

Table 1: Comparison between the studied groups as regard demographic data and comorbidities.

	Bronchial asthma group (n=28)	Bronchiectasis group (n=40)	COPD group (n=51)	ILD group (n=31)	P value
Age (years) Mean $\pm$ SD	55.8 $\pm$ 14.39	59.6 $\pm$ 15.64	56.9 $\pm$ 16.8	54.5 $\pm$ 19.1	0.613
Sex Male	13 (46.43%)	18 (45%)	28 (54.9%)	13 (41.94%)	0.659
Female	15 (53.57%)	22 (55%)	23 (45.1%)	18 (35.29%)	
BMI (kg/m²) Mean $\pm$ SD	32.7 $\pm$ 11.78	34.8 $\pm$ 11.55	34.9 $\pm$ 11.83	31.2 $\pm$ 11.9	0.484
Smoking Non-smoker	15 (53.57%)	23 (57.5%)	13 (25.49%)	6 (19.35%)	0.001*
Ex-smoker	5 (17.86%)	9 (22.5%)	11 (21.56%)	6 (19.35%)	
Current	8 (28.57%)	8 (20%)	27 (52.94%)	19 (37.25%)	
Comorbidities DM	5(17.9 %)	9(22.5 %)	22(43.1 %)	12(38.7 %)	0.045
Hypertension	9(32.1 %)	10(25.0 %)	17(33.3 %)	11(35.5 %)	
IHD	8(28.6 %)	11(27.5 %)	5(9.8 %)	2(6.5 %)	
CKD	4(14.3 %)	6(15.0 %)	2(3.9 %)	1(3.2 %)	
Malignancy	2(7.1 %)	4(10.0 %)	5(9.8 %)	5(16.1 %)	

*Significant as P value $\leq$ 0.05, ANOVA (F) test with post hoc test (Tukey), X²: Chi square test. **BMI**: Body mass index, **DM**: Diabetes mellitus, **IHD**: Ischemic heart disease and **CKD**: Chronic kidney disease.

Table 2: Comparison between the studied groups a regard presenting symptoms and its duration.

Symptoms	Bronchial asthma group (n=28)	Bronchiectasis group (n=40)	COPD group (n=51)	ILD group (n=31)	P value
Fever	19 (67.86%)	32 (80%)	38 (74.51%)	26 (83.87%)	0.476
Sore throat	8 (28.57%)	13 (32.5%)	13 (25.49%)	8 (25.81%)	0.887
Cough	17 (60.71%)	27 (67.5%)	37 (72.55%)	25 (80.65%)	0.375
Chest pain	8 (28.57%)	10 (25%)	14 (27.45%)	9 (29.03%)	0.981
Dyspnea	17 (60.71%)	28 (70%)	29 (56.86%)	22 (70.97%)	0.469
Headache	5 (17.86%)	1 (2.5%)	5 (9.8%)	3 (9.68%)	0.201
Malaise	2 (7.14%)	7 (17.5%)	10 (19.61%)	8 (25.81%)	0.307
Fatigue	8 (28.57%)	13 (32.5%)	13 (25.49%)	8 (25.81%)	0.887
Arthralgia	0 (0%)	4 (10%)	3 (5.88%)	2 (6.45%)	0.402
Myalgia	3 (10.71%)	3 (7.5%)	5 (9.8%)	4 (12.9%)	0.900
Duration of symptoms (days) Mean $\pm$ SD	10.6 $\pm$ 5.14	14.6 $\pm$ 4.78	15.4 $\pm$ 5.27	14.2 $\pm$ 4.73	<0.001*
	P1	0.008*	<0.001*	0.034*	
	P2		0.871	0.984	
	P3			0.699	

*Significant as P value $\leq$ 0.05, ANOVA (F) test with post hoc test (Tukey), X²: Chi square test, **P1:P** value compared to Bronchial asthma group, **P2:P** value compared to Bronchiectasis group, **P3:P** value compared to COPD group.

Table 3: Comparison between the studied groups as regard severity of COVID 19 according to Co-RADS score of chest CT at admission.

Chest CT at admission	Bronchial asthma group (n=28)	Bronchiectasis group (n=40)	COPD group (n=51)	ILD group (n=31)	P value
CO-RADS 1	0 (0%)	0 (0%)	0 (0%)	0 (0%)	----
CO-RADS 2	0 (0%)	0 (0%)	0 (0%)	0 (0%)	----
CO-RADS 3	0 (0%)	0 (0%)	0 (0%)	0 (0%)	----
Co-RADS 4	13 (46.43%)	15 (37.5%)	25 (49.02%)	13 (41.94%)	0.752
Co-RADS 5	15 (53.57%)	25 (62.5%)	26 (50.98%)	18 (58.06%)	<0.001*

*Significant as P value $\leq$ 0.05, X²: Chi square test.

