[Abstract:0115]

RELATIONSHIP OF SYMPTOMS AND EXTRACELLULAR NEUTROPHIL TRAPS IN THE POST-COVID PERIOD AMONG YOUNG PATIENTS

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The World Health Organization announced the end of COVID-19 pandemic in May 2023, drawing attention to the fact that there is still a struggle with the consequences of acute infection – a post-acute condition. Persistent inflammation and the formation of extracellular neutrophil traps (NETs) is one of the possible pathological mechanisms of this condition. The aim was to assess the residual clinical symptoms in the period 3-6 months after COVID-19 and to identify their relationship with the existence of NETs in young people.

Methods: 30 outpatients (70% F), median aged 23 (20-27) years, without concomitant chronic inflammatory diseases were included after they had given informed consent. Patients underwent a physical examination, laboratory tests. The amount of NETs was evaluated in the blood by immunofluorescence staining.

Results: 57% patients had COVID-19 repeatedly, 77% - were vaccinated. All patients had mild COVID-19 and residual effects from SARS-CoV-2 virus. The median (IQR) proportion of symptoms experiencing at least at 96 (67-123) days from COVID-19 diagnosis was 2 (1.8-3.0). Frequently reported symptoms included weakness (83.3%), headache (26.7%), sleep disorders, and pain in joints and muscles (16.7%). Thread–like NETs [median 6.1 (3.2-7.0)] were found in 87% patients. A correlation was established between the NETs value and the number of symptoms (p=0.05, r=0.35).

Conclusions: The results suggest that rates of symptoms are indeed common. A correlation has been established between the number of symptoms and NETs, which may be explained by the aseptic inflammation. This might suggest a need for further study.

Keywords: *coronavirus infection, COVID-19, post-COVID syndrome, extracellular neutrophil traps, NETs*

[Abstract:0174]

EVALUATION OF HAPPY HYPOXIA IN COVID-19 PATIENTS AND ITS CLINICAL IMPLICATIONS

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Summary: This study investigates the occurrence and characteristics of happy hypoxia in COVID-19 patients, particularly its relevance to ICU admission needs.

Purpose: The primary aim is to determine if happy hypoxia is a distinct physiological trait in COVID-19-induced ARDS and its association with the necessity for ICU care.

Methods: A retrospective, observational cohort study was carried out at the Government Medical College and Hospital in Nizamabad, India. It included adult patients hospitalized with suspected or confirmed COVID-19 from February 21, 2020, to December 31, 2021. The study employed a linear mixed-effects model to analyse the physiological response to hypoxemia in this population.

Findings: Among 1,365 patients, 75% tested positive for SARS-CoV-2. COVID-19 patients showed a significant decrease in the ROX index, indicating a heightened respiratory response to hypoxia compared to non-COVID-19 individuals. Variability in response to hypoxemia was noted among patients. 27% of the infected patients required ICU admission, with a 20% mortality rate within 45 days. Both ICU admission and mortality rates correlated with an increased respiratory response to varying degrees of hypoxemia.

Conclusions: Individuals with COVID-19 often exhibit a more pronounced symptomatic reaction to hypoxaemia compared to those with hypoxaemia from different causes. Yet, the extent of these symptoms varies significantly among patients. Consequently, while silent hypoxaemia can occur in any patient with hypoxemic

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respiratory failure, its prevalence in those infected with SARS-CoV-2 is not higher than in those without the infection.

Keywords: *COVID-19, asymptomatic hypoxia, SARS-CoV-2, hypoxemia, respiratory response*

[Abstract:0234]

IMPACT OF A POST-DISCHARGE PHONE CALL ON CARE UTILIZATION DURING THE COVID-19 PANDEMIC IN A US HOSPITAL SYSTEM

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Background: Post-discharge calls have been associated with reduced 30-day readmissions in the US [1,2]. But their impact during COVID-19 is unknown. Further, whether readmission is an adequate surrogate for post-acute care utilization remains controversial [3-5]. Since 2012, 30-day readmissions have decreased while ED visits and observation have increased [6-10]. We aim to determine the impact of a phone call on three 30-day utilization metrics during COVID-19: readmission, ED visits, and observation status.

Methods: We retrospectively analysed 3,555 patients discharged home from three US hospitals between December 2020 and July 2022. For each index admission, we recorded whether there was one or more of each of the utilization outcomes of interest. We used this as the dependent variable in a series of logistic regressions to analyse the association of call receipt and outcomes. For each outcome, we performed two analyses: one without adjustments and another adjusted for patient demographics and system variables.

Results: Table 1 shows participant demographics. When adjusted for patient and system covariates, the call was associated with a significant reduction in observation status (OR 0.60, $p < 0.05$) (Table 2). A phone call was not associated with a significant reduction in ED visits (OR 0.98, $p = 0.81$) or readmissions (OR 0.89, $p = 0.41$).

Conclusions: During COVID-19, the post-discharge phone call was associated with a significant reduction in 30-day observation status, where post-acute care utilization in the US has been rising since 2012. The call shows ongoing promise to reduce areas of increased post-acute care utilization even during COVID-19.

Keywords: *COVID-19, utilization, 30-day readmissions, observation status*

References

1. Hoyer EH, Brotman DJ, Apfel A, et al. Improving Outcomes After Hospitalization: A Prospective Observational Multicenter Evaluation of Care Coordination Strategies for Reducing 30-Day Readmissions to Maryland Hospitals. J Gen Intern Med. 2018 May;33(5):621-627.
2. Anderson, Janet. https://www.hopkinsmedicine.org/news/articles/2018/09/nurse-intervention-marks-5-years-of-smoothing-transitions-of-care
3. Wadhera RK, Joynt Maddox KE, Desai NR et al. Evaluation of Hospital Performance Using the Excess Days in Acute Care Measure in the Hospital Readmissions Reduction Program. Ann Intern Med. 2021 Jan; 174(1):86-92.
4. Pronovost PJ, Brotman DJ, Hoyer EH, Deutschendorf A. Reconsidering Hospital Readmission Measures. J Hosp Med. 2017 Dec; 12(12): 1009-1011.
5. Miller BJ, Deutschendorf A, Brotman DJ. The Hospital Readmissions Reduction Program: Inconvenient Observations. J Hosp Med. 2021 Jul;16(7):448.
6. Zuckerman RB, Sheingold SH, Orav EJ, Ruhter J, Epstein AM. Readmissions, Observation, and the Hospital Readmissions Reduction Program. N Engl J Med. 2016 Apr 21;374(16):1543-51.
7. Gerhardt G, Yemane A, Apostle K, et al. Evaluating whether changes in utilization of hospital outpatient services contributed to lower Medicare readmission rate. Medicare Medicaid Res Rev. 2014 Apr23;4(1):mmrr2014.004.01.b03.
8. Wadhera RK, Joynt Maddox KE, Kazi DS, et al. Hospital revisits within 30 days after discharge for medical conditions targeted by the Hospital Readmissions Reduction Program in the United States: national retrospective analysis. BMJ. 2019 Aug12;366:14563.
9. Nuckols TK, Fingar KR, Barrett M, et al. The Shifting Landscape in Utilization of Inpatient, Observation, and Emergency Department Services Across Payers. J Hosp Med. 2017 Jun; 12(6):443-446.

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Table 1. Demographics and readmission status of patients based on the receipt of post-discharge phone call

	No phone call		Phone call		All	
	N	%	n	%	n	p value
Age (N, SD)	54.3 (16.4)		59.0 (18)		57.5 (17.6)	<0.05
Sex						
Female	519	28.3	1,314	71.7	1,833	<0.05
Male	627	36.4	1,095	63.6	1,722	
Total	1,146	32.2	2,409	67.8	3,555	
Race						
White	512	31.4	1,121	68.7	1,633	0.09
Black or African-American	521	34.0	1,011	66.0	1,532	
Other or Unknown	113	28.9	278	71.1	391	
Total	1,146	32.2	2,410	67.8	3,556	
Payor Status						
Medicare	427	27.7	1,113	72.3	1,540	<0.05
Medicaid	478	46.7	546	53.3	1,024	
Commercial and Other	195	22.3	681	77.7	876	
Self-pay and Charity	46	39.3	71	60.7	117	
Total	1,146	32.2	2,411	67.8	3,557	
30 Day Readmission Status						
No	1,025	32.0	2,182	68.0	3,207	0.32
Yes	121	34.6	229	65.4	350	
Total	1,146	32.2	2,411	67.8	3,557	
30 Day Observation Status						
No	999	31.1	2,218	69.0	3,217	<0.05
Yes	147	43.4	192	56.6	339	
Total	1,146	32.2	2,410	67.8	3,556	

Table 1. *Demographics and readmission status of patients based on the receipt of post-discharge phone call.*
This table shows baseline demographic and utilization status of participants in the call receipt and call non-receipt groups. A significant difference in age, sex, payor status, and 30-day ED observation status exists between the two groups. These factors were included as individual and system controls in the models to determine the odds ratio of utilization outcome associated with call receipt.

Table 2. Impact of Post-discharge phone call on 30 Day Care Utilization Metrics

Metric	OR (CI)	P value
30 Day Observation Rate		
Adjusted *	0.60 (0.46 - 0.79)	**0.000**
Unadjusted	0.59 (0.47 - 0.74)	**0.000**
30 Day Readmission Rate		
Adjusted*	0.89 (0.68 - 1.17)	0.406
Unadjusted	0.89 (0.70 - 1.12)	0.321

**Adjusted for age, sex, race, payor status, observed length of stay, expected length of stay, AHRQ comorbidity index.*
Abbreviations: OR Odds Ratio; CI 95% Confidence Interval

Table 2. *Impact of post-discharge phone call on 30 day care utilization metrics.*
This table shows the odds ratio of a 30 day readmission or observation event associated with a post-discharge phone call for both adjusted and unadjusted models. When adjusted for individual and system covariates, a phone call is associated with a significant reduction in 30 day ED observation rate (OR 0.60, p < 0.05).

[Abstract:0270]

EXTRAPULMONARY COMPLICATIONS IN CRITICAL ILL PATIENT WITH SARS-COV-2

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Although fever and respiratory symptoms are the main clinical expression of COVID-19 disease, important extrapulmonary complications may appear. Mainly attributed to the ACE2 (angiotensin converting enzyme) receptors which act as the main entry point for the virus, activating several inflammatory lines. The prevalence of gastrointestinal symptoms is higher in patients with severe disease compared to the rest. The most serious gastrointestinal complication reported in critically ill patients is intestinal ischemia. The pathophysiology of intestine ischemia in these patients with SARS-CoV-2 remains uncertain. The atypical features of the intestinal ischemia in these patients strongly suggest alternative mechanisms.A 61-year-old male was admitted in the emergency department with bilateral pneumonia, positive testing for SARS-CoV-2, partial acute respiratory failure, and lactic acidosis. Examination revealed dyspnoea, fever, and wet crackles. Diarrhoea and abdominal pain. A pH of 7.29, lactate 100 mg/dl, pO_2 59 mmHg, CRP 31.32 mg/dl, ferritin 1920 ng/ml and D-dimer 2500 mcg/l. During the patient's stay in the ICU, subocclusive intestinal disease and rectal bleeding was reported, abdominal CT scan showed thickening of the distal lumen of the ileum (Fig. 1). Ileoscopy, ischemic ulcers at the level of the ileocecal junction (Fig. 3). As the diet progressed, abdominal distension again appeared with abundant tympanism and decreased peristalsis. X-ray was performed in which hydroaerial levels were observed (Fig. 2). After bowel rest, intestinal motility was restored. The biopsy showed a stenosis of the terminal ileum and a chronic inflammatory process with lymphoplasmacytic infiltrate and fibrosis within the lamina propria, without microthrombi.

Keywords: *COVID-19, ACE2, SARS-CoV-2*

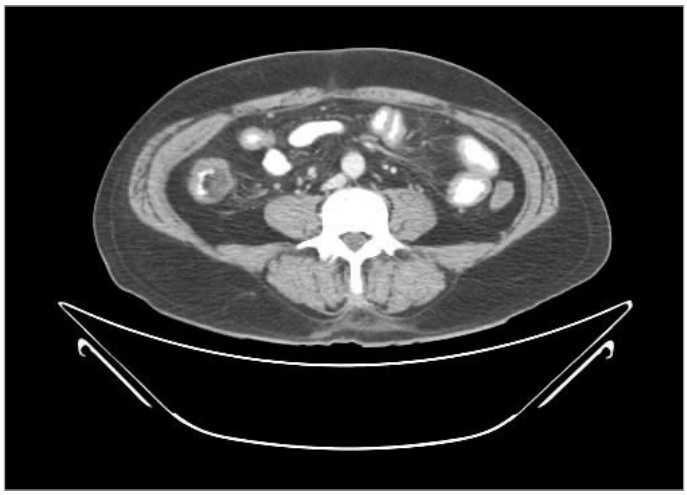

Figure 1. *Abdominal CT scan showed thickening of the distal lumen of the ileum and increased attenuation of locoregional fat.*

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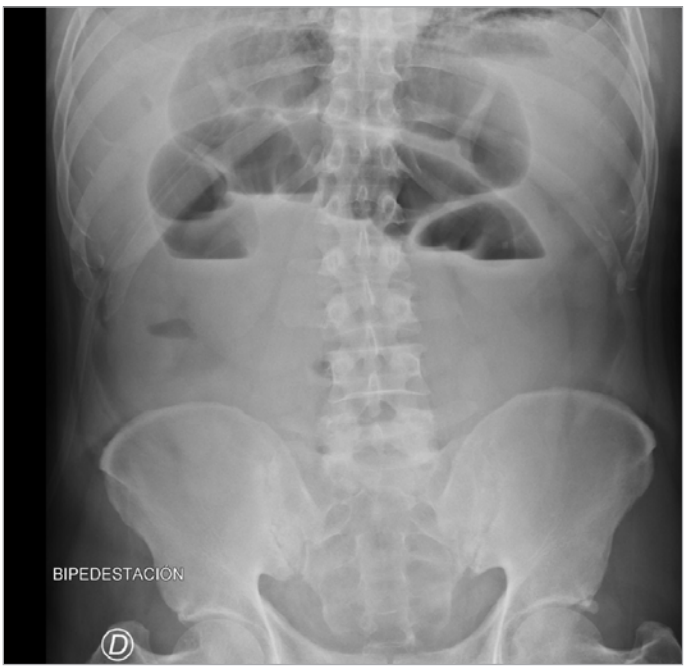

Figure 2. Abdominal X-ray was performed in which hydroaerial levels.

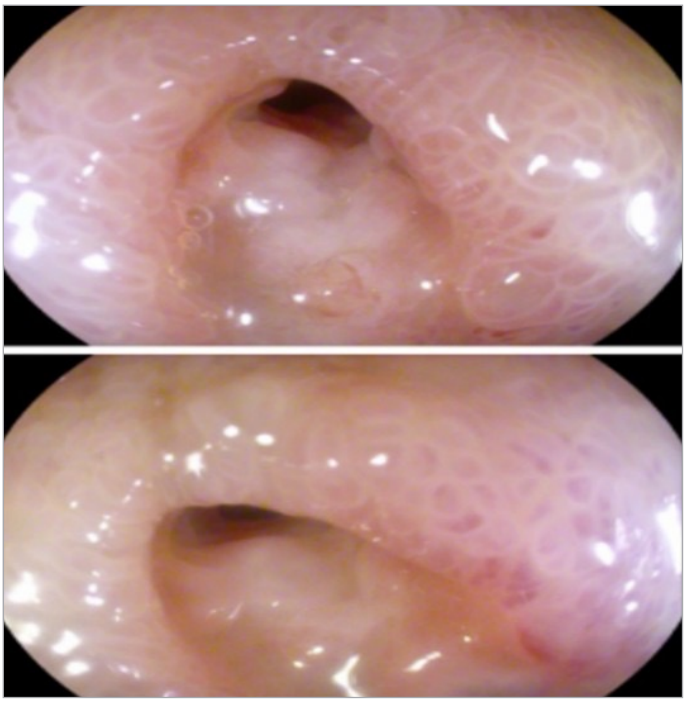

Figure 3. Stenosis of the terminal ileum and a chronic inflammatory process with lymphoplasmacytic infiltrate and fibrosis within the lamina propria, without microthrombi. Diagnosing the patient with chronic ischemic ileitis.

[Abstract:0319]

NIRMATRELVIR-RITONAVIR: DESCRIPTIVE ANALYSIS IN OUR CENTER

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Objectives: Treatment with nirmatrelvir-ritonavir is indicated in patients diagnosed of COVID-19 (mild or moderate risk of progression) in order to inhibit replication.

Methods: Descriptive analysis of 68 patients who received treatment with nirmatrelvir-ritonavir (from 01/01/2021 to 07/09/2023) diagnosed of mild or moderate COVID-19 (home treated or hospitalised for reasons other than COVID-19) and one single case of compassionate use (congenital myopathy under 65 years old). We assessed the symptoms onset, immunosuppressive treatment, and comorbidities to study the indications in the target population. None of them had the contraindications included in the form.

Results: We found 68 patients being treated with nirmatrelvir-ritonavir. The 53.1% of them were immunosuppressed (19.1% were given myelotoxic chemotherapy previously). The 75% of our sample were properly vaccinated. If we look at the comorbidities, lung (27.9%) and ischemic heart disease (23.5%) were predominant. The 8.8% required additional oxygen therapy.

