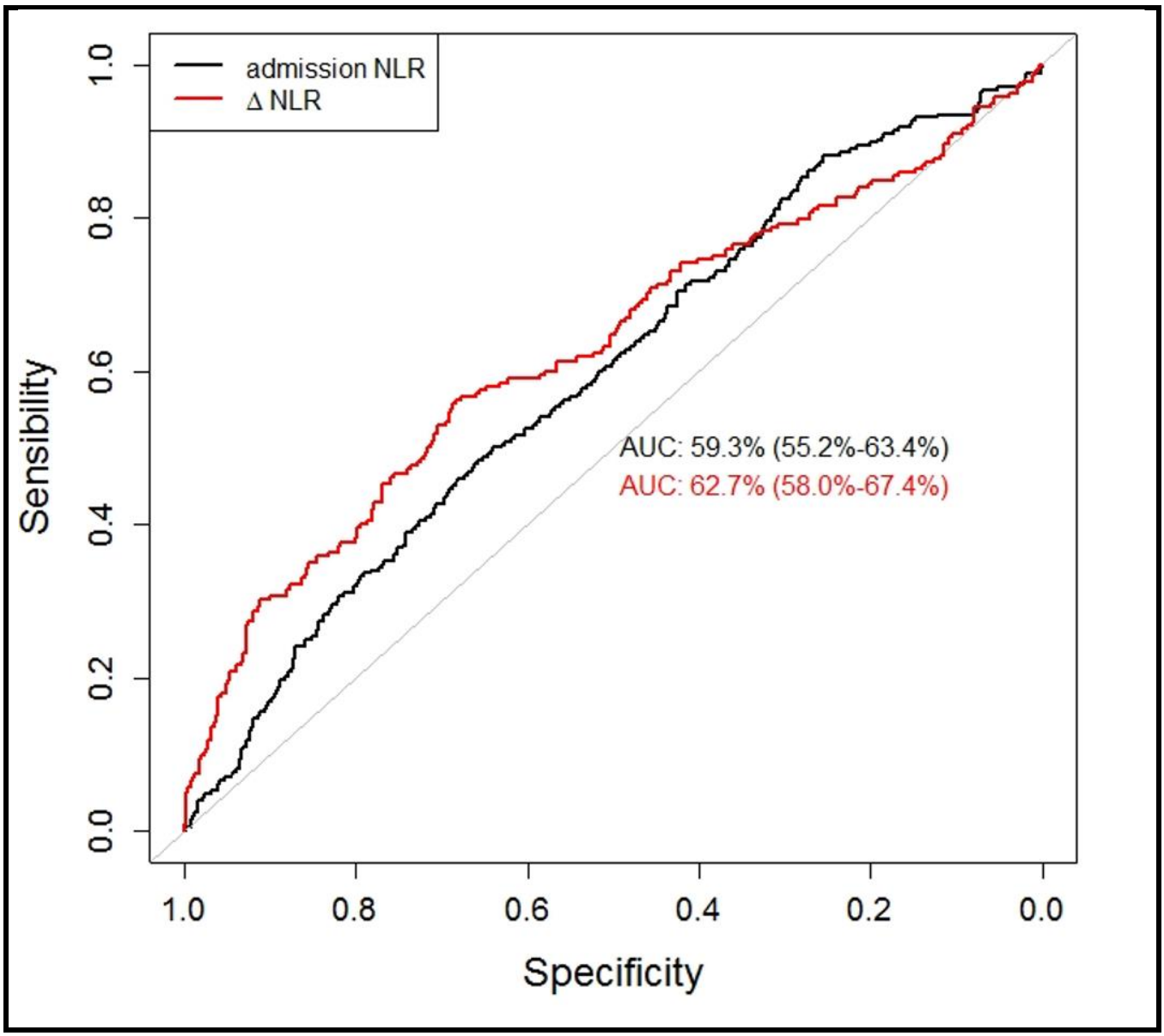
Table 2: Biochemichal factors associated with severe COVID-19 (admission to the ICU)