Table 4: Comparison between the studied groups as regard laboratory investigations.

Variable	Bronchial asthma group (n=28)	Bronchiectasis group (n=40)	COPD group (n=51)	ILD group (n=31)	P value
Hb (g/dl) Mean $\pm$ SD	13.1 $\pm$ 3.35	12.9 $\pm$ 3.3	12.4 $\pm$ 3.51	12.9 $\pm$ 4.06	0.841
WBCs (x109/L) Mean $\pm$ SD	12.9 $\pm$ 5	13.4 $\pm$ 4.79	12 $\pm$ 4.13	14.3 $\pm$ 4.91	0.180
Neutrophils (x109/L) Mean $\pm$ SD	5.6 $\pm$ 2.79	8.9 $\pm$ 3.42	8.2 $\pm$ 2.82	8.4 $\pm$ 1.92	<0.001*
	P1	<0.001*	<0.001*	0.001*	
	P2		0.656	0.863	
	P3			0.994	
Lymphocytes (x109/L) Mean $\pm$ SD	1.4 $\pm$ 0.44	1.3 $\pm$ 0.35	1.2 $\pm$ 0.45	1.2 $\pm$ 0.36	0.129
NLR Mean $\pm$ SD	4.7 $\pm$ 3.29	7.6 $\pm$ 3.56	8.1 $\pm$ 4.07	7.8 $\pm$ 2.91	<0.001*
	P1	0.007*	<0.001*	0.007*	
	P2		0.913	0.997	
	P3			0.977	
PLT (x109/L) Mean $\pm$ SD	273 $\pm$ 137.88	325.5 $\pm$ 126.94	285.3 $\pm$ 119.92	296.4 $\pm$ 118.8	0.320
CRP (ng/mL) Mean $\pm$ SD	79.6 $\pm$ 39.11	80.5 $\pm$ 40.31	80.2 $\pm$ 36.27	71.1 $\pm$ 36.25	0.704
Serum ferritin (ng/mL) Mean $\pm$ SD	458.1 $\pm$ 202	492.1 $\pm$ 232.63	410.9 $\pm$ 214.63	410.8 $\pm$ 212.99	0.269
D-dimer (ng/mL) Mean $\pm$ SD	3645.5 $\pm$ 2975.25	5352 $\pm$ 3257.72	4358.8 $\pm$ 3122	4593.8 $\pm$ 2692.74	0.148
LDH (U/L) Mean $\pm$ SD	552.2 $\pm$ 126.71	510.8 $\pm$ 154.84	509.1 $\pm$ 147.01	503.2 $\pm$ 114.87	0.511
ALT (U/L) Mean $\pm$ SD	44.5 $\pm$ 17.94	43.5 $\pm$ 17.4	48.8 $\pm$ 17.38	42.9 $\pm$ 16.4	0.371
AST (U/L) Mean $\pm$ SD	33.7 $\pm$ 12.51	33.3 $\pm$ 12.05	31.2 $\pm$ 12.88	30 $\pm$ 11.7	0.567
Na⁺ (mmol/L) Mean $\pm$ SD	136.2 $\pm$ 8.12	135.8 $\pm$ 9.96	135 $\pm$ 9	134.5 $\pm$ 8.82	0.883
K⁺ (mmol/L) Mean $\pm$ SD	4 $\pm$ 0.86	4.2 $\pm$ 0.8	4.1 $\pm$ 0.78	4 $\pm$ 0.81	0.733
Ca⁺⁺ (mmol/L) Mean $\pm$ SD	1 $\pm$ 0.24	1.2 $\pm$ 0.28	1.1 $\pm$ 0.27	1 $\pm$ 0.24	0.032*
	P1	0.236	0.774	0.841	
	P2		0.665	0.026*	
	P3			0.218	
Prothrombin time (sec) Mean $\pm$ SD	14.6 $\pm$ 2.48	14.8 $\pm$ 2.41	15.3 $\pm$ 2.42	14.8 $\pm$ 2.27	0.620
Prothrombin concentration (mg/L) Mean $\pm$ SD	1 $\pm$ 0.17	0.9 $\pm$ 0.17	0.9 $\pm$ 0.16	1 $\pm$ 0.17	0.217
INR Mean $\pm$ SD	1.2 $\pm$ 0.17	1.3 $\pm$ 0.19	1.2 $\pm$ 0.17	1.2 $\pm$ 0.16	0.700

*Significant as P value $\leq$ 0.05, ANOVA (F) test with post hoc test (Tukey), **P1:**P value compared to Bronchial asthma group, **P2:**P value compared to Bronchiectasis group, **P3:**P value compared to COPD group, **Hb:** Hemoglobin, **WBCs:** white blood cells, **PLT:** Platelets, **CRP:**C-reactive protein, **LDH:** Lactate dehydrogenase, **ALT:** Alanine Aminotransferase, **AST:** aspartate aminotransferase, **INR:** international normalized ratio.