Discussion: It has recently been confirmed the effectiveness of the drug in selected patients (COVID-19 mild or moderate with onset symptoms under or equal to 5 days) in preventing the admission or death in the first 30 days after diagnosis. We consider convenient the follow-up in these cases for scientific purposes.

Conclusions: The collected sample is small, so it could be interesting to increase it and register more patients to carry out future studies on its effectiveness.

Keywords: *nirmatrelvir, ritonavir, COVID-19*

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Most frequent comorbidities

Ischemic heart disease

		Frequency	Percent	Valid percent	Cumulative percent
Válido	no	52	76,5	76,5	76,5
	yes	16	23,5	23,5	100,0
	Total	68	100,0	100,0	

Lung disease

		Frequency	Percent	Valid percent	Cumulative percent
Válido	no	49	72,1	72,1	72,1
	yes	19	27,9	27,9	100,0
	Total	68	100,0	100,0	

Table 1. *Comorbidities.*

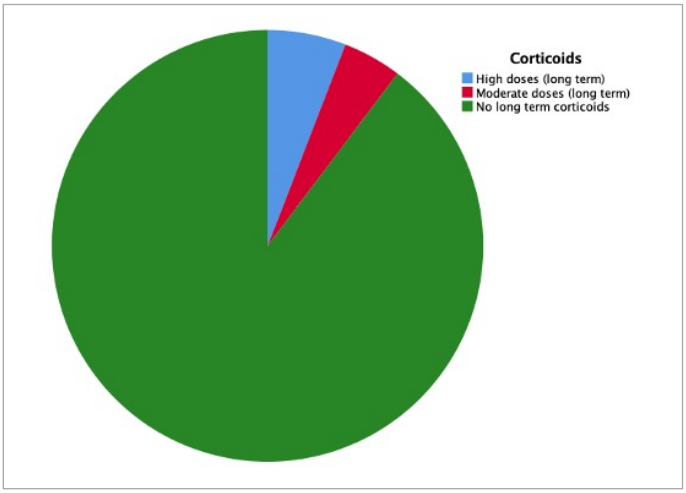

Figure 1. *Corticoids.*

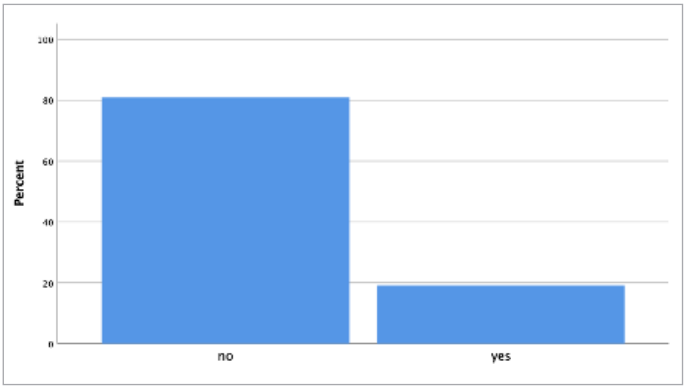

Figure 2. *Myelotoxic chemotherapy.*

[Abstract:0320]

BILATERAL SARS-COV-2 PNEUMONIA – A DRAMATIC IMAGING PRESENTATION

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Introduction: COVID-19, caused by SARS-CoV-2 infection, is a disease that can have a very serious presentation, even in younger and healthier patients.

Case Presentation: The images are of a 55-year-old man, with overweight as his only history, admitted to the Emergency Department due to a condition compatible with COVID-19 with severe respiratory failure. The chest X-ray revealed bilateral pneumonia, and the chest tomography revealed bilateral multilobar involvement, with a severity score of 23/25. Invasive ventilatory support was initiated with a good response, with ventilatory weaning after 10 days and hospital discharge 25 days after admission, without complications or sequelae associated with this condition. Currently asymptomatic, with no changes in respiratory function.

Conclusions: This case stands out due to the severity of the initial presentation, with dramatic imaging results.

Keywords: *SARS-CoV-2, pneumonia, severity score*

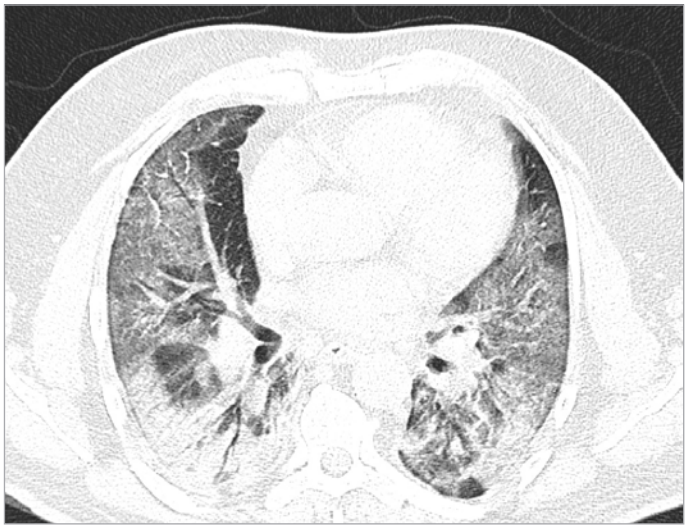

Figure 1. *Chest tomography with a severity score of 23/25.*

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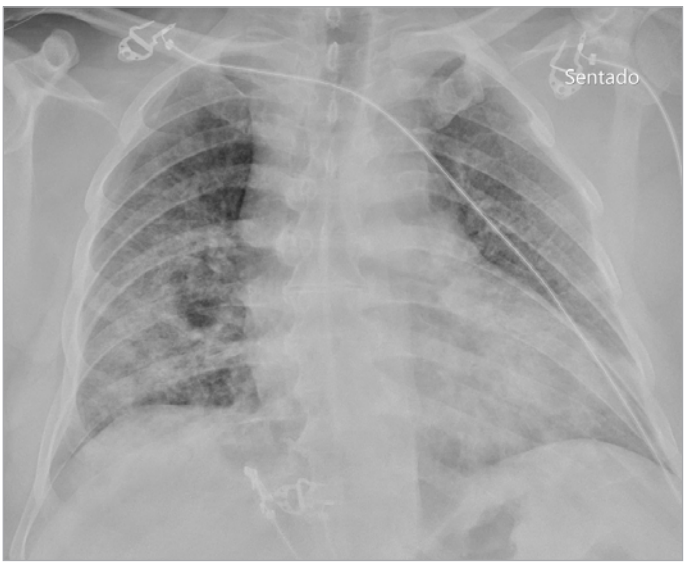

Figure 2. X-ray with bilateral multilobar involvement.

[Abstract:0327]

IS THERE AN ASSOCIATION BETWEEN VACCINATION AGAINST SARS-COV-2 AND THE ANTIPHOSPHOLIPID SYNDROME?

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Background: The increased frequency of antiphospholipid antibodies (APA) during a SARS-CoV-2 infection has been demonstrated. Cases of venous thromboembolism (VTE) after SARS-CoV-2 infection and vaccination are also known. No study has investigated the presence of APA in vaccinated patients with VTE. This study analyse the APA and the antiphospholipid syndrome (APS) in this population.

Methods: We conducted a retrospective single-centre observational study including patients diagnosed with VTE between 01/01/2021 to 31/07/2022. We analysed the SARS-CoV-2 infection and vaccination, and the APA. The primary endpoint was the prevalence of the APA and the secondary was the one of the APS.

Results: Based on our selection criteria, we identified 159 patients of whom 131 have been excluded. Among the 28 patients (59 ± 16 years, 32% male) during the period of our study, 53.6% had at least one APA. After 12 weeks, the APA have been controlled among 25% of these patients and 10.7% of the initial cohort were diagnosed as APS. Primary endpoint: there is an increased prevalence of the APA time-related after a SARS-CoV-2 vaccination.

Secondary endpoint: the prevalence of the APS is increased after a SARS-CoV-2 vaccination compared to the prevalence of the general population.

Conclusions: There is an association in our study between SARS-CoV-2-vaccination and APS. However, the limits of our study are the limited population and the absence of regular monitoring of the APA. This should be the subject of a future prospective study with a larger number of patients and a regular monitoring of the antibodies.

Keywords: *vaccination, SARS-CoV-2, venous thromboembolism, antiphospholipid syndrome*

[Abstract:0334]

ASSESSMENT OF COVID-19 VACCINE IMMUNOGENICITY OVER ONE YEAR IN PATIENTS RECEIVING IMMUNOMODULATORS/ IMMUNOSUPPRESSANTS OR POLYCHEMOTHERAPY

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Objective: The aim of the study is to evaluate the immunogenicity of the COVID-19 vaccine in patients receiving immunomodulators/ immunosuppressants or polychemotherapies based on the treatment of the underlying pathology in an internal medicine and onco-haematology department over a period of one year.

Methods: Our study was prospective. We included 61 patients. They were all undergoing immunosuppressive therapy. We performed a series of 9 serological tests before vaccination and 21 days after vaccination, at d+49 after a 1st boost, at 3 months, 6 months, 9 months, and 12 months. We divided our population into 4 groups according to the treatments received.

Results: The results show a mean age of 50 years ± 14.85. The sex ratio F/M was ± 1.10. To better characterize vaccine responders, we compared them with non-responders based on several parameters: age, sex, comorbidities, whether or not the third booster dose had been received, biological work-up, and treatments divided into four groups: A lack of vaccine response was not significantly correlated with the use of rituximab at S4, i.e., 3 months (p=0.01), at S6, i.e., 9 months (p=0.034), and at S7, i.e., 12 months (p=0.009). Lack of vaccine response at 12 months was significantly correlated with patients receiving polychemotherapy (p=0.02) or immunosuppressive therapy (p=0.043). Multivariate analysis showed an association between lack of vaccine response at S3 in patients receiving rituximab (p=0.024) and corticosteroid therapy (p=0.02) and in leukopaenic patients (p=0.04).

Keywords: *COVID-19 vaccine, serology test, immunogenicity, hemopathies and autoimmune disease*

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[Abstract:0366]

ENDOTHELIOPATHY, SOLUBLE THROMBOMODULIN AND ITS ROLE IN PREDICTING PROGNOSIS IN SEVERE CORONAVIRUS DISEASE-2019 PNEUMONIA

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Purpose: The main reason for acute respiratory distress syndrome (ARDS) and mortality during coronavirus disease-2019 (COVID-19) infection is thrombotic events due to the tendency to coagulopathy. Systemic inflammation, endothelial dysfunction caused by severe hypoxia and thrombocyte abnormalities lead to coagulopathy. Here, we aimed to search for the relationship of soluble thrombomodulin (TM) and von Willebrand factor (vWF) antigen levels as endothelial dysfunction biomarkers with an early stage severe COVID-19 infection.

Methods: Fifty-four patients admitted to our hospital with severe COVID-19 infection and 25 healthy asymptomatic patients were included in the study. Both the patient (at hospital admission date) and healthy control group gave venous blood samples for soluble TM and vWF antigen level measurements. The level of the searched parameters was compared between groups and hospital admission duration and mortality rate of the patient group. Results were evaluated using the SPSS program.

Results: vWF antigen levels did not show any difference between groups, but soluble TM was significantly higher in the patient group. Thus, soluble TM level did not show a statistically significant relationship with duration of hospitalization or mortality.

Conclusions: Early elevation of soluble thrombotic level can be considered as an early defence mechanism of endothelium against thrombosis in a severe COVID-19 infection.

Keywords: solubl thrombomodulin, von Willebrand factor, COVID-19 infection

		Min.-Max.	Median	Mean ± SD/(n, %)
Age		30.0-70.0	53.0	51.7±9.7
Sex	Female			24 (41.7%)
	Male			35 (58.3%)
Comorbidity	(-)			30 (50.8%)
	(+)			29 (49.2%)
Hypertension				24 (40.7%)
Diabetes mellitus				12 (20.3%)
Cardiovascular disease				4 (6.8%)
vWF, ng/mL		1.9-54.3	40.3	37.8±12.0
Trombomodulin, ng/mL		3.1-10.1	5.1	5.2±1.0
Haemoglobin, g/L		8.8-15.3	13.0	12.7±1.3
Urea		12.0-111.0	25.0	29.8±17.4
Creatinine, µmol/L		0.1-2.2	0.7	0.8±0.3
CRP (mg/L)		1.0-229.0	30.0	57.4±62.0
Procalcitonin, ng/mL		0.0-1.3	0.1	0.1±0.2
Ferritin, pg/dL		10.0-1500	147.5	284.0±334.8
Aspartate aminotransferase, U/L		12.0-195.0	33.0	37.6±28.1
Alanine aminotransferase, U/L		6.0-142.0	26.0	33.3±24.0
Lactate dehydrogenase, U/L		0.0-803.0	251.0	271.4±126.5
Creatine kinase, U/L		15.0-1049.0	69.5	135.0±175.7
Prognosis	Discharge			52 (88.1%)
	Death			7 (11.9%)
Hospitalization (day)		4.0-41.0	8.0	9.5±6.5

Min.: Minimum, Max.: Maximum, SD: Standard deviation, vWF: von Willebrand factor, CRP: C-reactive protein

Table 1. *Laboratory, clinical and demographic characteristics of patients.*

Mean ± SD/(n, %)		Control group		Case group		p	
		Median	Mean ± SD/(n, %)	Median			
Age (year)		48.2±10.4	51.0	53.2±9.1	54.0	0.052	t
Sex	Female	11 (44.0%)		24 (40.7%)		0.778	χ²
	Male	14 (56.0%)		35 (59.3%)			
vWF (ng/mL)		42.5±6.4	44.3	35.8±13.2	37.8	0.066	m
Trombomodulin (ng/mL)		4.6±0.8	4.5	5.4±1.0	5.5	**0.001**	t
Haemoglobin, g/L		12.9±1.1	13.0	12.7±1.4	12.9	0.425	t
Urea		23.8±15.9	20.0	31.5±17.5	26.5	**0.004**	m
Creatinine, µmol/L		0.72±0.20	0.70	0.79±0.33	0.80	0.544	m
CRP (mg/L)		3.8±2.4	4.0	80.1±61.1	61.0	**0.001**	m
Procalcitonin, ng/mL		0.01±0.01	0.02	0.11±0.18	0.08	**0.001**	m
Ferritin, pg/dL		60.9±37.7	54.0	378.5±359.6	269.0	**0.001**	m
Aspartate aminotransferase, U/L		22.9±9.9	22.0	44.0±30.9	37.5	**0.001**	m
Alanine aminotransferase, U/L		23.0±10.1	22.0	37.7±26.9	29.0	**0.005**	m
Lactate dehydrogenase, U/L		166.9±43.1	150.0	316.5±124.0	299.5	**0.001**	m
Creatine kinase, U/L		53.9±22.6	54.0	170.6±200.5	114.0	**0.001**	m

t: T-test, m: Mann-Whitney U test, χ²: Chi-square test, vWF: von Willebrand factor, CRP: C-reactive protein, SD: Standard deviation

Table 2. *General features and laboratory values of case and control groups.*

[Abstract:0371]

THE IMPACT OF THE COVID-19 PANDEMIC IN THE PROFILE OF DIABETIC AND HYPERTENSIVE PATIENTS ADMITTED IN AN INTERNAL MEDICINE CLINICAL HOSPITAL FROM TRANSYLVANIA

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Introduction: Type 2 Diabetes Mellitus (T2DM) and arterial hypertension are two of the most common comorbidities recorded in an internal medicine hospital. This study evaluated the clinical differences between patients with T2DM admitted in the Internal Medicine Section of the CF Clinical Hospital from Cluj-Napoca, before and during the COVID-19 pandemic.

Materials and Methods: A database was created of patients who were admitted to this hospital before the COVID-19 pandemic (year 2018) and, respectively, during the pandemic year 2021. Computer randomization was used to select 5 adult patients with T2DM, discharged each month from the selected years, thus forming 2 databases of 60 patients each (equal number of women n=31). We recorded all the data obtained from anamnesis, clinical examination, laboratory and paraclinical investigations. The data was recorded in an Excel document and it was analysed using GraphPad Prism 6.0.

Results: There were no statistically significant differences regarding the age, the BMI and the waist circumference. More diabetic patients from the 2021 cohort had a poorly controlled disease, and almost double number of patients needed insulin for the treatment of diabetes comparing to the 2018 cohort. There were statistically significant more diabetic patients with hypertension in the pandemic year than before, with higher severity and poorer control of their hypertension. Metabolic syndrome was statistically significant more prevalent in the 2021 study group, compared to the 2018 study group.

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Conclusions: The COVID-19 pandemic had a detrimental impact on the profile of diabetic patients admitted in the CF Clinical Hospital of Cluj-Napoca.

