

Prior ICS use may protect from COVID lung parenchymal involvement in asthmatics and COPD patients affected by COVID19

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BACKGROUND

Parenchymal involvement in COVID19 can vary from absent to severe, with oxygen saturation degradation. Risk for COVID19 in asthmatics has been shown to be lower than in the general population.

Our aim is to evaluate **risk factors for lung parenchymal involvement** in patients with asthma and COPD affected by COVID19.

METHOD

Retrospective monocentric study conducted on 1410 patients admitted with a positive PCR test in the University Hospital of Liege between March 2020 and February 2021.

Patients underwent a Chest CT scan at admission.

Patients were classified into 3 groups according to the underlying obstructive pulmonary disease.

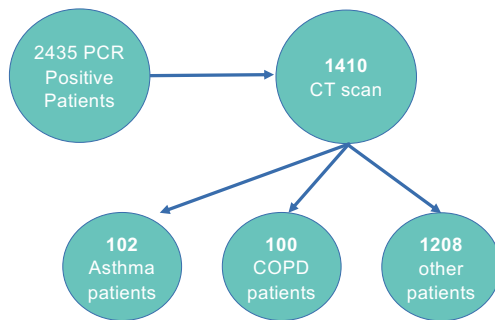


Figure 1. Flowchart



RESULTS

	Category	N	Mean ± SD	Median (Q1-Q3)	p-value
Sex	F	546	20.2 ± 19.3	18.0 [5.0 - 35.0]	<.0001
	M	864	25.6 ± 21.1	18.0 [10.0 - 35.0]	
Overweight	No	384	21.7 ± 19.6		0.036
	Yes	619	24.5 ± 21.3		
Chronic obstructive lung disease	No	426	30.6 ± 22.3	25.0 [18.0 - 50.0]	<.0001
	Yes	338	20.5 ± 19.8	18.0 [0.0 - 35.0]	
Asthma	No	870	24.7 ± 21.0	18.0 [10.0 - 35.0]	0.82
	Yes	102	24.2 ± 20.3	18.0 [10.0 - 35.0]	
ICS	No	770	25.7 ± 21.4	18.0 [10.0 - 35.0]	0.014
	Yes	136	20.8 ± 19.6	18.0 [5.0 - 35.0]	
ICS dosage (eq. Beclomethasone)	Low	57	22.1 ± 21.9	18.0 [0.0 - 35.0]	0.81
	Mild	48	20.7 ± 18.7	18.0 [10.0 - 32.5]	
	High	30	19.3 ± 16.6	18.0 [8.0 - 25.0]	
COPD	No	774	26.4 ± 21.2	18.0 [10.0 - 35.0]	<.0001
	Yes	100	15.4 ± 18.0	10.0 [0.0 - 22.5]	
OCS	No	839	24.9 ± 21.0	18.0 [10.0 - 35.0]	0.50
	Yes	34	27.4 ± 23.1	18.0 [10.0 - 45.0]	
First KL-6		367	0.20		0.0001
Emphysema	No	1145	24.6 ± 20.6	18.0 [10.0 - 35.0]	<.0001
	Yes	250	18.4 ± 19.1	15.0 [0.0 - 25.0]	
White blood cells (10 ³ /mm ³)		1092	-0.062		0.040
Eosinophils (%)		1086	-0.10		0.0010
Eosinophils (10 ³ /mm ³)		1086	-0.11		0.0003
Corticosteroids	No	661	19.0 ± 17.5	18.0 [5.0 - 25.0]	<.0001
	Yes	749	27.5 ± 22.2	25.0 [10.0 - 40.0]	
Saturation with O ₂ (%)	No	1240	22.1 ± 19.6	18.0 [10.0 - 35.0]	<.0001
	Yes	152	34.6 ± 23.9	35.0 [10.0 - 50.0]	
Need for oxygen	No	1123	20.9 ± 18.8	18.0 [10.0 - 35.0]	<.0001
	Yes	269	34.4 ± 23.6	35.0 [15.0 - 50.0]	
O ₂ admission (l) (LN)		147	0.35		<.0001
Saturation (admission) (%)	Globally	1392	-0.33		<.0001
	With O ₂	152	-0.27		0.0008
	Without O ₂	1240	-0.36		<.0001

Table 1. Univariate analysis of parenchymal lung involvement and selected outcomes

RESULTS

Asthmatics and COPD patients accounted for 12% and 13% of patients respectively.

18% of patients suffering from SARS-CoV2 infection received ICS at baseline.

Parenchymal involvement:

- Was higher in men and overweight patients
- Was higher in patients with high baseline white blood cell count, eosinophils and KL-6 levels
- Was lower in patients suffering from chronic obstructive lung disease
- Was lower in patients treated with ICS at baseline.

Unsurprisingly, patients exhibiting the worse lung involvement required more systemic corticoids and oxygen use. Additionally, more of them were admitted to the ICU.

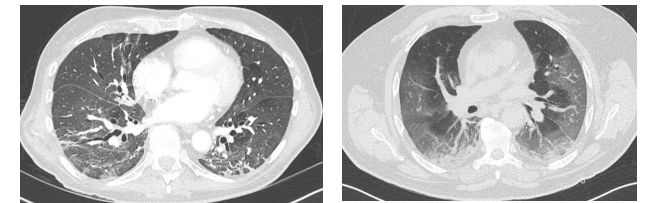


Figure 2. Parenchymal involvement in two patients affected by COVID19.

CONCLUSION

Treatment with ICS is associated with lower risk for lung parenchymal involvement