				Multivariate analysis**	
	All	**Moderate**	**Severe**	OR (95%CI)	p-value
CRP	81 [39-142.3]	68 [33-128]	124 [76- 92]	1.007 [1.005-1.010]	<0.001*
Admission lymphocytes	870 [630-1200]	900[640-1220]	780[590-1122.5]	1000 [1.000-1.000]	0.841
Admission NLR	5.4 [3.5-9.3]	5.2 [3.2-8.7]	6.6 [4.1-11.1]	0.971 [0.940-1.004]	0.082
H-24 NLR	5 [3.1-8.2]	4.4 [2.7-7.0]	7.4 [4.7-12.5]	1.117 [1.060-1.176]	<0.001*
ΔNLR >0 (%)	334 (41.3)	211 (35.3)	123 (58.0)	1.877 [1.160-3.036]	0.010 *

Data are all expressed in median [Q1–Q3] or n (%) where n is the total number of patients with available data. * $p < 0.05$, ** model adjusted on gender, Body mass index, C reactive protein, Creatinine, Admission NLR, NLR H24 and ΔNLR.

Abbreviations: OR= odds ratio, BMI = body mass index, CRP=C reactive protein, NLR= neutrophil to lymphocyte ratio, ΔNLR = difference between NLR (NLR H-24 - NLR at admission).

Figure 2: Receiver operating characteristics (ROC) curve for NLR as a predictive factor of severe COVID-19



To predict critical illness	Area under curve	Cut-off	Sensibility	Specificity	Multivariate analyse with cut-off	
					OR (95%CI)	p
Admission NLR	0.593 [0.552-0.634]	6.883	48.3 [41,9-54,8]	65.7 [62.2-69.0]	0.975 [0.947-1.005]	0.097
ΔNLR	0.627 [0.580-0.674]	0.222	56.1 [49.2-62.9]	68,3 [64.4-72.1]	2.187 [1.348-3.547]	0.002*

Data are all expressed in median [Q1-Q3], *: p<0.005, **: model adjusted on Gender, Body mass index, C reactive protein, Creatinine, Admission NLR, NLR H24 and Δ NLR.

Abbreviations: OR= odds ratio, NLR: neutrophil lymphocyte ratio, ΔNLR = difference between NLR (NLR H-24 - NLR at admission).

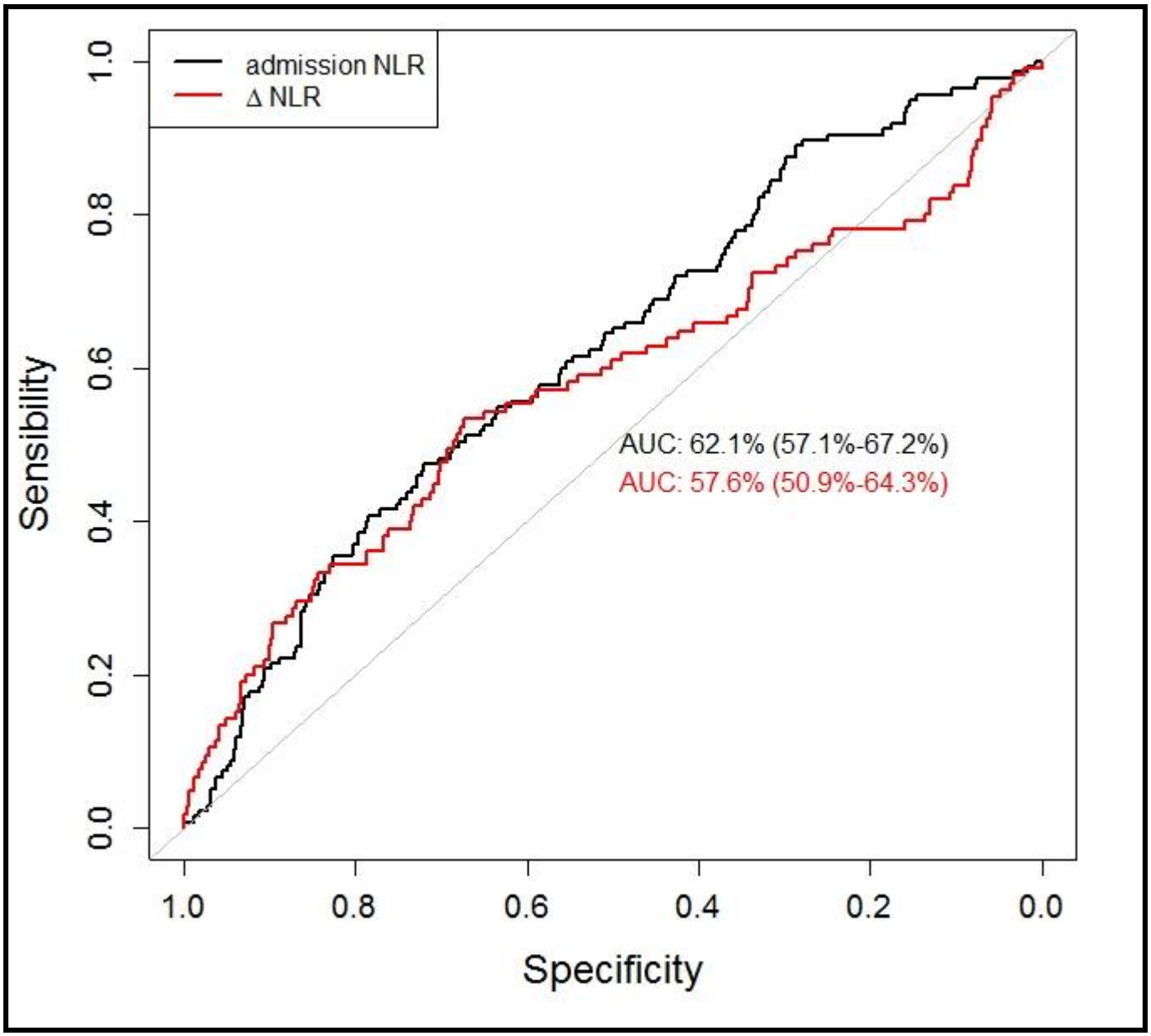
Table 3: Biochemichal and predictive factors of mortality in COVID-19 patients