Keywords: *COVID-19, type 2 diabetes mellitus, hypertension, metabolic syndrome*

[Abstract:0388]

EARLY 3-DAY COURSE OF REMDESIVIR FOR THE PREVENTION OF THE PROGRESSION TO SEVERE COVID-19 IN THE ELDERLY: A SINGLE CENTRE, REAL LIFE COHORT STUDY

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Introduction: Remdesivir, a viral RNA polymerase inhibitor, has constituted a key component of therapeutic regimens against the pandemic caused by severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2).
Aim: The present study is a real-life prospective cohort study involving 143 elderly non-hospitalized patients with SARS-CoV-2 (≥65 years of age) who attended the emergency department of the authors' hospital seeking care for COVID-19 symptoms appearing within the prior 7 days.
Materials and Methods: Eligible patients received intravenous remdesivir at a dose of 200 mg on the first day and 100 mg on days 2 and 3. The efficacy endpoints were set as the need for COVID-19-related hospitalization and all-cause mortality in the following 28 days.
Results: A total of 143 patients participated in the study. Of these patients, 118 (82.5%) patients were vaccinated with at least two doses. All patients enrolled completed the 3-day course, with a total of 6 out of 143 patients (4.2%) having a COVID-19-related hospitalization by day 28, and 5 patients (3.5%) succumbing to the disease within the study period. In the univariate Cox regression analysis, the neutrophil-to-lymphocyte ratio and haematological malignancy were identified as predictors of progression to severe disease, and albumin levels, the C-reactive protein-to-albumin ratio (CAR) and haematological malignancy were identified as predictors of 28-day mortality.
Conclusions: Among the elderly outpatients, a 3-day course of intravenous remdesivir was associated with favourable outcomes.

Keywords: *COVID-19, remdesivir, elderly*

[Abstract:0402]

MIGRATORY PULMONARY INFILTRATES IN A PATIENT WITH NON-HODGKIN LYMPHOMA, B-CELL DEPLETED, AS A MANIFESTATION OF POST-COVID-19 SYNDROME

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Introduction: The post-COVID-19 syndrome refers to complications from the disease COVID-19 beyond 3 months, mainly from the respiratory, cardiovascular, and nervous systems. In particular, immunocompromised patients may have persistent or recurrent manifestations after the initial illness.
Aim: To present a case with nodular non-Hodgkin lymphoma of the pelvis, treated with Obinutuzumab (anti-CD20), and with prolonged clinical symptoms and persistent imaging findings for approximately 1 year after hospitalization for COVID-19.
Materials and Methods: A 51-year-old female patient with nodular non-Hodgkin lymphoma of the pelvis, treated with Obinutuzumab (anti-CD20) and bendamustine, visited the post-COVID-19 clinic due to repeated episodes of fever, positive PCR detection for SARS-CoV-2, and infiltrates on chest computed tomography (CT) after hospitalization for COVID-19. The imaging findings from all chest CT scans performed during these episodes were compared with each other and always in the same radiology centre over a period of approximately 1 year. Other lymphoma restaging evaluation with PET CT, pelvic, brain, and upper-abdominal MRI and BMB were also performed.
Results: From the comparison of the chest CT scans, we found migratory ground-glass pulmonary infiltrates with a ''crazy paving'' pattern alternately in both lungs, with spontaneous resolution, in temporal correlation always with the recurrence of symptoms (Figure 1). The rest of the lymphoma re-staging review showed no recurrence.
Conclusions: Patients under B-cell depletion therapy present an increased risk of persistent or recurrent disease of COVID-19 with diverse and sometimes atypical pulmonary imaging findings, while migratory infiltrates with spontaneous resolution have rarely been reported in the literature.

Keywords: *post-COVID-19, B-cell depletion, pulmonary infiltrates*

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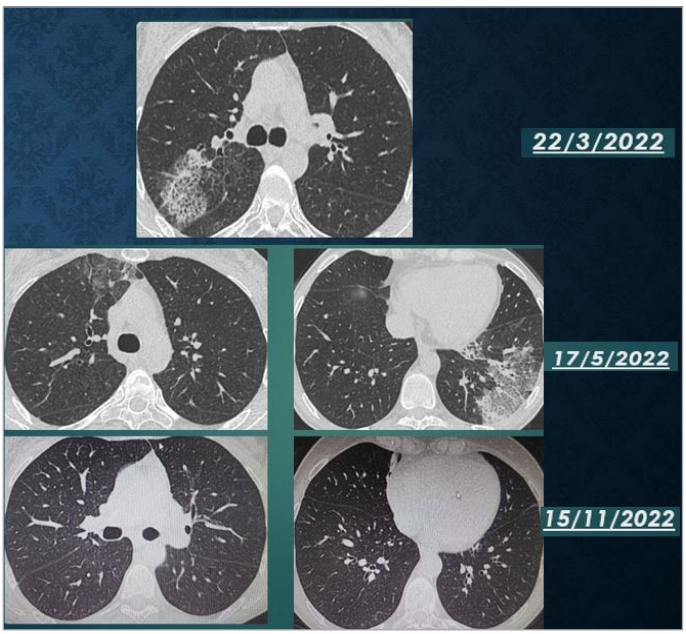

Figure 1.

[Abstract:0403]

PREDICTORS OF COVID-19-ASSOCIATED MORTALITY AMONG HOSPITALIZED ELDERLY PATIENTS WITH DEMENTIA

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Introduction: The mortality of elderly patients with dementia hospitalized with coronavirus disease 2019 (COVID-19)-associated pneumonia is high. Data on the outcomes of these patients in all phases of the pandemic are limited.

Aim: The aim of the present study was to examine the in-hospital and 90-day mortality rates of elderly patients with dementia hospitalized due to COVID-19-associated pneumonia during all phases of the pandemic.

Materials and Methods: During the study period, 105 elderly patients (≥65 years old) with dementia of various aetiologies were hospitalized due to COVID-19-associated pneumonia. The patient characteristics and in-hospital outcomes within 90 days of admission were recorded.

Results: The mean age of the patients was 84.03±7.61 years and 60 (57.1%) patients were females. A total of 52 (49.5%) patients were hospitalized during the omicron variant period, 27 (25.7%) were fully vaccinated (three doses) and 38 (36.2%) patients succumbed during their hospitalization. In total, 52 (49.5%) patients succumbed within the first 90 days of admission. The omicron variant and the absence of full vaccination were associated with a higher in-hospital mortality. In the multivariate regression analysis, only the absence of complete vaccination was an independent predictor of mortality. Age and the lack of complete vaccination were associated with 90-day mortality; in addition, by multivariate regression analysis, age and the absence of full vaccination exhibited an independent association with the 90-day mortality rate.

Conclusions: The in-hospital and 90-day mortality rates of elderly patients with dementia and COVID-19-associated pneumonia is high.

Keywords: *COVID-19, dementia, mortality*

[Abstract:0465]

INCIDENTS OF PULMONARY HYPERTENSION IN POST-COVID PATIENTS

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Introduction: Pulmonary hypertension (PH) is the most common complication among hospitalized COVID-19 patients and is associated with increased mortality.

Aim: The aim of the study was to identify the correlation between COVID-19 and PE and assess the severity of PE and its consequent clinical outcomes in post-COVID-19 patients.

Materials and Methods: During the period of 2021–2022, 138 patients (women—64, men—74, average age 55±10) were examined in the therapy department. Transthoracic echocardiography and thorax CT were performed. We compared echo data during the acute period and three months after discharge. Patients were divided into two groups: group I: healthy individuals (N38). group II: patients with known diseases (IIa-LVF, N50; IIb-COPD, N28; IIc-PE, N20).

Results: Regardless of the severity of pneumonia, the prevalence of PH (82%) was high, and that significantly correlated with the initial levels of the TCT score. The incidence of PH in group II was higher than in group I (98 versus 15); however, the frequency of PE was the same in the subgroups. In post-COVID cases, the obtained results were slightly different: the incidence of PE in group I was raised to 48%, while in the other subgroups, a tendency towards a decrease in cases was revealed.

Conclusions: Based on the results obtained, PH is a common complication of COVID-19 infection encountered after recovery. PH can occur as a result of lung parenchymal injury and disturbed pulmonary circulation. The incidence of PE in post-COVID patients with COVID-19 pneumonia is more than 40%.

Keywords: *pulmonary hypertension, post COVID-19, incidence*

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[Abstract:0467]

COMPARISON OF IMMUNE PROFILE AND DETERMINATION OF GENETIC SUSCEPTIBILITY IN MILD-MODERATE AND SEVERE ADULT COVID-19 CASES: CROSS-SECTIONAL ANALYSIS

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Aim: Aim is immunophenotyping and to determine whether there is a genetic cause that will cause severe COVID-19 patients hospitalized as a result of infection with Wuhan type SARS-CoV-2 virus.

Methods: Seventy-eight cases who had microbiologically confirmed COVID-19 diagnosis and hospitalized in Hacettepe University Faculty of Medicine Adult Hospitals Internal Medicine wards and intensive care units were included. Forty-two had severe, 36 had moderate/mild illness. Blood samples were taken on the first day of hospitalization for lymphocyte subgroups and cytokine levels and whole exome analyzes. And on the fourth days blood samples were taken for cytokine levels.

Results: The mean age of the patients was 51±18 years and 34/78 (43.5%) were female. The average hospital stay was 12 (1-127) days and 8 (10.3%) of the patients died. Lymphocyte subgroups and pro-inflammatory cytokine levels of patients with severe disease and mild/moderate disease and the variations detected in WES analyses are given in Table 1. The analysis for predicting the clinical course of patients according to the levels of certain cytokines is shown graphically in Figure 1.

Conclusions: It appears that high IL1, IL1RA, IL2R, IL6, IL8, MCP1, IP10, MIG and low RANTES levels during hospitalization are associated with severe COVID-19. Genetic variations that predispose to severe COVID-19 described in the literature were not detected in our mild/moderate and severe COVID-19 patients. Further functional studies are planned to determine whether genetic variations that may be related to the immune mechanisms we detected in patients are important in pathogenesis.

Keywords: *COVID-19, proinflammatory cytokines, whole exom sequencing*

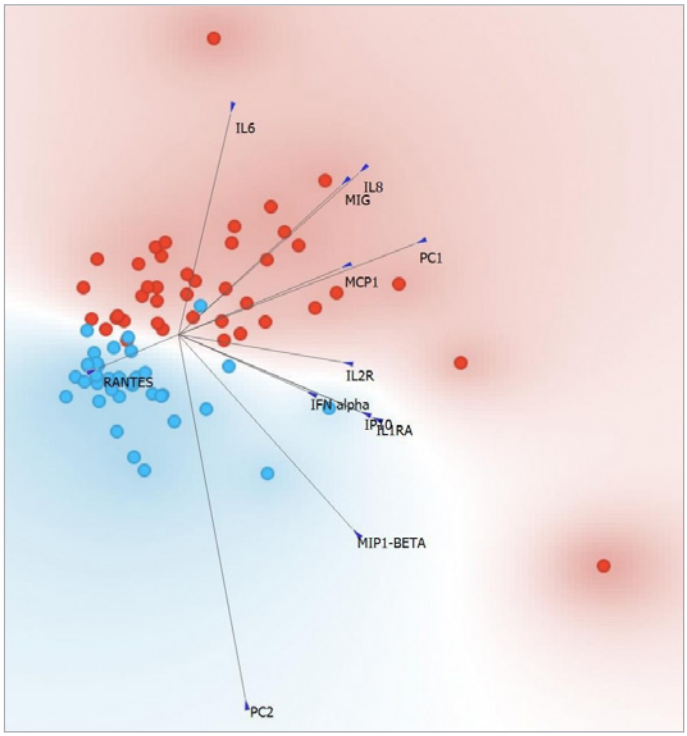

Figure 1. *Principle Component Analysis.*
Blue dots: mild/moderate cases red dots: severe cases.

	Severe COVID-19 cases (n:42)	Mild-Moderate COVID-19 cases (n:36)	p value
Age, year (mean ± SD)	63±13.3	37.8±14.1	<0.001
Kadin	14 (33.3%)	20 (55.6%)	0.067
Absolte Lymphocyte count /micL	895±375	1345±557	<0.001
CD3+ Lymphocyte count µ/mL	607±318	1031±410	0.005
CD4+ T Lymphocyte count µ/mL	353±216	586±238	0.013
CD19+ Lymphocyte count µ/mL	81±48	143±116	0.019
CD16+56+ count µ/mL	111±102	154±69	0.013
IgA mg/dl	210.5±120	229±94	0.965
IgG mg/dl	1080±381	1286±313	0.039
IgM mg/dl	104±61	150±81	0.085
IFNα (median, IQR)	2.385 (4.228)	1.243 (2.1)	0.08
IL-1β	0.024 (0.066)	0.0075 (0.0142)	0.07
IL-1RA	5.405 (9.41)	0.515 (5.56)	0.003
IL-2	0.015 (0.0925)	0.04 (0.06)	0.336
IL-2R	3.635 (14.385)	0.85 (2.175)	<0.001
IL-6	1.085 (3.79)	0.135 (0.465)	<0.001
IL-8	4.42 (8.31)	0.05 (1)	<0.001
TNFα	0.929 (2.708)	0.77917 (0.683)	0.2
IL-12p40	6.79 (35.322)	10.96 (13.825)	0.73
MCP-1	12.83 (21.032)	7.385 (7.4825)	0.001
MIP1β	3.57 (3.965)	2.26 (3.1925)	0.205
MIG	68.29 (117.90)	6.225 (7.467)	<0.001
RANTES	122.11 (57.362)	148.34 (105.577)	0.026
IP10	0.875 (1.84)	0.23 (0.652)	0.001
Eotaxin	5.275 (5.2925)	5.1 (5.155)	0.64
GMCSF	0.175 (0.24)	0.165 (0.1175)	0.5
Length of stay (days)	30 26	7.5 5.6	<0.001
Mortality	8 (19%)	0	0.006
Detected variations in whole exome analysis	TLR1 TLR3 NOD2 CSF2RB CASQ1 MSH2 PRSS1 JAK2 XIRP2 CARD11 OTULIN L CFB TLR6 (2 patients) FCGR2A (6 patients) IFNW1 C4B GP1BA VWF TNFRSF13B INF2 DCLRE1C PRF1 IFNAR2 TNFAIP3 MEFV (12 patients)	TNFRSF13B PIK3CD NOTCH1 (2 patients) FAM104B IRF3 (2 hasta) IFNW1 PRKD1 TLR1 TLR2 NOD2 (2 patients) COPA GP1BA CFB GFI1 OTULINL MUC4 MSH6 SOS1 FCGR2A (2 patients) SARM1 GATA2 JAK1 (2 patients) IKZF1 MEFV (7 patients)	NA

Table 1. *Lymphocyte subgroups, immunoglobulin levels and whole exome analysis results of patients monitored with a diagnosis of COVID-19.*

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[Abstract:0480]

TELECOVID: EXPERIENCE IN TELEMONITORING IN PATIENTS WITH COVID-19 IN A HEALTHCARE DISTRICT

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Objective: To evaluate telemedicine with telemonitoring in patients with COVID-19 infection, with low risk of unfavourable outcome.

Methods: Retrospective observational study of patients with COVID-19 infection with low risk of unfavourable outcome.

Telephone follow-up between January 2021 and May 2022. Two groups of patients were included: - Criterion 1: patients with mild pneumonia (PSI score I-II), over 60 years old, with type A comorbidity (HTN and DM) and without risk factors for poor outcome. - Criterion 2: patients without pneumonia, with type B comorbidity (cardiovascular disease, COPD, cancer, immunosuppression) stable (absence of admission due to decompensation in the last year) and without risk factors for poor outcome (SOFA score > 4, D-dimer >1000 ng/L, lymphopenia <1000 x 10^9/L, C-reactive protein >100 mg/L, Ferritin >300 mcg/L and LDH >250 U/L).Follow-up was proactive, from the day after discharge from emergency and inclusion in TeleCOVID program.

Results: 400 patients (60% men) were included, mean age of 53 years. The average follow-up time was 4.5 days. 238 (59.5%) met inclusion criterion 1 and 162 (40.5%) met criterion 2. During the telephone follow-up, 90 patients (23.2%) were referred to emergency, 14 (3.5%) required observation assistance and 19 (4.7%) required hospital admission. There were no deaths (0%). Hospital length of stay for COVID-19 patients is 8.4 days. With TeleCOVID program, 159.6 days of stay were generated vs. 3,360 days that would have been generated if the 400 patients had been admitted. This model reduced possible exposures and spread of the disease providing the patient a safe environment.

