

# INFLAMMATORY MARKERS IN COVID-19 INFECTION IN GALWAY UNIVERSITY HOSPITAL

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## Background

The coronavirus disease (COVID-19) pandemic is characterised by a broad spectrum of clinical presentations of varying severity. In Ireland to date, 8.5% of cases have been hospitalised, of these 13% of cases required admission to the intensive care unit (ICU) (1). It has been suggested that severe cases are associated with a cytokine release syndrome which plays a role in the pathology of COVID-19 (2).

## Aim

To assess variables of confirmed COVID-19 patients that may aid prediction of severe infection

## Methods

A cross-sectional study was conducted from March 6<sup>th</sup> to May 1<sup>st</sup> 2020, of all patients presenting to Galway University Hospital who were found to have a detected PCR COVID-19 infection. Baseline clinical and laboratory data were collected, and data was anonymised. Categorical variables were compared with the  $\chi^2$ -test and numerical variables were tested with the Mann-Whitney-U-test (Stata software v15); p-value of <0.05 was considered significant.

## Results

There were 70 patients admitted with detected COVID-19 infection, 29.0% (n=20) required ICU care and the ceiling of care for 9% (n=6) was ward level (Table 1). On admission high levels of C-reactive protein (median 87 mg/L v 14.3 mg/L, p<0.005), ferritin (median 939  $\mu$ g/L v 408  $\mu$ g/L, p<0.005) and interleukin-6 (median 73 pg/l v 19 pg/l, p<0.005) were associated with requiring ICU admission compared to ward level. Over a quarter of patients (27.1%) had oxygen saturations <94% on admission and this was also associated with high interleukin-6 levels (62 pg/l v 20 pg/l, p=0.018) compared to patients with oxygen saturations  $\geq$ 94%.

## Discussion/Conclusion

Further research is required but data suggests that high inflammatory markers early in the admission to hospital is associated with severe infection.

## References:

1. Health Protection Surveillance Centre. Epidemiology of COVID-19 in Ireland Report prepared by HPSC on for National Public Health Emergency Team. 16/10/2020
2. Mehta *et al.* COVID-19: Consider Cytokine Storm Syndromes and Immunosuppression. The Lancet. Vol 395:10229, P1033-1034, March 28, 2020.

**Table 1: Baseline characteristics and lab parameters of patients included in the study**

	Patients evaluable	Median (range) / n (%)	Ward (n=50)	ICU (n=20)	p-value	
Baseline characteristics	Age (years)	70	53 (19-95)	n=50; 49 (19-95)	n=20; 62.5 (35-78)	0.0837
	Male sex	56	33 (58.9%)	17 (46.0%)	16 (84.2%)	0.006
	Hypertension	27	14 (51.9%)	4 (80.0%)	10 (45.5%)	0.163
	CCD	56	6 (10.7%)	3 (8.1%)	3 (15.8%)	0.379
	CPD	56	3 (5.4%)	1 (2.7%)	2 (10.5%)	0.218
	Healthcare Worker	57	15 (26.3%)	14 (36.8%)	1 (5.3%)	0.011
	Obese	56	7 (12.5%)	2 (5.4%)	5 (26.3%)	0.025
	O <sub>2</sub> < 94%	70	19 (27.1%)	6 (12.0%)	13 (65.0%)	<0.0005
Lab parameters	CRP	68	30 (0.5-260)	14.3 (0.5-245)	87 (9-260)	<0.0005
	Ddimer	55	307 (69-2723)	212 (69-2667)	755.5 (186-2723)	0.0055
	Ferritin	53	566 (17-2757)	408 (17-2540)	939 (45-2757)	0.0017
	IL6	41	43 (2-587)	19 (2-90)	73 (13-587)	0.0006
	LDH	54	255.5 (103-602)	233 (103-602)	312.5 (217-492)	0.0008
	TG	48	1.5 (0.3-16.9)	1.4 (0.3-11.1)	1.7 (1.0-16.9)	0.0287

**Figure 1: Comparing IL6 Levels in ICU and ward patients**