Table 5: Comparison between the studied groups as regard ABG analysis.

Variable	Bronchial asthmagroup (n=28)	Bronchiectasis group (n=40)	COPD group (n=51)	ILD group (n=31)	P value
PaCO₂ (mmHg) Mean ± SD	52.7 ± 19.24	55.8 ± 16.09	57.9 ± 16.42	60.1 ± 18.48	0.385
PaO₂ (mmHg) Mean ± SD	63.8 ± 18.81	62.7 ± 17.74	66.5 ± 20.4	60.9 ± 17.79	0.587
HCO₃ (mEq/L) Mean ± SD	20.5 ± 2.81	21.6 ± 4.18	20.9 ± 3.53	22.7 ± 3.31	0.073
O₂ saturation (%) Mean ± SD	89.9 ± 5.6	75.9 ± 10.48	74.5 ± 14.52	76.1 ± 15.34	<0.001*
	P1	<0.001*	<0.001*	<0.001*	
	P2		0.946	1	
	P3		0.937		

*Significant as P value ≤ 0.05, ANOVA (F) test with post hoc test (Tukey), **P1:P** value compared to Bronchial asthma group, **P2:P** value compared to Bronchiectasis group, **P3:P** value compared to COPD group.

Table 6: Comparison between the studied groups as regard disease severity (According to WHO classification, 2020).

Variable	Bronchial asthma group (n=28)	Bronchiectasis group (n=40)	COPD group (n=51)	ILD group (n=31)	P value
Mild	0 (0%)	0 (0%)	0 (0%)	0 (0%)	-----
Moderate	20 (71.43%)	18 (45%)	17 (33.33%)	17 (54.84%)	0.01*
Severe	8 (28.57%)	22 (55%)	34 (66.67%)	14 (45.16%)	
	P1	0.046*	0.002*	0.281	
	P2		0.284	0.477	
	P3			0.033*	

*Significant as P value ≤ 0.05, X²: Chi square test, **P1: P** value compared to Bronchial asthma group, **P2:P** value compared to Bronchiectasis group, **P3:P** value compared to COPD group.

Table 7: Comparison between the studied groups as regard the needed O₂ therapy, NIV and MV.

Variable		Bronchial asthma group (n=28)	Bronchiectasis group (n=40)	COPD group (n=51)	ILD group (n=31)	P value
O₂ mask	Yes	20 (71.43%)	35 (87.5%)	40 (78.43%)	22 (70.97%)	0.295
	No	8 (28.57%)	5 (12.5%)	11 (21.57%)	9 (17.65%)	
NIV	Yes	13 (46.43%)	24 (60%)	30 (58.82%)	15 (48.39%)	0.557
	No	15 (53.57%)	16 (40%)	21 (41.18%)	16 (31.37%)	
MV	Yes	3 (10.71%)	6 (15%)	9 (17.65%)	5 (16.13%)	0.876
	No	25 (89.29%)	34 (85%)	42 (82.35%)	26 (50.98%)	

*Significant as P value ≤ 0.05, X²: Chi square test, **NIV**: Non-invasive ventilation, **MV**: mechanical ventilation

Table 8: Comparison between the studied groups as regard the duration of hospital stay and prognosis

Variable		Bronchial asthma group (n=28)	Bronchiectasis group (n=40)	COPD group (n=51)	ILD group (n=31)	P value
Hospital stays (days)	Mean ± SD	7.6 ± 2.81	7.9 ± 2.96	7.5 ± 2.38	7.7 ± 3.41	0.907
Prognosis	Improved	22 (78.57%)	21 (52.5%)	22 (43.14%)	10 (32.26%)	0.003*
	Died	6 (21.43%)	19 (47.5%)	29 (56.86%)	21 (41.18%)	
	P1		0.041*	0.004*	0.006*	
	P2			0.404	0.098	
	P3				0.359	

*Significant as P value ≤ 0.05, ANOVA (F) test with post hoc test (Tukey), X²: Chi square test, **P1:P** value compared to Bronchial asthma group, **P2:P** value compared to Bronchiectasis group, **P3:P** value compared to COPD group.