Keywords: *COVID-19, telemedicine, telemonitoring*

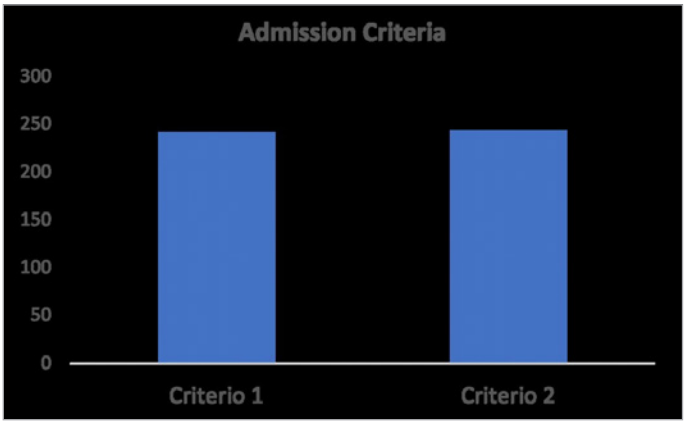

Figure 1. *Admission criteria.*

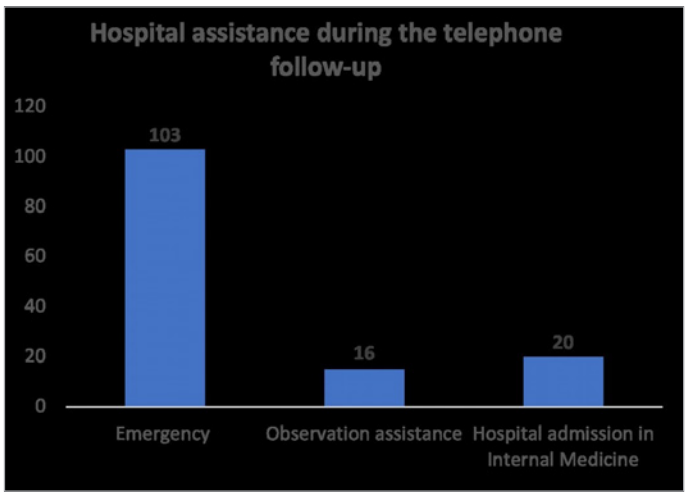

Figure 2. *Hospital admission during the telephone follow-up.*

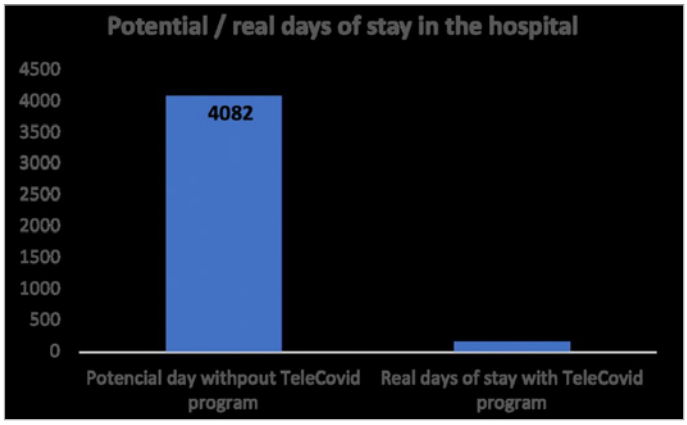

Figure 3. *Potental vs real days of stay.*

[Abstract:0502]

USING AN INTERLEUKIN-1 INHIBITOR IN MANAGING COVID-19 PNEUMONIA AMONG THE ELDERLY

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Objectives: The aim of our study is to describe the experience with the use of anakinra in elderly patients admitted with COVID-19 pneumonia.

Materials and Methods: Retrospective observational cohort study in which we included patients admitted for COVID-19 pneumonia in a second level hospital who received treatment with anakinra between March 2020 and January 2022.

We collected clinical and analytical data from the digital medical record, as well as 30-day outcome. We established three groups according to the day of admission on which treatment was started:

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early (1st-2nd day), intermediate (3rd-5th day) and late (after the 5th day).

Results: We obtained 71 patients, with a mean age of 85.6 years and a predominance of men (68%). Thirty-five per cent met the criteria for multi-pathology. The most frequent comorbidities were hypertension (82%), diabetes (48%) and obesity (42%). Only 11% were vaccinated against COVID-19. 97% were treated with corticosteroids, only 6% with remdesivir. The patients were severe and inflamed, 97% with a multilobar infiltrate on chest X-ray.

At 60 days, 31 patients had been discharged from hospital (only 1 of them with ICU stay), while 40 died during admission, a mortality of 56%. Patients who received anakinra earlier (1st-2nd day of admission) fared better than those treated later (3rd-5th day of admission and > 5th day), with 30-day cure rates of 60%, 28% and 31% respectively.

Discussion: Anakinra is a safe and effective drug as a treatment for COVID-19 pneumonia. In our study, elderly patients who received anakinra earlier had lower mortality.

Keywords: *anakinra, COVID-19, elderly*

[Abstract:0519]

LOW PREVALENCE OF OSTEONECROSIS AFTER STEROIDS-RELATED TREATMENT OF COVID-19: A CROSS SECTIONAL STUDY

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Purpose: During the COVID-19 pandemic the use of steroids, at various dosages and durations, for the treatment of hospitalized patients was a common and effective strategy. However, steroid administration is a known risk factor for osteonecrosis. The aim of this study was to examine the prevalence of skeleton osteonecrosis in COVID-19 patients treated with or without steroids.

Methods: Eighty (48 males-mean age 53.6 ± 11.3 years) randomly selected hospitalized COVID-19 patients were analysed; of them 40 patients were managed with a published protocol including steroids and 40 did not receive any steroids. Demographics and laboratory measurements including white blood cells count, C-reactive protein and ferritin were retrieved from the medical records. All patients were clinically examined and underwent magnetic resonance imaging of the hips, shoulders, and knees at a median time of 358 days after the onset of steroid treatment.

Findings: Three out of 40 patients (7.5%) treated with steroids were diagnosed with femoral head osteonecrosis at a median time of 265 days after initiation of steroid treatment. None of the patients in the non-steroid-treated group developed osteonecrosis (p=0.07). Patients with osteonecrosis had higher ferritin levels, received higher doses of corticosteroids and had longer hospitalization compared with patients that were treated with steroids and did not have osteonecrosis.

Conclusions: COVID-19-related therapy with steroids resulted in low prevalence of osteonecrosis. However, high clinical suspicion for early diagnosis is warranted, given the fact that a great proportion of hospitalized patients received steroids during the pandemic.

Keywords: *COVID-19, corticosteroids, femur head necrosis*

[Abstract:0534]

PLITIDEPSIN IN THE TREATMENT OF ADULT PATIENTS WITH COVID-19 REQUIRING OXYGEN THERAPY. RESULTS FROM A PHASE III CLINICAL TRIAL (NEPTUNO)

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Plitidepsin is an anti-SARS-CoV-2 marine peptide that targets EF1A. Previous study (NCT04382066) showed feasibility of plitidepsin in COVID-19 patients.

NEPTUNO was a controlled phase 3 trial to determine the efficacy and safety of plitidepsin in adults with COVID-19 (NCT04784559). Eligibility included: documented SARS-CoV-2 infection; ≤14-days (d) from symptoms-onset; ≤3d of corticoids; hospitalization; oxygen therapy (O2T); adequate organ function. Non-eligibility included: severe dependency; chronic-O2T; respiratory failure; severe COVID-19; antiviral, immunomodulatory, or immunosuppressive treatment. Randomization was stratified by region, age adjusted Charlson and Barthel scores. Treatment: dexamethasone ≥3d plus plitidepsin (1.5 or 2.5mg/d, d1-3) or standard of care (SOC), followed by dexamethasone as clinically indicated (Fig1). Primary-endpoint: time to sustained-withdrawal of O2T (TSWO). A sample size of 609 patients and 530 events were needed to detect a target hazard ratio (HR) of 1.4 [8d (SOC) vs 5.7d (plitidepsin)].

NEPTUNO prematurely ended on 31-Jan-23, with 205 randomized patients, due to significant accrual drop. Table 1 shows pts-characteristics. Median-TSWO was 5 vs 7d for both plitidepsin arms (Fig2). For plitidepsin-1.5 mg vs SOC, HR=1.37 (p=0.08), and for plitidepsin-2.5 mg vs SOC, HR=1.06 (p=0.78). Bootstrap simulation (10000 samples, 609 patients) estimated a HR=1.36 for plitidepsin-1.5mg vs SOC (adjusted-p=0.007). Baseline IL-10 was a potent risk factor. Cox-regression interaction-model for IL-10, plitidepsin-1.5 mg and 2.5 mg vs SOC estimated HR=1.78 (p=0.02) and HR=1.32 (p=0.27), respectively. Table 2 represents treatment-related adverse events (severity ≥grade3 (NCI-CTCAE) or in at least ≥3% pts).

Data support a positive benefit-risk ratio for plitidepsin in adult patients with COVID-19 requiring O2T. A randomized trial in immunocompromised COVID-19 patients is ongoing (NCT05705167).

Keywords: *COVID-19, antiviral, plitidepsin, controlled clinical trial, SARS-CoV-2*

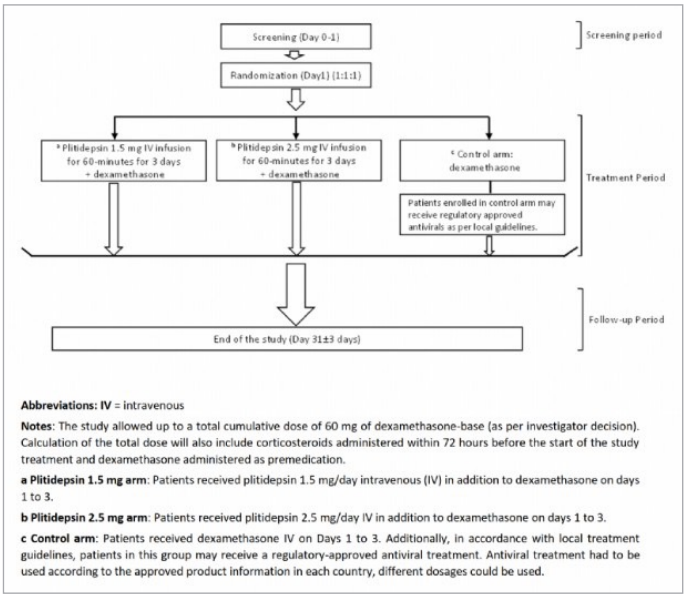
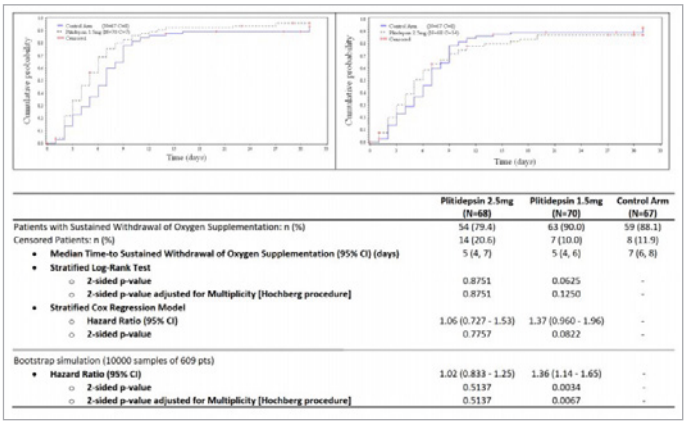


Figure 1. NEPTUNO trial design.



	Plitidepsin 2.5mg (N=68)	Plitidepsin 1.5mg (N=70)	Control Arm (N=67)
Patients with Sustained Withdrawal of Oxygen Supplementation: n (%)	54 (79.4)	63 (90.0)	59 (88.1)
Censored Patients: n (%)	14 (20.6)	7 (10.0)	8 (11.9)
• Median Time-to Sustained Withdrawal of Oxygen Supplementation (95% CI) (days)	5 (4, 7)	5 (4, 6)	7 (6, 8)
• Stratified Log-Rank Test			
○ 2-sided p-value	0.8751	0.0625	-
○ 2-sided p-value adjusted for Multiplicity [Hochberg procedure]	0.8751	0.1250	-
• Stratified Cox Regression Model			
○ Hazard Ratio (95% CI)	1.06 (0.727 - 1.53)	1.37 (0.960 - 1.96)	-
○ 2-sided p-value	0.7757	0.0822	-
Bootstrap simulation (10000 samples of 609 pts)			
• Hazard Ratio (95% CI)	1.02 (0.833 - 1.25)	1.36 (1.14 - 1.65)	-
○ 2-sided p-value	0.5137	0.0034	-
○ 2-sided p-value adjusted for Multiplicity [Hochberg procedure]	0.5137	0.0067	-

Figure 2. NEPTUNO primary endpoint.

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	Plitidepsin 2.5 mg (N=68) n (%)	Plitidepsin 1.5 mg (N=70) n (%)	Control Arm (N=67) n (%)	Total (N=205) n (%)
Stratification Factors:				
• Charlson comorbidity index (age-adjusted)				
○ 0-1	34 (50.0%)	36 (51.4%)	33 (49.3%)	103 (50.2%)
○ ≥ 2	34 (50.0%)	34 (48.6%)	34 (50.7%)	102 (49.8%)
• Pre-baseline Barthel				
○ ≥ 90	68 (100.0%)	70 (100.0%)	67 (100.0%)	205 (100.0%)
• Geographical Region				
○ Europe	64 (94.1%)	65 (92.9%)	64 (95.5%)	193 (94.1%)
○ Rest of the World	4 (5.9%)	5 (7.1%)	3 (4.5%)	12 (5.9%)
Age (years)				
• Median [Q1; Q3]	60.5 [51.5; 68.5]	60.0 [47.0; 69.0]	61.0 [46.0; 72.0]	60.0 [48.0; 69.0]
• >=65	23 (33.8%)	27 (38.6%)	29 (43.3%)	79 (38.5%)
Gender				
• Male	43 (63.2%)	44 (62.9%)	42 (62.7%)	129 (62.9%)
• Female	25 (36.8%)	26 (37.1%)	25 (37.3%)	76 (37.1%)
Race				
• White	63 (92.6%)	62 (88.6%)	64 (95.5%)	189 (92.2%)
• Asian	1 (1.5%)	3 (4.3%)	0	4 (2.0%)
• Other	4 (5.9%)	5 (7.1%)	3 (4.5%)	12 (5.9%)
Body Mass Index (kg/m²) -N pts	66	67	65	198
• Median [Q1; Q3]	28.6 [26.4; 32.3]	28.4 [25.7; 32.0]	29.7 [26.3; 32.7]	28.7 [26.3; 32.3]
• >=30	25 (37.9%)	22 (32.8%)	29 (44.6%)	76 (38.4%)
Time since onset symptoms - N	63	67	65	195
• ≤5 days	35 (55.6%)	34 (50.7%)	31 (47.7%)	100 (51.3%)
• 6-10 days	28 (44.4%)	33 (49.3%)	34 (52.3%)	95 (48.7%)
Non-vaccinated pts	27 (39.7%)	31 (44.3%)	31 (46.3%)	89 (43.4%)
PaO_2/FiO_2 - Evaluable N pts	49	50	51	150
• Median	327	325.5	326	327
• Q1; Q3	321; 372	314; 346	319; 346	321; 352
Baseline lung infiltrates [N (%)]	49 (72.1)	44 (62.9)	43 (64.2)	136 (66.3)
SARS-CoV-2 viral load - N pts	63	67	65	195
• <4 log10 copies/mL	10 (15.9%)	14 (20.9%)	16 (24.6%)	40 (20.5%)
• 4-7 log10 copies/mL	30 (47.6%)	30 (44.8%)	27 (41.5%)	87 (44.6%)
• >7 log10 copies/mL	23 (36.5%)	23 (34.3%)	22 (33.8%)	68 (34.9%)

Table 1. NEPTUNO patients characteristics.

Treatment-related Adverse Events (Any Grade in ≥3% of the patients or at least one Grade≥3)		Plitidepsin 2.5 mg (N=63)				Plitidepsin 1.5 mg (N=67)				Control Arm (N=65)			
		All		Grade>=3		All		Grade>=3		All		Grade>=3	
		N	%	N	%	N	%	N	%	N	%	N	%
Gastrointestinal disorders	Constipation	3	4.8	.	.	.	.	.	.	1	1.5	.	.
	Diarrhea	4	6.3	.	.	2	3.0	.	.	.	.	.	.
	Nausea	5	7.9	.	.	6	9.0	.	.	.	.	.	.
Infections and infestations	Cellulitis	.	.	.	.	1	1.5	1	1.5	.	.	.	.
Investigations	Adjusted calcium decreased	1	1.6	1	1.6	2	3.0	1	1.5	.	.	.	.
	Alanine aminotransferase increased	2	3.2	.	.	3	4.5	.	.	3	4.6	.	.
	Aspartate aminotransferase increased	3	4.8	.	.	1	1.5	.	.	4	6.2	.	.
	Blood creatine phosphokinase increased	.	.	.	.	.	.	.	.	2	3.1	.	.
	Blood lactate dehydrogenase increased	.	.	.	.	.	.	.	.	3	4.6	.	.
	Gamma-glutamyltransferase increased	3	4.8	.	.	3	4.5	.	.	1	1.5	.	.
	Lipase increased	1	1.6	1	1.6	1	1.5	.	.	.	.	.	.
	Serum ferritin abnormal	2	3.2	.	.	2	3.0	.	.	.	.	.	.
Metabolism and nutrition disorders	Hyperglycemia	15	23.8	5	7.0	14	20.9	4	6.0	8	12.3	3	4.6
Vascular disorders	Hypertension	.	.	.	.	2	3.0	.	.	2	3.1	.	.
	Phlebitis	3	4.8	.	.	.	.	.	.	1	1.5	.	.

Table 2. NEPTUNO safety.