			Univariate analysis		Multivariate analysis**	
	Survivors	**Non-survivors**	**OR (95% CI)**	**p-value**	**OR (95% CI)**	**p-value**
CRP	100.0 [56-158]	78.5 [37-139]	1.003 [1.001-1.005]	0.006*	1.002 [0.999-1.005]	0.276
Admission lymphocytes	720 [500-1000]	890[650-1120	0.999 [0.999-1]	0.004	1.000 [0.999-1.001]	0.967
Admission NLR	7.6 [4.3-11.8]	5.2 [3.3-8.8]	1.023 [1.006-1.042]	0.010*	1.020 [0.987-1.055]	0.232
H-24 NLR	7.9 [5.1-14.1]	4.6[2.9-7.5]	1.059 [1.035-1.084]	<0.001*	1.006 [0.963-1.050]	0.798
Δ NLR >0 (%)	271 (39.0)	58 (55.2)	1.931 [1.277-2.920]	0.002*	2.142 [1.132-4.056]	0.019*

Data are all expressed in median [Q1–Q3] or n (%) where n is the total number of patients with available data. * $p < 0.05$, ** model adjusted on Gender, Body mass index, C reactive protein, Creatinine, Admission NLR, NLR H24 and Δ NLR.

Abbreviations: OR= odds ratio, BMI = body mass index, CRP=C reactive protein, NLR= neutrophil to lymphocyte ratio, ΔNLR = difference between NLR (NLR H-24 - NLR at admission).

Figure 3: Receiver operating characteristics (ROC) curve for NLR as a predictive factor of mortality in COVID-19 patients



To predict mortality	Area under curve	Cut-off	Sensibility	Specificity	Multivariate analysis with cut-off**	
					OR (95%CI)	p
Admission NLR	0,621 [0,571-0,672]	8.236	47.4 [38,8-56,2]	71.9 [68,8-74,9]	1.025 (0.989-1.063)	0.176
ΔNLR	0,576 [0,509-0,643]	0.411	53.3 [43,3-63,1]	67.3 [63,7-70,8]	2.71 (1.404-5.245)	0.003*

Data are all expressed in median [Q1–Q3], * p<0.005, **: model adjusted on Gender, Body mass index, C reactive protein, Creatinine, Admission NLR, NLR H24 and ΔNLR.

Abbreviations: OR= odds ratio, NLR= neutrophil lymphocyte ratio, ΔNLR = difference between NLR (NLR H-24 - NLR at admission).