Table (9): Comparison between improved and died cases during hospitalization.

Variable	Improved cases (75 pt.)	Died cases (75 pt.)	P value
Age (years)*	57.4± 15.5	56.4± 7.6	0.72
Gender			
Male	39(52)	33(44)	0.41
Female	36(48)	42(56)	
Smoking			0.003
Non-smoker	44(58.7)	25(33.3)	
Ex-smoker	9(12.0)	22(29.3)	
Current smoker	22(29.3)	28(37.3)	
Comorbidity			0.045
DM	21(28.0)	27(36.0)	
Hypertension	22(29.3)	25(33.3)	
IHD	17(22.7)	9(12.0)	
CKD	10(13.3)	3(4.0)	
Duration of symptoms(days)*	13.6± 5.57	14.6±4.89	0.24
Chest Ct on admission			0.32
CORAD 4	30(40)	36(48)	
CORAD 5	45(60)	39(52)	
Type of CRD:			0.002
Bronchial Asthma	22 (29.3)	6 (8)	
Bronchiectasis	21(28)	19 (25.3)	
COPD	22(29.3)	29 (38.7)	
ILD	10 (13.3)	21(28)	

T: Student t test, **CRD**: chronic respiratory disease. X2: Chi square test

Table (10): Comparison between improved and died patients during hospitalization as regard laboratory finding.

Variable	Improved cases (75 pt.)	Died cases (75 pt.)	P value
Hb (g/dl)	12.8± 3.47	12.7± 3.6	0.89
WBCs (x109/L)	13.2± 4.69	12.9±4.68	0.68
Neutrophils (x109/L)	6.36± 2.51	9.59± 2.64	< .001
Lymphocytes (x109/L)	1.47± 0.348	1.02±0.341	< .001
Neutrophil-Lymphocyte ratio	4.55± 1.94	10± 3.08	< .001
PLT(x109/L)	281± 120	311± 130	0.14
CRP(ng/mL)	76.4± 37.4	80.2± 38.2	0.54
Serum Ferritin (ng/mL)	432± 200	451± 235	0.58
D-dimer(ng/mL)	3957± 2874	5122±3176	0.02
LDH(ng/mL)	511± 142	522± 137	0.62
AST (U/L)	33.8± 11.6	30.1± 12.8	0.05
ALT(U/L)	43.1± 16.5	47.6± 17.9	0.11
Na+ (mmol/L)	136± 8.62	135± 9.42	0.63
K+ (mmol/L)	4.15± 0.811	4.02±0.791	0.33
Ca++ (mmol/L)	1.1± 0.284	1.03± .252	0.11
Prothrombin time (sec)	14.6± 2.41	15.2± 2.34	0.11
Prothrombin concentration (mg/L)	0.944± 0.169	0.919±0.168	0.37
INR	1.23± 0.18	1.24± 0.166	0.82
SO2 (%)	80.2± 13.7	75.9± 13.3	0.05
PaCo2(mmHg)	54.9±18.9	58.8±15.5	0.17
PaO2(mmHg)	62.5± 18.9	65.2± 18.8	0.38
HCO3(mEq/L)	20.8± 3.28	21.9± 3.84	0.049
Hospital stay (days)	7.8± 3.04	7.52± 2.61	0.54

Student t-test was used

Table (11): Binomial logistic regression for predictors of hospital mortality in the studied population.

	95% Confidence Interval				
Predictor	E	Lower	Upper	P value	Odds ratio
Bronchia Asthma	-0.84	-3.31	1.61	0.5	0.42
Bronchiectasis	1.77	-0.24	3.78	0.048	5.87
Smoking “current smoker”	1.82	-0.201	3.83	0.04	6.16
Diabetes Mellitus	-3.69	-7.71	0.31	0.042	0.02
Chronic kidney disease	-5.45	-10.36	-0.55	0.029	0.004
Neutrophils (x10 ⁹ /L)	-0.073	-1.16	1.01	0.89	0.92
Lymphocytes (x10 ⁹ /L)	0.159	-7.25	7.57	0.96	1.17
Neutrophil-Lymphocyte Ratio	-1.44	-2.95	0.055	0.059	0.23
D-dimer (ng/mL)	-3.73	-6.94	-5.16	0.023	0.99
AST(U/L)	0.045	-0.021	0.11	0.181	1.04
HCO ₃ (mEq/L)	-0.27	-0.54	-0.011	0.041	0.75
O ₂ saturation (%)	0.048	-0.008	0.11	0.09	1.049
NIV	0.89	-0.62	2.42	0.24	2.45

Model fit measures: R² 0.71