[Abstract:0548]

A CASE REPORT OF LIPOSOMAL AMPHOTERICIN B THE TREATMENT OF COVID-19-ASSOCIATED PULMONARY ASPERGILLOSIS

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Case Presentation and Diagnostic Pathways: A 76-year-old female patient was admitted to the hospital with complaints of recurrent fever and the nasopharyngeal swab performed on the patient's SARS-CoV-2 RT-PCR test resulted as positive. The patient has a medical history of hypertension and chronic kidney disease due to focal segmental glomerulosclerosis and has been using low-dose 8 mg metilprednisolon daily in the past 2 years. He applied to the outpatient clinic with complaints of fever, diarrhoea and dyspnoea 1 week after the end of the isolation period. Thorax computed tomography (CT) showed fungal pneumonia. In fiber optic bronchoscopy (FOB), bronchoalveolar lavage resulted positive for galactomannan antigen of 4.33 S/CO. With the preliminary diagnosis of COVID-19 associated pulmonary aspergillosis (CAPA), first-line treatment voriconazole was started. Control thorax CT showed progression in all lobes and a newly developed crazy paving pattern. Therefore, considering azole resistance, voriconazole treatment was replaced with liposomal amphotericin B (LAmB) (dose of 5 mg/kg). There was a decrease in inflammation parameters and dyspnoea under amphotericin b treatment. The patient's treatment was planned to be completed in 2 months and he was discharged.

Clinical Hypothesis: COVID-19 associated pulmonary aspergillosis.

Discussion and Learning Points: Patients with COVID-19 should be aware of opportunistic infections that may complicate the course of the disease. Clinical suspicion is required for the diagnosis of CAPA. CAPA is an important complication that is life-threatening and causes high mortality in COVID-19 patients. Therefore, early diagnosis and initiation of effective antifungal treatment will reduce the mortality rate.

Keywords: COVID-19 associated pulmonary aspergillosis (CAPA), fungal infections, amphotericin-B

[Abstract:0589]

INFLUENCE OF CYTOKINE LEVELS ON THE EFFECT OF CORTICOIDS ON MORTALITY OR ICU ADMISSION IN COVID-19 PNEUMONIA

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Retrospective observational cohort study on the influence of plasma levels of cytokines on the effect of methylprednisolone or dexamethasone in IV pulses for 3 days with a decrease for 5 days, on mortality or admission to the ICU, in 287 patients admitted to the Príncipe de Asturias University Hospital from March 24 to May 8 and followed until August 31, 2020, with SARS-CoV-2 pneumonia and baseline SpO_2 <94%, in which cytokines have been determined in the first days of admission using the Milliplex MAP kit and the MAGpix Germany). Multivariate analysis was

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performed with binary logistic regression with evaluation of the interaction between each cytokine and corticosteroid treatment. To analyse the influence of plasma levels of cytokines IL6 (Interleukin 6), IL10, IL18, IFNa, IFNg, TNFa, TGFa, FGF2, IL1RA, GCSF, sIL1RII, sIL2Ra, IL1a, IL1b in the effect of systemic corticosteroids on mortality or ICU admission in COVID-19 pneumonia.Median age is 64 years, 187 are male, median Charlson comorbidity index 1. 43.6% were treated with tocilizumab, 13.6% were admitted to the ICU, 12.9% died and 21.6% died or were admitted to the ICU. 43.9% received corticosteroids. 35.7% of those who received corticosteroids died or were admitted to the ICU and 7.6% of those who did not receive them. The multivariate analysis with the confounding variables Initial SpO_2FiO_2, clinical worsening and respiratory support, offers a null adjusted effect. The interaction is significant with TNFa, IL18, GCSF and sIL1RII, which means that the effect of corticosteroids depends on the values of these cytokines.

Keywords: *COVID-19, corticoids, pneumoniae, cytokines*

[Abstract:0780]

INCIDENCE OF NEW CARDIOVASCULAR DISEASE WITHIN 12 MONTHS AFTER COVID-19. DATA FROM THE «ACTIV» INTERNATIONAL REGISTRY

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Purpose: To assess the incidence of cardiovascular disease (CVD) in the first 12 months after recovery from SARS-CoV-2 compared with the annual incidence per 100 000 people in the general population.

Methods: The "ACTIV" international registry (NCT04492384) was established to assess the course of COVID-19 in the Eurasian region (7 countries - data from 9364 patients). The course of the post-COVID period was analysed based on the results of telephone interviews of 3099 patients at 3, 2493 at 6, and 1782 at 12 months after recovery. The incidence of «Newly diagnosed diseases» (NDD) was compared with the similar pre-pandemic data from the official national statistics of the Russia for 2019 and the expected incidence determined in the epidemiological study "EPOCHA".

Findings: Within the first 3 months, 8.17% of patients reported the occurrence of NDD, in 4-6 months - 6.30% and in 7-12 months - 3.54% of patients. Among these, CVD accounted for a significant proportion (Table 1). A comparative analysis of the age-standardized incidence of newly diagnosed hypertension, type 2 diabetes mellitus, and ischemic heart disease within 12 months after discharge against the official national statistics and the expected incidence revealed a significantly higher incidence in post-COVID-19 patients (Table 2).

Conclusions: According to the "ACTIV" registry, COVID-19 is a significant risk factor for the occurrence of CVD during the first 12 months after recovery. At the same time, the first 3 months after discharge from infectious diseases hospital are associated with the highest risk of a new cardiovascular condition.

Keywords: *post-COVID syndrome, COVID-19, ACTIV registry*

Disease	1-3 months (n=292)	4-6 months (n=189)	7-12 months (n=73)
Hypertension, n (%)	73 (25.00)	51 (27.00)	16 (21.90)
Type 2 diabetes mellitus, n (%)	36 (12.30)	8 (4.23)	5 (6.85)
Ischemic heart disease, n (%)	18 (6.16)	24 (12.70)	4 (5.48)
Atrial fibrillation (AF), n (%)	12 (4.11)	5 (2.65)	3 (4.11)
Stroke, n (%)	9 (3.08)	7 (3.70)	6 (8.22)
Heart arrhythmias (except for AF), n (%)	6 (2.05)	3 (1.59)	2 (2.74)
Deep vein thrombosis/Pulmonary embolism, n (%)	6 (2.05)	4 (2.12)	2 (2.74)
Myocardial infarction, n (%)	4 (1.37)	4 (2.12)	0 (0)
Myocarditis, n (%)	3 (1.03)	0 (0)	0 (0)
Heart failure, n (%)	1 (0.34)	0 (0)	0 (0)
Chronic kidney disease, n (%)	3 (1.03)	1 (0.53)	0 (0)

Table 1. *Breakdown of newly diagnosed diseases in post-COVID period.*

Disease	Non-age-standardized incidence in the ACTIV registry	Age-standardized incidence in the ACTIV registry	Official national statistics (2019)	Expected incidence according to the EPOCHA study (2007, 2017)
Hypertension	12 912.9	8 292.8	1 176.7	1 871.7
Type 2 diabetes mellitus	2 711.4	2 053.6	279.7	232.0
Ischemic heart disease	2 641.5	1 695.7	740.6	581.5

Table 2. *Comparative analysis of the incidence (per 100,000 population) in various epidemiological studies.*

[Abstract:0788]

SEVERE COVID-19 AND INSULIN RESISTANCE IS ASSOCIATED WITH GLYCOSE DYSMETABOLISM IN NON-OBESE/NON-DIABETIC COVID-19 PATIENTS. RESULTS FROM THE UNIVERSITY HOSPITAL OF IOANNINA COVID-19 REGISTRY, NCT05534074

Angelos Liontos[1], Dimitrios Biros[1], Rafail Matzaras[1], Ilias Tsiakas[1], Lazaros Athanasiou[1], Valentini Samanidou[1], Diamantina Lymperatou[1], Revekka Konstantopoulou[1], Athina Zarachi[3], Ioannis Vagias[1], Christiana Pappa[2], Maria Nasiou[2], Nikolaos Gavriel Kolios[2], Eleni Pargana[2], Georgia Vedoura[2], Haralampos Milionis[1], Eirini Christaki[1]

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Introduction: The increased morbidity and mortality rates among COVID-19 patients with diabetes mellitus (DM) and obesity has

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been documented. This study aimed to examine the association between markers of inflammation, disease severity, insulin resistance, hyperglycaemia, and outcomes in COVID-19 patients, with no prior history of DM and obesity.

Methods: Data from the University Hospital of Ioannina COVID-19 Registry were obtained between March 2020 and December 2022. The data included information on epidemiological, clinical characteristics, and laboratory results of hospitalized patients. Inflammatory and severity markers were assessed with WBC: blood cell count, NLR: neutrophil to lymphocyte ratio, CRP: C-reactive protein, PCT: procalcitonin, IL-6: interleukin-6, PFR: PO_2/FiO_2 ratio and CT, BoD: CT burden of disease on computed tomography. Insulin resistance was assessed with TRG/HDL-C: triglycerides to HDL-cholesterol ratio and TyG: triglyceride-glucose index.

Results: A total of 631 patients were included in this study. Characteristics of the study cohort are summarized in Table 1. Results of multivariate binary logistic regression of inflammatory markers, disease severity markers and insulin resistance indices with the incidence of hyperglycaemia on admission and during hospitalization for the study cohort are summarized in Table 2.

Conclusions: In non-diabetic and non-obese patients with severe disease, several factors including NLR, CRP, IL-6, PFR, insulin resistance indices (TyG index and TRG/HDL-C ratio), were associated with increased risk of hyperglycaemia on admission and during hospitalization.

Keywords: *COVID-19, dysglycaemia, Insulin resistance, hyperglycemia*

Cohort	Patients without diabetes or obesity	
Characteristics	Frequency (n)	Mean/SD
Sex (male/female)	369/262	
Age (years)		63.85/18.34
BMI (kg/m²)		25.64/2.79
Plasma glucose (mg/dL)		119.73/35.08
WBC count (#/uL)		7244.40/4032.51
NLR		7.41/7.83
CRP (mg/L)		112.02/115.81
PCT (ng/mL)		0.53/2.24
IL-6 (pg/mL)		56.90/174.61
PFR		281.78/123.93
TRG/HDL-C ratio		3.20/2.18
TyG index		8.66/0.55
Hyperglycemia on admission	118	
Hyperglycemia during hospitalization	317	
Comorbidities		
CAD	118	
AH	248	
Dyslipidemia	191	
COPD	45	
Thyroid disease	64	
Autoimmune disease	43	
Cancer	58	
Smoking (active)	88	
COVID-19 vaccination	186	

Table 1. Demographic, somatometric baseline characteristics, comorbidities, inflammatory markers, insulin resistance indices, disease severity markers. Data presented as frequency or mean/standard deviation.

Table 1. *Demographic, somatometric baseline characteristics, comorbidities, inflammatory markers, insulin resistance indices, disease severity markers. Data presented as frequency or mean/ standard deviation.*

Group of patients	Patients without diabetes or obesity			
Glycemic status	Hyperglycemia on admission		Hyperglycemia during hospitalization	
Variables	OR	p-value	OR	p-value
WBC count (#/uL)	1.000	<0.001	1.000	0.018
NLR	1.066	<0.001	1.021	0.075
CRP (mg/L)	1.002	0.004	1.002	0.042
PCT (ng/mL)	1.004	0.934	1.012	0.702
IL-6 (pg/mL)	1.000	0.381	1.000	0.718
PFR	0.997	0.008	1.000	0.595
CT BoD>50%	1.586	0.119	1.316	0.255
NLR>3.1	2.402	0.002	1.369	0.105
CRP>100 mg/L	1.882	0.003	1.441	0.035
PCT>0.5 ng/mL	1.516	0.215	0.997	0.993
IL-6>24 pg/mL	0.583	0.027	0.807	0.283
PFR<200	2.131	0.001	1.352	0.139
TRG/HDL-C ratio	1.007	0.890	1.064	0.200
TyG index	9.408	<0.001	3.612	<0.001

Table 2. Multivariate Binary Logistic Regression results of inflammatory markers, disease severity markers and the incidence of hyperglycemia on admission and during hospitalization in non-obese/non-DM patients

WBC count: White Blood Cell count, NLR: Neutrophil to Lymphocyte Ratio, CRP: C-Reactive Protein, PCT: Procalcitonin, IL-6: Interleukin-6, PFR: PO_2/FiO_2 Ratio, TRG/HDL-C: Triglycerides to HDL-Cholesterol ratio, TyG: Triglyceride-glucose index, CT BoD: CT Burden of Disease, OR: Odds Ratio.

Table 2. *Multivariate Binary Logistic Regression results of inflammatory markers, disease severity markers and the incidence of hyperglycaemia on admission and during hospitalization in non-obese/non-DM patients WBC count: White Blood Cell count, NLR: Neutrophil to Lymphocyte Ratio, CRP: C-Reactive Protein, PCT: Procalcitonin, IL-6: Interleukin-6, PFR: PO_2/FiO_2 Ratio, TRG/HDL-C: Triglycerides to HDL-Cholesterol ratio, TyG: Triglyceride-glucose index, CT BoD: CT Burden of Disease, OR: Odds Ratio.*

[Abstract:0894]

PROLONGED COVID-19 IN AN IMMUNOCOMPROMISED PATIENT: THE ROLE OF REMDESIVIR THERAPY

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The evidence that monoclonal antibody against CD20 rituximab increases the risk of severe COVID-19 is very well established. Several cases have been described of prolonged COVID-19 in this group, with persistent positive PCR and evidence of viral replication, as indicated by low cycle threshold (CT) values, demonstrating reduced viral clearance. There seems to be lower effectiveness of vaccination, reflected in a reduced production of anti-SARS-CoV-2 antibodies. Multiple cases in the literature have shown clinical improvement and even viral clearance after treatment with remdesivir.We present the case of a 78-year-old man who underwent chemotherapy with rituximab until December 2021 for follicular lymphoma. After an extended hospitalization from April to July 2022 for severe SARS-CoV-2 pneumonia, requiring invasive mechanical ventilation, he was undergoing rehabilitation program when he developed fatigue for minimal exertion and fever in August 2022. Chest computed tomography revealed cotton wool-like alveolar infiltrates in 70% of the parenchyma. Assuming hypoxemic healthcare-acquired pneumonia, empirical antibiotic therapy with piperacillin-tazobactam was initiated, suspended on the seventh day due to persistent fever and elevated C-reactive protein. Microbiological samples were collected again, with a positive SARS-CoV-2 PCR with low CT values. Assuming prolonged COVID-19 with

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bacterial superinfection, he restarted piperacillin-tazobactam and initiated remdesivir, completing a 10-day course, with clinical, laboratory, and radiographic improvement.This case reinforces the notion that COVID-19 in immunosuppressed patients treated with rituximab should be approached differently, as the resolution of the infection may be delayed, and there is a possibility of worsening after initial clinical improvement.

Keywords: *COVID-19, remdesivir, rituximab*

[Abstract:0955]

HOW HAS THE COVID-19 PANDEMIC AFFECTED OUR RAPID DIAGNOSIS UNIT?

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Purpose: Rapid Diagnostic Units (RDUs) emerged to expedite the care of potentially serious pathologies on outpatients. We set out to analyse its activity during the COVID-19 pandemic and compare it with the same period of the previous year.

Methods: Observational and descriptive study, we collected patients evaluated in first RDU consultation at our Hospital in Zamora from 3/15/20 to 5/15/20. We analysed: sex, age, reason for consultation, date of first consultation and we established 3 phases according to the epidemiological curve of the pandemic: 1. Beginning of the state of alarm until the peak of admissions, 2. Decrease of the epidemiological curve until de-escalation, 3. Start back to normal. We compare with the same period of 2019.

Findings: 25 patients, 52% men, median age 75 years. In the same period of the previous year, 189 consultations were attended in the unit, 82 of them first consultations.

Discussion: During the first phases of the pandemic, a significant decrease in activity is evident, especially if we compare with the same period of previous year. This could be related to the decrease in activity in primary care and the population's fear of coming hospital. A recovery is progressively seen with the first phases of de-escalation. The most consulted processes were probable neoplasia.

Conclusions: The COVID-19 pandemic has significantly affected the activity of the RDU. The causes of this decrease are probably the lower activity of primary medicine and the population's fear of contagion. The unit's usual activity could be oversized at other times.

Keywords: *rapid, diagnostic, pandemic*

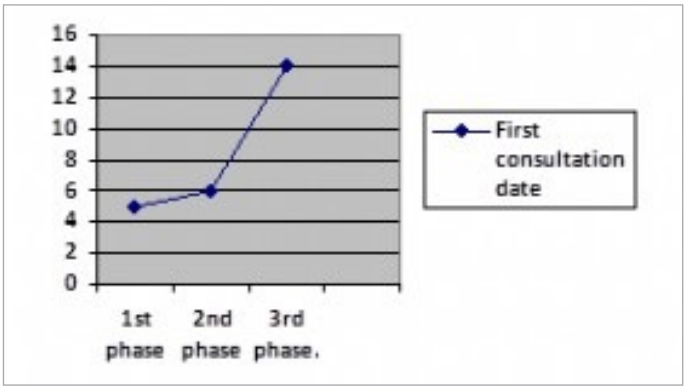

Figure 1. *First consultation date.*
1st phase: 3/15/2020 - 4/2/2020 2nd phase: 4/3/2020 - 5/4/2020 3rd phase: 5/5/2020 - 5/15/2020

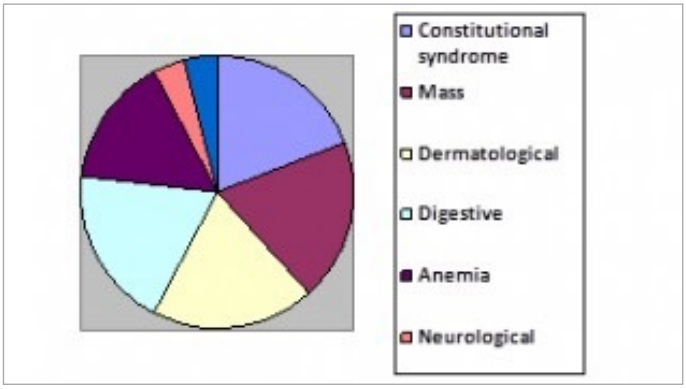

Figure 2. *Reason for consultation.*

[Abstract:0987]

ATYPICAL MANIFESTATIONS OF COVID-19: FEBRILE PURPURA

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Introduction: COVID-19 is a viral infectious disease caused by the coronavirus 2. The most frequent clinical manifestations affect the upper and lower airways. Although the skin involvement remains non-classic, it has been reported in quite a few patients. An inflammatory and immunological origin has been discussed. This was a real diagnostic and therapeutic challenge, hence the interest of our clinical case.

Observation: This is Ms. FH, aged 82, with no notable pathological history, who consulted us for asthenia, fever and diarrhoea for a week. Admission examination showed a patient febrile at 39°C, hemodynamically stable, eupnoeic, with pulsed saturation at 98% on ambient air (AA), cardiopulmonary auscultation was free.

She was calm conscious without sensory-motor deficit. She did not have meningeal syndrome. She had lesions of non-necrotic petechial purpura extending to the upper limbs, face and lower limbs. On biology, she had a biological inflammatory syndrome with a CRP of 260 mg/l, an Hb of 13.2 g/dl, normal platelets, lymphopenia of 750/mm3 with a correct haemostasis assessment.

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Furthermore, she had respiratory alkalosis with a PaO_2 of 82 mmHg and a $PacO_2$ of 29 mmHg at AA. Cerebrospinal fluid analysis was without abnormality. The COVID-19 PCR on nasopharyngeal swab was positive. The diagnosis of COVID-19 was made.

The patient was hospitalized for monitoring, the evolution was favourable with apyrexia on the 5th day of her hospitalization, regression of the skin lesions after a week. She did not have to use oxygen.

Conclusions: Skin manifestations may be the only clinical presentation of COVID-19.

Keywords: *atypical manifestations, COVID-19, febrile purpura*

Figure 1. *Purpura extending to the face.*

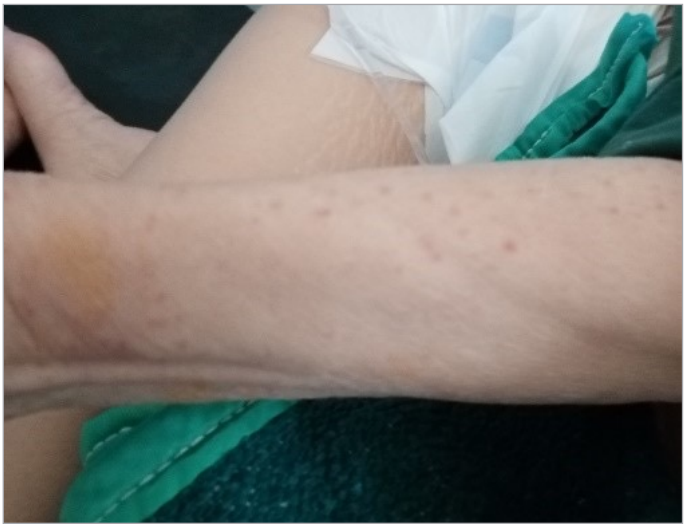

Figure 2. *Purpura extending to the Limbs.*

[Abstract:1147]

ADMISSION HYPONATREMIA AND COVID-19. IMPACT ON DISEASE'S OUTCOMES IN HOSPITALIZED PATIENTS. ANALYSIS AND RESULTS FROM THE UNIVERSITY HOSPITAL OF IOANNINA COVID-19 REGISTRY, NCT05534074

Angelos Liontos[1], Eleni Tsaousi[4], Nikolaos Gavriel Kolios[2], Dimtrios Biros[1], Vasileios Pezoulas[4], Rafail Mantzaras[1], Ilias Tsiakas[1], Lazaros Athanasiou[1], Athina Zarachi[3], Diamantina Lymperatou[1], Christiana Pappa[2], Maria Nasiou[2], Valentini Samanidou[1], Eleni Pargana[2], Georgia Vedoura[2], Ioannis Vagias[1], Dimitrios Fotiadis[4], Haralampos Milionis[1], Eirini Christaki[1]

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Introduction: Hyponatremia is a major medical emergency and increases morbidity and mortality across in hospitalized patients. Aim of this study was to investigate the effect of hyponatremia in patients with COVID-19. We assessed the association of hyponatremia with various markers of disease severity and disease's outcomes.

Methods: Data from the University Hospital of Ioannina COVID-19 Registry were obtained between March 2020 and December 2022 of 1458 patients hospitalized in the Infectious Diseases Unit of the hospital. Variables assessed are shown in Table 1.

Results: When comparing patients with hyponatremia at admission versus patients with normonatraemia at admission, a statistically significant difference was observed in the following quantitative variables: Days of hospitalization (11.01 vs 10.3, p=0.049), creatinine (1.24 mg/dl vs 1.27 mg/dl, p=0.027), lymphocytes abs. No (1080 /μL vs 1274 /μL, p=0.044), neutrophiles to lymphocytes ratio (7.1 vs 6.86, p=0.04), ferritin, max value (524.58 μg/L vs 507.59 μg/L, p=0.008) and CRP (123.73 mg/L vs 107.37 mg/L, p=0.012). Results are summarized in Table 2.

In multivariate binary logistic regression analysis, creatinine levels were associated with increased risk of admission hyponatremia. The latter was also associated with prolonged hospitalization (Table 3).

Conclusions: The occurrence of hyponatremia is intertwined with the pathophysiology of COVID-19 and complicates the hospitalization of patients. The onset of hyponatremia accompanies increased markers of inflammation and predisposes to a more severe course of the disease. Timely diagnosis, accurate assessment and appropriate treatment of this entity are required.

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Keywords: *COVID-19, Hyponatremia, disease severity*

Days of Hospitalization
Creatinine (mg/dL)
Urea/Creatinine ratio
Lympocytes abs.No (/µL)
Neutrophils to Lymphocytes ratio (NLR)
Ferritin (µg/L)
Ferritin, max value (µg/L)
C-reactive protein (CRP) (mg/L)
C-reactive protein max. value (CRP) (mg/L)
Procalcitonin (ng/ml)
Interleukin-6 (IL-6) (IU/ml)
Partial oxygen pressure/Fraction of inspired Oxygen ratio (PFR)
Burden of Disease in Computed Tomography (CTBoD)(%)
LoS>7 days
Intubation
Death
Sodium levels on admission
Sodium levels any day

Table 1. *Variables used in this study.*

	Baseline		
	hyponatremia (N=443)	normonatremia (N=962)	p-value
Days of hospitalization	11.01	10.3	0.049
Creatinine (mg/dL)	1.24	1.27	0.027
Urea/Creatinine ratio	42.19	41.33	0.434
Lymphocytes, abs. No (/µL)	1080.0	1274.0	0.044
Neutrophils to Lymphocytes ratio (NLR)	7.10	6.86	0.040
Ferritin (µg/L)	443.52	429.67	0.144
Ferritin, max value (ng/L)	524.58	507.59	0.080
C-reactive protein (CRP) (mg/L)	123.73	107.37	0.012
C-reactive protein, (CRP) max. value (mg/L)	89.05	79.78	0.026
Procalcitonin (PCT) (ng/ml)	0.74	0.70	0.058
Interleukin-6 (IL-6) (IU/mL)	59.61	48.13	0.109
Partial Oxygen pressure/Fraction of inspired Oxygen ratio (PFR)	260.1	321.3	0.094

Table 2. *Results. Hyponatremia vs. normonatremia on admission.*

		P-value	OR	95% C.I. Lower
VARIABLES	Creatinine	.048	1.206	1.002
	LoS	.001	1.508	1.194

Table 3. *Multivariate Binary Logistic Regression analysis.*

[Abstract:1173]

RELATIONSHIP BETWEEN COVID-19 AND ACUTE PANCREATITIS: LITERATURE REVIEW

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Introduction and Purpose: In the early stages of the COVID-19 pandemic, before the vaccine was introduced, it had a serious life-threatening course, especially in risk groups. Acute pancreatitis is one of the life-threatening medical emergencies. It has been a matter of curiosity how the coexistence of COVID-19 and pancreatitis progresses.

Methods: In this review, 43 cases of pancreatitis with covid were analysed. The average age is 44 years, and the male/female ratio is 27/16. 33% of the cases were monitored in intensive care, 65% in the ward, and the rest at home.

Findings: COVID-19 was reported first in 37% of the cases, pancreatitis was reported first in 26%, and simultaneous onset was reported in 37%. The average time to diagnose pancreatitis after COVID-19 is 9 days. Direct viral effect was held responsible in 65% of the cases, and cytokine storm was held responsible in 9%. The averages of amylase, lipase, leukocyte, and CRP in the cases were found to be 707 U/L, 1607 U/L, 10800, 53 mg/dl, respectively. 88% of the cases recovered, 7% died, and 5% are still under care due to complications. Necrotizing pancreatitis developed in 14% of the cases and pseudocyst developed in 2%.

Conclusions: In summary, amylase lipase tests in patients with abdominal pain who developed COVID-19 and COVID-19 screening in patients with pancreatitis will contribute to early diagnosis.

Keywords: *COVID-19, acute pancreatitis, screening*

Number of Patients	43
Mean Age (years)	44
Male to Female Ratio (M/F)	27/16
Covid Follow up	
• **ICU** (n, percentage)	8, 19
• **Hospitalized** (n, percentage)	16, 37
• **Outpatient** (n, percentage)	15, 35
• **Unidentified** (n, percentage)	4, 5
Covid Pancreatitis Course	
• **Simultaneously** (n, percentage)	4, 9
• **Pancreatitis prior to Covid** (n, percentage)	11, 26
• **Covid prior to Pancreatitis** (n, percentage)	16, 37
• **Mean Covid to Pancreatitis Duration** (days)	9.7
Mean Laboratory Results	
• **Amylase** (U/L)	707
• **Lipase** (U/L)	1607
• **WBC** (10^3 cells /L)	10.8
• **CRP** (mg/L)	53
Presumed Mechanism of Pancreatitis	
• **Direct Viral** (n, percentage)	28, 65
• **Cytokine Storm** (n, percentage)	4, 9
• **Vaccination** (n, percentage)	4, 9
• **Drug Induced** (n, percentage)	1, 2
Comorbidities	22, 51
• **Hypertension** (n, percentage)	13, 30
• **Chronic Kidney Disease** (n, percentage)	10, 23
• **Diabetes** (n, percentage)	7, 16
• **Chronic Pancreatitis** (n, percentage)	2, 5
• **Hyperlipidemia** (n, percentage)	3, 7
Outcome	
• **Death** (n, percentage)	3, 7
• **ICU** (n, percentage)	2, 5
• **Resolution** (n, percentage)	38, 88
Complications	
• **Acute Necrotizing Pancreatitis** (n, percentage)	6, 14
• **Pseudocyst** (n, percentage)	1, 2

Table 1. *Demographic, clinical and laboratory characteristics of the cases*

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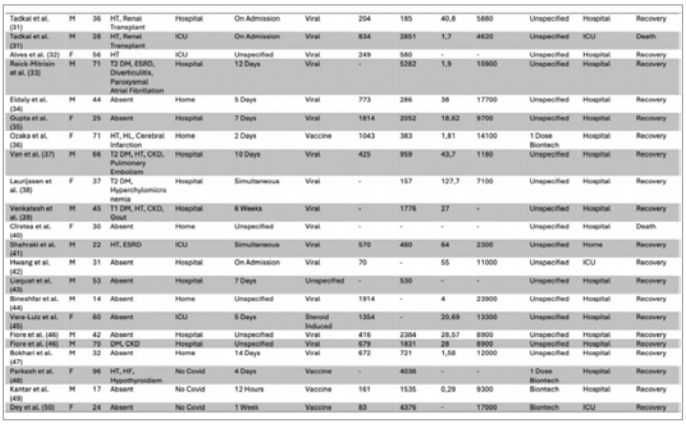
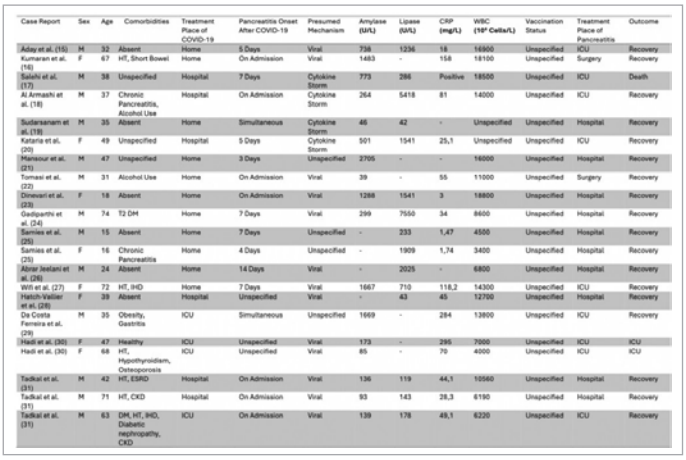


Tadkal et al. (31)	M	36	HT, Renal Transplant	Hospital	On Admission	Viral	204	185	40,8	5880	Unspecified	Hospital	Recovery
Tadkal et al. (31)	M	28	HT, Renal Transplant	ICU	On Admission	Viral	834	2851	1,7	4620	Unspecified	ICU	Death
Alves et al. (32)	F	56	HT	ICU	Unspecified	Viral	249	580	-	-	Unspecified	Hospital	Recovery
Reicik-Mitrain et al. (33)	M	71	T2 DM, ESRD, Diverticulitis, Paroxysmal Atrial Fibrillation	Hospital	12 Days	Viral	-	5282	1,9	10900	Unspecified	Hospital	Recovery
Eldaly et al. (34)	M	44	Absent	Home	5 Days	Viral	773	286	38	17700	Unspecified	Hospital	Recovery
Gupta et al. (35)	F	25	Absent	Hospital	7 Days	Viral	1814	2052	18,62	9700	Unspecified	Hospital	Recovery
Ozaka et al. (36)	F	71	HT, HL, Cerebral Infarction	Home	2 Days	Vaccine	1043	383	1,81	14100	1 Dose Biontech	Hospital	Recovery
Van et al. (37)	M	66	T2 DM, HT, CKD, Pulmonary Embolism	Hospital	10 Days	Viral	425	959	43,7	1180	Unspecified	Hospital	Recovery
Laurijssen et al. (38)	F	37	T2 DM, Hypercholomicronemia	Hospital	Simultaneous	Viral	-	157	127,7	7100	Unspecified	Hospital	Recovery
Venkatesh et al. (39)	M	45	T1 DM, HT, CKD, Gout	Hospital	6 Weeks	Viral	-	1776	27	-	Unspecified	Hospital	Recovery
Cinitea et al. (40)	F	30	Absent	Home	Unspecified	Viral	-	-	-	-	Unspecified	Hospital	Death
Shahraki et al. (41)	M	22	HT, ESRD	ICU	Simultaneous	Viral	570	480	64	2300	Unspecified	Home	Recovery
Huang et al. (42)	M	31	Absent	Hospital	On Admission	Viral	70	-	55	11000	Unspecified	ICU	Recovery
Llequet et al. (43)	M	53	Absent	Hospital	7 Days	Unspecified	-	530	-	-	Unspecified	Hospital	Recovery
Bineshtar et al. (44)	M	14	Absent	Home	Unspecified	Viral	1914	-	4	23900	Unspecified	Hospital	Recovery
Vara-Luiz et al. (45)	F	60	Absent	ICU	5 Days	Steroid Induced	1354	-	20,69	13300	Unspecified	Hospital	Recovery
Fiore et al. (46)	M	42	Absent	Hospital	Unspecified	Viral	416	2384	28,57	8900	Unspecified	Hospital	Recovery
Fiore et al. (46)	M	70	DM, CKD	Hospital	Unspecified	Viral	579	1931	28	8900	Unspecified	Hospital	Recovery
Bokhari et al. (47)	M	32	Absent	Home	14 Days	Viral	672	721	1,58	12000	Unspecified	Hospital	Recovery
Parkash et al. (48)	F	96	HT, HF, Hypothyroidism	No Covid	4 Days	Vaccine	-	4036	-	-	1 Dose Biontech	Hospital	Recovery
Kantar et al. (49)	M	17	Absent	No Covid	12 Hours	Vaccine	161	1535	0,29	9300	Biontech	Hospital	Recovery
Dey et al. (50)	F	24	Absent	No Covid	1 Week	Vaccine	83	4376	-	17000	Biontech	ICU	Recovery

Table 2. *Characteristics of covid-19 and pancreatitis association in the case series - 2.*



Case Report	Sex	Age	Comorbidities	Treatment Place of COVID-19	Pancreatitis Onset After COVID-19	Presumed Mechanism	Amylase (U/L)	Lipase (U/L)	CRP (mg/L)	WBC (10^3 Cells/L)	Vaccination Status	Treatment Place of Pancreatitis	Outcome
Aday et al. (15)	M	32	Absent	Home	5 Days	Viral	736	1234	18	16900	Unspecified	ICU	Recovery
Kumaran et al. (16)	F	67	HT, Short Bowel	Home	On Admission	Viral	1483	-	158	18100	Unspecified	Surgery	Recovery
Salehi et al. (17)	M	38	Unspecified	Hospital	7 Days	Cytokine Storm	773	286	Positive	18500	Unspecified	ICU	Death
Al Armashi et al. (18)	M	37	Chronic Pancreatitis, Alcohol Use	Hospital	On Admission	Cytokine Storm	264	5418	81	14000	Unspecified	ICU	Recovery
Sudarsanam et al. (19)	M	35	Absent	Home	Simultaneous	Cytokine Storm	46	42	-	Unspecified	Unspecified	Hospital	Recovery
Katarie et al. (20)	F	49	Unspecified	Hospital	5 Days	Cytokine Storm	501	1541	25,1	Unspecified	Unspecified	ICU	Recovery
Haraiour et al. (21)	M	47	Unspecified	Home	3 Days	Unspecified	2705	-	-	16000	Unspecified	Hospital	Recovery
Tomasi et al. (22)	M	31	Alcohol Use	Home	On Admission	Viral	39	-	55	11000	Unspecified	Surgery	Recovery
Dinavari et al. (23)	F	18	Absent	Home	On Admission	Viral	1288	1541	3	18800	Unspecified	Hospital	Recovery
Gadipanthi et al. (24)	M	74	T2 DM	Home	7 Days	Viral	299	7550	34	8600	Unspecified	Hospital	Recovery
Samias et al. (25)	M	15	Absent	Home	7 Days	Unspecified	-	233	1,47	4500	Unspecified	Hospital	Recovery
Samias et al. (25)	F	16	Chronic Pancreatitis	Home	4 Days	Unspecified	-	1909	1,74	3400	Unspecified	Hospital	Recovery
Abrar Jeelani et al. (26)	M	24	Absent	Home	14 Days	Viral	-	2025	-	6800	Unspecified	Hospital	Recovery
Wit et al. (27)	F	72	HT, IHD	Home	7 Days	Viral	1667	710	118,2	14300	Unspecified	ICU	Recovery
Hatch Valler et al. (28)	F	39	Absent	Hospital	Unspecified	Viral	-	43	43	12700	Unspecified	Hospital	Recovery
De Costa Ferreira et al. (29)	M	35	Obesity, Gastritis	ICU	Simultaneous	Unspecified	1669	-	284	13800	Unspecified	ICU	Recovery
Hadi et al. (30)	F	47	Healthy	ICU	Unspecified	Viral	173	-	295	7000	Unspecified	ICU	ICU
Hadi et al. (30)	F	68	HT, Hypothyroidism, Osteoporosis	ICU	Unspecified	Viral	85	-	79	4000	Unspecified	ICU	ICU
Tadkal et al. (31)	M	42	HT, ESRD	Hospital	On Admission	Viral	136	119	44,1	10560	Unspecified	Hospital	Recovery
Tadkal et al. (31)	M	71	HT, CKD	Hospital	On Admission	Viral	93	143	28,3	6190	Unspecified	Hospital	Recovery
Tadkal et al. (31)	M	63	HT, IHD, Diabetic nephropathy, CKD	ICU	On Admission	Viral	139	178	49,1	6220	Unspecified	ICU	Recovery

Table 2. *Characteristics of covid-19 and pancreatitis association in the case series -1.*

[Abstract:1185]

HYPERGLYCAEMIA AND SEVERITY OF COVID-19 IS ASSOCIATED WITH WORSE OUTCOMES IN NON-OBESE/NON-DIABETIC HOSPITALIZED PATIENTS. RESULTS FROM THE UNIVERSITY HOSPITAL OF IOANNINA COVID-19 REGISTRY, NCT05534074

Angelos Liontos[1], *Dimitrios Biros*[1], *Rafail Matzaras*[1], *Ilias Tsiakas*[1], *Lazaros Athanasiou*[1], *Valentini Samanidou*[1], *Diamantina Lymperatou*[1], *Revekka Konstantopoulou*[1], *Athina Zarachi*[3], *Ioannis Vagias*[1], *Christiana Pappa*[2], *Maria Nasiou*[2], *Nikolaos Gavriel Kolios*[2], *Eleni Pargana*[2], *Georgia Vedoura*[2], *Haralampos Milionis*[1], *Eirini Christaki*[1]

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Introduction: The increased morbidity and mortality rates among COVID-19 patients with diabetes mellitus (DM) and obesity has been documented. This study aimed to evaluate the association between markers of inflammation, disease severity, insulin resistance, hyperglycaemia, and outcomes in COVID-19 patients, with no prior history of DM and obesity.

Methods: Data from the University Hospital of Ioannina COVID-19 Registry were documented retrospectively, between March 2020 and December 2022. The data included information on epidemiological, clinical characteristics, and laboratory results of hospitalized patients. Inflammatory and severity markers were assessed with WBC: blood cell count, NLR: neutrophil to lymphocyte ratio, CRP: C-reactive protein, PCT: procalcitonin, IL-6: interleukin-6, PFR: PO_2/FiO_2 ratio and CT BoD: CT burden of disease on computed tomography. Insulin resistance was assessed with TRG/HDL-C: triglycerides to HDL-cholesterol ratio and TyG: triglyceride-glucose index. Hyperglycaemia (glucose >140 mg/dL) was documented on admission and during hospitalization.

Results: A total of 631 patients were included in this study. Characteristics of the study cohort are summarized in Table 1. Results of Multivariate Binary Logistic Regression of inflammatory markers, disease severity markers, insulin resistance indices and the incidence of hyperglycaemia on admission and during hospitalization for the study cohort are summarized in Table 2.

Conclusions: In non-diabetic and non-obese patients with severe disease, several factors including NLR, CRP, IL-6, PFR, insulin resistance indices (TyG index and TRG/HDL-C ratio), and hyperglycaemia were associated with increased risk of worse outcomes.

Keywords: *hyperglycaemia, COVID-19, disease severity*

DOI: 10.12890/2024_V11Sup1

Cohort	Patients without diabetes or obesity	
Characteristics	**Frequency (n)**	**Mean/SD**
Sex (male/female)	369/262	
Age (years)		63.85/18.34
BMI (kg/m²)		25.64/2.79
Plasma glucose (mg/dL)		119.73/35.08
WBC count (#/uL)		7244.40/4032.51
NLR		7.41/7.93
CRP (mg/L)		112.02/115.81
PCT (ng/mL)		0.53/2.24
IL-6 (pg/mL)		56.90/174.61
PFR		281.78/123.93
TRG/HDL-C ratio		3.20/2.18
TyG index		8.66/0.55
Hyperglycemia on admission	118	
Hyperglycemia during hospitalization	317	
Comorbidities		
CAD	118	
AH	248	
Dyslipidemia	191	
COPD	45	
Thyroid disease	64	
Autoimmune disease	43	
Cancer	58	
Smoking (active)	88	
COVID-19 vaccination	186	
Outcomes		
LoS>7 days	320	
Intubation	31	
Patient death	68	

Table 1. *Demographic, somatometric baseline characteristics, comorbidities, inflammatory markers, insulin resistance indices, disease severity markers and study outcomes. Data presented as frequency or mean/standard deviation. BMI: Body Mass Index, WBC count: White Blood Cell count, NLR: Neutrophil to Lymphocyte Ratio, CRP: C-Reactive Protein, PCT: Procalcitonin, IL-6: Interleukin-6, PFR: PO_2/FiO_2 Ratio, TRG/HDL-C: Triglycerides to HDL-Cholesterol ratio, TyG: Triglyceride-glucose index, CAD: Coronary Artery Disease, AH: Arterial Hypertension, COPD: Chronic Obstructive Pulmonary Disease, LoS: Length of Stay.*

Outcomes	LoS>7 days		Intubation		Death	
Variables	**OR**	**p-value**	**OR**	**p-value**	**OR**	**p-value**
WBC count (#/uL)	1.000	0.346	1.000	0.259	1.000	**0.002**
NLR	1.024	**0.034**	1.038	**0.024**	1.062	**<0.001**
CRP (mg/L)	1.003	**0.001**	1.004	**0.002**	1.005	**<0.001**
PCT (ng/mL)	1.061	0.272	1.047	0.448	1.156	**0.008**
IL-6 (pg/mL)	1.000	0.858	1.001	0.087	1.003	**<0.001**
PFR	0.997	**<0.001**	0.989	**<0.001**	0.994	**<0.001**
CT BoD	4.757	**<0.001**	28.430	**<0.001**	5.535	**<0.001**
NLR>3.1	1.511	**0.022**	5.552	**0.021**	5.724	**<0.001**
CRP>100	2.179	**<0.001**	2.579	**0.015**	3.022	**<0.001**
PCT>0.5	1.393	0.279	2.263	0.109	4.742	**<0.001**
IL-6>24	2.323	**<0.001**	2.496	**0.041**	3.705	**<0.001**
PFR<200	2.442	**<0.001**	5.100	**<0.001**	3.546	**<0.001**
Hyperglycemia on admission	1.023	0.916	2.390	**0.029**	1.667	0.103
Hyperglycemia during hospitalization	1.685	**0.002**	3.352	**0.010**	1.425	0.226
TRG/HDL-C ratio	1.249	**<0.001**	1.186	**0.023**	1.369	**<0.001**
TyG index	2.418	**<0.001**	2.983	**0.002**	3.203	**<0.001**

Table 2. *Multivariate Binary Logistic Regression results of inflammatory markers, disease severity markers and the study outcomes for the sub-group of patients without diabetes or obesity. WBC count: White Blood Cell count, NLR: Neutrophil to Lymphocyte Ratio, CRP: C-Reactive Protein, PCT: Procalcitonin, IL-6: Interleukin-6, PFR: PO_2/FiO_2 Ratio, TRG/HDL-C: Triglycerides to HDL-Cholesterol ratio, TyG: Triglyceride-glucose index, CT BoD: CT Burden of Disease, OR: Odds Ratio.*

[Abstract:1186]

HOSPITAL ACQUIRED HYPONATREMIA AND COVID-19. IMPACT ON DISEASE'S OUTCOMES IN HOSPITALIZED PATIENTS. ANALYSIS AND RESULTS FROM THE UNIVERSITY HOSPITAL OF IOANNINA COVID-19 REGISTRY, NCT05534074

Angelos Liontos[1], Eleni Tsaousi[4], Nikolaos Gavriel Kolios[2], Dimtrios Biros[1], Vasileios Pezoulas[4], Rafail Mantzaras[1], Ilias Tsiakas[1], Lazaros Athanasiou[1], Athina Zarachi[3], Diamantina Lymperatou[1], Christiana Pappa[2], Maria Nasiou[2], Valentini Samanidou[1], Eleni Pargana[2], Georgia Vedoura[2], Ioannis Vagias[1], Dimitrios Fotiadis[4], Haralampos Milionis[1], Eirini Christaki[1]

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Introduction: Hyponatremia is a major medical emergency and increases morbidity and mortality across in hospitalized patients. Aim of this study was to investigate the effect of hyponatremia in patients with COVID-19. We assessed the association of hyponatremia with various markers of disease severity and disease's outcomes.

Methods: Data from the University Hospital of Ioannina COVID-19 Registry were obtained between March 2020 and December 2022 of 1458 patients hospitalized in the Infectious Diseases Unit of the hospital. Variables assessed are shown in Table 1.

Results: When comparing patients with hospital acquired hyponatremia versus patients with normonatremia, a statistically significant difference was observed in the following quantitative variables: days of hospitalization (11.4 vs 9.23, p<0.001), urea / creatinine ratio (42.13 vs 40.05, p=0.02), lymphocytes abs. No (1093.2 /μL vs 1346.7 /μL, p=0.022), neutrophiles to lymphocytes ratio (7.70 vs 6.05, p=0.004), CRP (122.47 mg/L vs 99.47 mg/L, p=0.001), IL - 6 (54.08 IU/mL vs 38.49 IU/mL, p=0.036). Results are summarized in Table 2.

In multivariate binary logistic regression analysis, days of hospitalization and NLR were associated with increased risk of hyponatremia during hospital stay. The latter was also associated

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with prolonged hospitalization and increased risk of intubation (Table 3).

Conclusions: The occurrence of hyponatremia complicates the hospitalization of patients. Our findings showed that the onset of hyponatremia during hospitalization is associated with increased markers of inflammation and predisposes to a more severe course of the disease. Timely diagnosis, accurate assessment and appropriate treatment of this entity are required.

Keywords: *hyponatremia, COVID-19, disease severity*

VARIABLES
Days of Hospitalization
Creatinine (mg/dL)
Urea/Creatinine ratio
Lympocytes abs.No (/µL)
Neutrophils to Lymphocytes ratio (NLR)
Ferritin (µg/L)
Ferritin, max value (µg/L)
C-reactive protein (CRP) (mg/L)
C-reactive protein max. value (CRP) (mg/L)
Procalcitonin (ng/ml)
Interleukin-6 (IL-6) (IU/ml)
Partial oxygen pressure/Fraction of inspired Oxygen ratio (PFR)
Burden of Disease in Computed Tomography (CTBoD)(%)
LoS>7 days (length of stay)
Intubation
Death
Sodium levels any day

Table 1. Variables used in this study.

	Hospitalization		
	hyponatremia (N=694)	normonatremia (N=693)	p-value
Days of hospitalization	11.4	9.23	0.001
Creatinine (mg/dL)	1.37	1.16	0.413
Urea/Creatinine ratio	42.13	40.05	0.020
Lymphocytes, abs. No (/µL)	1093.2	1346.7	0.022
Neutrophils to Lymphocytes ratio (NLR)	7.70	6.05	0.004
Ferritin (µg/L)	438.0	416.0	0.421
Ferritin, max value (µg/L)	534.19	469.13	0.124
C-reactive protein (CRP) (mg/L)	122.47	99.47	0.001
C-reactive protein, (CRP) max. value (mg/L)	88.42	72.35	0.001
Procalcitonin (PCT) (ng/ml)	0.90	0.48	0.081
Interleukin-6 (IL-6) (IU/mL)	54.08	38.49	0.036
Partial Oxygen pressure/Fraction of inspired Oxygen ratio (PFR)	331.7	317.8	0.323

Table 2. Results of disease's severity markers. Hospital-acquired hyponatremia vs normonatremia.

		P-value	OR	95% C.I. for OR	
				Lower	Upper
variables	LoS	.000	2.181	1.753	2.715
	Intubation	.049	1.808	1.001	3.264
	Days of hospitalization	.002	1.039	1.014	1.065
	Neutrophils to Lymphocytes ratio (NLR)	.005	1.037	1.011	1.063

Table 3. Multivariate Binary Logistic Regression analysis.

[Abstract:1328]

CLINICAL AND ECONOMIC IMPLICATIONS OF ORAL ANTIVIRAL AGENTS IN COVID-19: A PROSPECTIVE STUDY

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Background: The pandemic dramatic impact highlighted the need for development of preventive measures and specific therapies to avoid hospital overcrowding.

Objective: Aims of this study are to: 1) confirm efficacy and safety of molnupiravir use in the real world for non- hospitalized adults with mild-to-moderate, laboratory-confirmed COVID-19 with at least one risk factor for severe progression of illness; 2) compare the results with those of clinical trials; 3) perform an economic evaluation; 4) comparing use of molnupiravir versus paxlovid, to assess potential saving associated with molnupiravir.

Methods: Observational, prospective study. Data collected allowed to assess efficacy and safety of molnupiravir in real life, compare the results with a subgroup of patients treated with nirmatrelvir-ritonavir and to affect a cost-effectiveness analysis.

Results: In January-December 2022, 435 patients (225 males, 220 females; median age 72 years), were enrolled; 24 patients were unvaccinated, 280 patients had ≥2 risk factors.Molnupiravir appeared to give better results both clinically and economically. In these patients in comparison with literature data, hospitalization was 2.5% vs 6.8% (p<0.005), overall adverse effects 14.3% vs 30.4% (p<0.0001), severe adverse effects 2.6 vs 6.9% (p<0.001), thus involving a potential total savings of about €92.954 per patient (8% of standard of care cost).

Conclusions: Early molnupiravir treatment helped fragile patients who partially responded to vaccine, or with absolute contraindications to vaccination, to overcome COVID-19 without the need of hospitalization. Molnupiravir represents a clinical and economic effective treatment, avoiding disease progression in old patients suffering from multiple pathologies and taking several drugs.

Keywords: *oral antiviral agents, molnupiravir, SARS-CoV-2, COVID-19, nirmatrelvir, oral antiviral*

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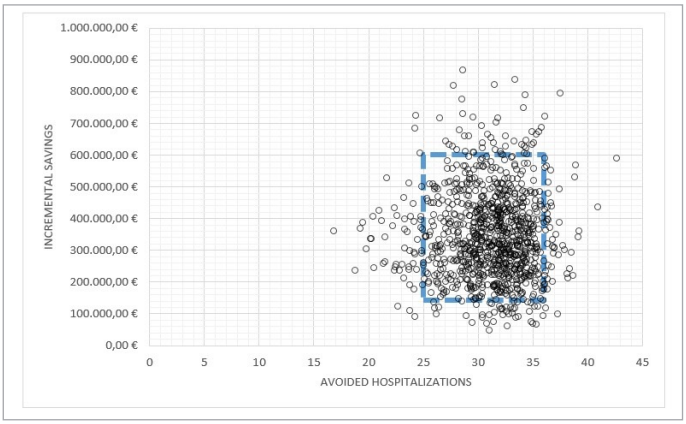

Figure 1. *Monte Carlo simulations.*
Results: incremental saving vs avoided hospitalizations. In the square, the area delimited by the 95% CI boundaries.
100% percent of simulations resulted in a saving consequent to the use of Molnupiravir in non-hospitalized patients. As for the savings magnitude, a 95% confidence interval ranging from € 144,000 to € 602,000 was estimated with a 50th percentile of € 327,000 savings (circa € 750 per patient). Concerning avoided hospitalizations, the 95% confidence interval ranged from 25 to 36 with a 50th percentile of 32 avoided hospitalizations (7.36 %).

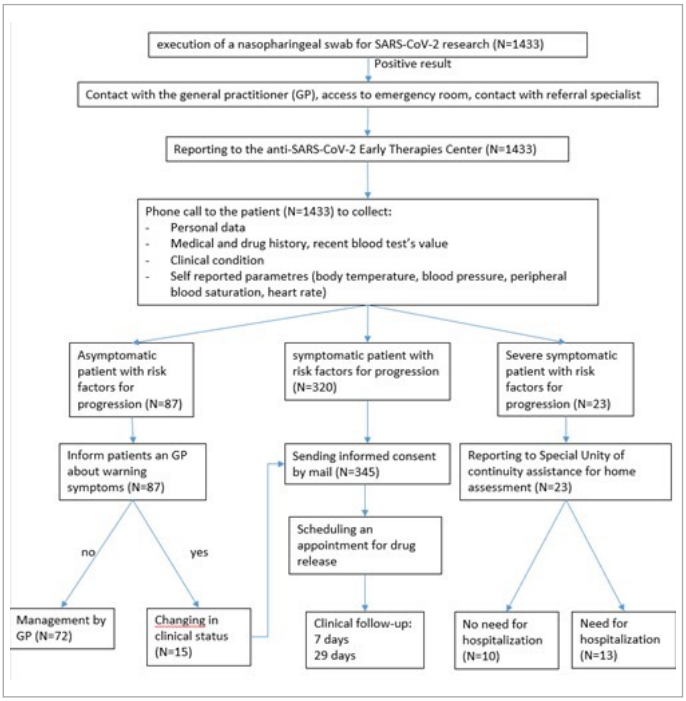

Figure 2. *Patient's flow, from the first SARS-CoV-2 positive swab to the onset of therapy.*
Patients included in the study were treated with 800 mg of Molnupiravir every 12 hours for 5 days, were informed of the potential teratogenicity of the drug and received all information on contraception timing. According to literature, the primary efficacy end point was the incidence of hospitalization for any cause (defined as ≥24 hours of acute care in a hospital or any similar facility) or death, while the primary safety end point was the incidence of any adverse events during the 29 days period of follow-up.

[Abstract:1352]

A CASE PRESENTED WITH RESISTANT HYPOMAGNESEMIA IN THE POST COVID-19 PERIOD

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Background: Hypomagnesemia is an electrolyte imbalance caused by a low serum magnesium level (less than 1.46 mg/dL) in the blood. We report hypomagnesemia developed after coronavirus disease 2019 (COVID-19) in patient with early stage of breast cancer.
Case Presentation: A 57-year-old woman was referred to our department because of severe fatigue. Her past medical history was a diagnosed and treated with early-stage breast cancer under tamoxifen therapy. She developed progressive fatigue after one week of moderate COVID-19 infection.
Management and Outcomes: She was diagnosed based on fever and respiratory symptoms, with imaging features of viral pneumonia, decreased white blood cell (WBC) counts in the early stage of the disease, and decreased lymphocyte count. Etiological evidence was performed by respiratory tract specimens tested positive for novel coronavirus nucleic acid by RT-PCR. Tests for other hypomagnesemia causes were negative. Magnesium was 0.7 mmol/L on admission with progressive fatigue. There was a response to intravenous magnesium treatment, but it did not completely solve the problem, the patient's need continued. She was discharged from the hospital when her symptoms improved. Oral magnesium replacement therapy was continued for 3 months.
Discussion: Hypomagnesemia may be associated with the severity of COVID-19 and its mortality. Differential diagnosis includes chronic disease, alcohol use disorder, gastrointestinal loss, renal loss, and other conditions.
Conclusions: A proper differential diagnosis should rule out other causes of progressive fatigue and hypomagnesemia, thus allowing a timely treatment.

Keywords: *COVID-19, hypomagnesemia, magnesium*

[Abstract:1377]

ASSOCIATION BETWEEN ABO AND RHESUS BLOOD GROUPS AND THE SEVERITY OF COVID-19: FIRST GREEK DATA

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Purpose: To assess the severity of disease in patients with common blood group as expressed by specific clinical and laboratory criteria, aiming to identify blood groups as a potential predictive biomarker of COVID-19 outcome.

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Methods: This is a single-centre retrospective study enrolling 444 COVID-19 patients, 224 men and 220 women, who were hospitalized in the General Hospital of Kavala due to hypoxemia between 01/2020 and 02/2022. Patients were divided in 4 age groups, <65, 65-75, 76-85 and >85 years old, while the severity of the disease was assessed based on the duration of hospitalization, the occurrence of bilateral pulmonary infiltrates, pulmonary embolism, the need for invasive mechanical ventilation, and the outcome of death. The occurrence of multiorgan failure was assessed by the presence of at least two of thrombocytopenia, increased neutrophil-to-lymphocyte-ratio (NLR)>6, acute kidney injury and/or elevated liver function enzymes.
Results: In our sample, 65.5% of patients were hospitalized for more than 7 days, 76.1% developed pneumonia and 3.4% pulmonary embolism, without statistically significant correlation with blood groups. 14.4% of patients were intubated with O blood group showing statistically significant negative correlation (p<0.01). Rh(-) patients showed statistically significant odds of multiorgan disfunction in terms of increased NLR (p<0.04), while O-Rh(-) and A-Rh(-) patients showed statistically significant increased risk of mortality (p<0.03).
Conclusions: As COVID-19 remains a global health crisis, predicting the outcome of disease through the identification and use of easy-accessible biomarkers could be game-changing for hospitalized patients.Our study demonstrates Rh factor as a reliable biomarker in this direction.

Keywords: *COVID-19, ABO, Rhesus, COVID-19 severity, COVID-19 outcome*

[Abstract:1421]

ALTERATIONS IN SERUM CALPROTECTIN LEVELS (CAL) PREDICT SEVERITY AND OUTCOME OF PATIENTS WITH CORONAVIRUS DISEASE 19 (COVID-19)

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Purpose: Serum calprotectin is a promising biomarker of neutrophil-associated inflammation in various inflammatory disorders. In COVID-19, calprotectin is considered to correlate with disease severity. Therefore, we aimed to assess CaL alterations as a monitoring parameter in COVID-19.
Methods: CaL were serially obtained from 25 patients that were eventually intubated/died (group 1) and 25 matched patients (1:1) who were discharged (group 2) at the following predefined time-points: baseline (t0), middle of hospitalization (t1) and discharge or intubation/death (t2).
Findings: No differences in CaL during the course of the disease occurred in group 2, while in group 1, CaL increased from t0 to t1 and t1 to t2 (p=0.009 and p<0.001, respectively). Changes had a significant prognostic value for intubation/death [AUC (95 %CI): 0.803 (0.664–0.943); p<0.001]. Comparison of the fold changes between time-points within the two groups showed CaL elevation for those with an uneventful event compared to those discharged [for both transitions; t0 to t1: 1.67 (1.36) vs 0.61 (0.96) times, p=0.001 and t1 to t2: 1.87 (2.87) vs 0.86 (0.093) times; p=0.002, respectively].
Conclusions: Significant constant increase in CaL in patients who eventually required intubation or died, along with its higher predictive ability in ROC analysis, supports its use in identifying high-risk patients and guiding timely interventions for improved outcomes.

Keywords: *calprotectin, COVID-19, biomarker*

[Abstract:1473]

ALKALOSIS IS ASSOCIATED WITH COVID-19 DISEASE SEVERITY AND WORSE OUTCOMES. THE UNIVERSITY HOSPITAL OF IOANNINA COVID-19 REGISTRY, NCT05534074

Angelos Liontos[1], Lazaros Athanasiou[1], Dimitrios Biros[1], Nikolaos Gavriel Kolios[1], Maria Nasiou[2], Valentini Samanidou[1], Diamantina Lymperatou[1], Revekka Konstantopoulou[1], Eleni Pargana[2], Ioannis Vagias[1], Christiana Pappa[2], Georgia Vedoura[2], Ilias Tsiakas[1], Eirini Christaki[1], Haralampos Milionis[1]

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Introduction: Acid–base disorders are a common complication in COVID-19 hospitalized patients ranging from mild to severe alternations. The aim of this study was to investigate the association of the most common disorder in a cohort study group with risk factors and disease severity indices. On further analysis outcomes were also assessed.
Methods: Data from the University Hospital of Ioannina COVID-19 Registry were documented retrospectively, from March 2020 to December 2021.
Data on epidemiological, clinical characteristics, and laboratory results of hospitalized patients were documented. Inflammatory and severity markers were assessed with lymphocytes count, NLR: neutrophil to lymphocyte ratio, CRP: C-reactive protein, PCT: procalcitonin, IL-6: interleukin-6, PFR: PO_2/FiO_2 ratio and CT BoD: CT burden of disease on computed tomography. Acid-

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base disorders were documented on admission and during hospitalization.

Results: A total of 243 hospitalized patients, were included in the study. Acid-base disorders on admission are summarized at Table 1. We further analysed the most common disorder, namely respiratory alkalosis (RAL) with metabolic alkalosis (MAL) and RAL alone. Baseline characteristics of the study cohort are shown in Table 2. Risk factors for RAL+MAL on admission and its association with COVID-19 disease severity markers are summarized in Table 3. Association of RAL+MAL upon admission and hospital acquired with study outcomes are summarized in Table 4.

Conclusions: In this study cohort RAL+MAL on admission and hospital acquires as well, was the most common acid-base disorder. Presence of RAL+MAL was associated with worse study outcomes.

Keywords: *respiratory alkalosis, metabolic alkalosis, COVID-19*

met acidosis	9
met acidosis + resp acidosis	2
met acidosis + resp alkalosis	15
met acidosis + resp alkalosis + met acidosis	1
met alkalosis	2
met alkalosis + resp acidosis	2
met alkalosis + resp alkalosis	2
resp acidosis	1
resp acidosis + met acidosis	2
resp alkalosis	48
resp alkalosis + met acidosis	27
resp alkalosis + met acidosis + met alkalosis	1
resp alkalosis + met alkalosis	130

Table 1. *Acid-base disorders present on admission.*

Laboratory parameters	Admission		
	RAL and MAL	Other	p-value
NLR on admission	6.27	6.00	0.199
Lymphocyte Count on admission	948.84	1132.68	0.038
Ferritin on admission	570.10	459.21	0.088
CRP on admission	78.30	57.78	0.002
IL-6 on admission	58.69	28.07	0.303
Procalcitonin on admission (PCT)	1.05	0.23	0.018
Creatinine on admission	1.04	1.48	0.001
Urea/Creatinine on admission	43.90	44.30	0.898
PFR on admission	244.36	286.75	0.004

Table 2. *Mean laboratory parameter values of the patient population diagnosed with RAL and MAL on admission. RAL: respiratory alkalosis, MAL: metabolic alkalosis, NLR: Neutrophil to Lymphocyte Ratio, CRP: C-Reactive Protein, PCT: Procalcitonin, IL-6: Interleukin-6, PFR: PO_2/FiO_2 Ratio.*

Laboratory Parameters	RAL + MAL On admission	
	OR	p-value
Creatinine on admission	0.73	0.050
Urea/Creatinine on admission	1.00	0.884
Urea/Creatinine >40 on admission	1.11	0.696
Systolic BP <100 on admission	0.70	0.567
Hypokalemia on admission	4.49	0.008
Hypochloremia on admission	3.33	0.070
PFR on admission	0.99	0.010
PFR <150 on admission	1.97	0.045
CT BoD >50%	2.06	0.031
NLR on admission	1.01	0.694
Lymphocyte Count on admission	0.99	0.007
Ferritin on admission	1.00	0.345
CRP on admission	1.00	0.018
IL-6 on admission	1.00	0.292
Procalcitonin on admission	1.29	0.360

Table 3. *Univariate binary logistic regression analysis of markers of disease severity and RAL + MAL (Odds Ratios [OR] are adjusted for age and sex). Abs. No: absolute number, NLR: Neutrophils to Lymphocytes ratio, abs. count: absolute count, CRP: C-reactive protein, IL-6: interleukin-6, PFR: partial Oxygen pressure/Fraction of inspired Oxygen - PO_2/FiO_2 ratio, CT BoD: Burden of Disease in Computed Tomography of the lungs.*

Outcomes	RAL and MAL			
	On admission (n=131)		Hospital acquired (n=220)	
	OR	p-value	OR	p-value
LoS >7 days	2.26	0.021	5.43	<0.001
Intubation	5.30	0.034	1.38	0.546
Death	1.95	0.117	0.91	0.822

Table 4. *Univariate binary logistic regression analysis of and study outcomes (Odds Ratios [OR] are adjusted for age and sex) LoS; Hospital Length of Stay, RAL; Respiratory Alkalosis, MAL; Metabolic Alkalosis.*

[Abstract:1538]

APPLYING MACHINE LEARNING TO ANTICIPATE PERSISTENT COVID-19 SYMPTOMS TWO YEARS FOLLOWING INFECTION

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Introduction: The persistent impact of COVID-19 has prompted an investigation into the long-term consequences in hospitalized patients. Our study focuses on the prevalence, determinants, and clinical attributes of long COVID.

Methods: We included hospitalized COVID-19 patients who consented to participate.

We conducted follow-up interviews to detect long COVID, utilizing patient demographic and initial hospital data to pinpoint risk factors. Our research extended the conventional definition

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of long COVID beyond 12 weeks post-infection to two years following the onset of SARS-CoV-2.

Results: Of 479 COVID-19 survivors studied, nearly half reported persistent symptoms 21.7 months post-hospitalization. Common symptoms included chronic fatigue, cough, and breathlessness. Major risk factors, identified using the information gain method, included higher age, higher Charlson comorbidity score, need for oxygen during admission, low haemoglobin, and increased BUN and CRP levels. Initial symptoms were not predictive, while severity of infection, atypical lung involvement (lobar consolidation etc.) and hospital stay length had minimal predictive value. Using four machine learning models with 5-fold cross-validation, Neural Networks and Logistic Regression showed superior performance (AUC: 0.803) with Naïve Bayes and Random Forest presenting slightly lower AUC values.

Conclusions: A significant number of hospitalized COVID-19 patients experience long COVID. Machine learning algorithms demonstrate considerable accuracy in predicting these outcomes.

Keywords: *COVID-19, machine learning, post-COVID, long COVID*

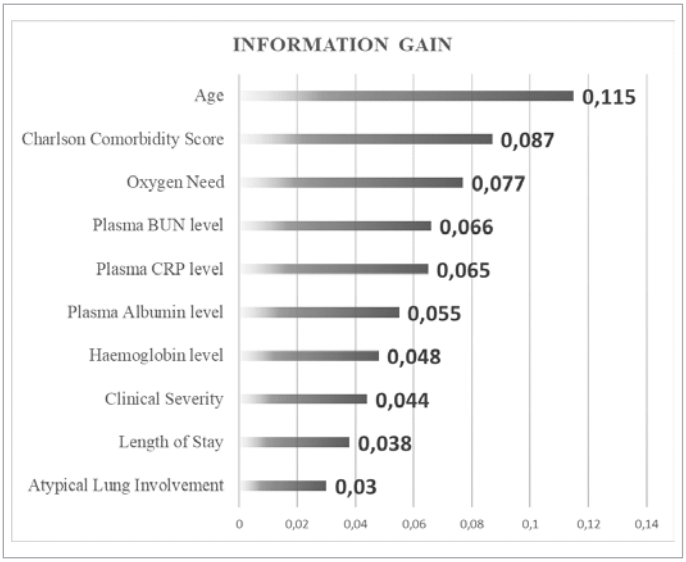

Figure 1. *Top 10 ranking features.*

	Area Under Curve	Accuracy	Precision	Recall
Random Forest	0.78	0.71	0.72	0.67
Logistic Regression	0.803	0.74	0.75	0.7
Naive Bayes	0.78	0.72	0.71	0.7
Neural Network	0.804	0.72	0.724	0.7

Table 1. *Performance Metrics of Machine Learning Algorithms.*

[Abstract:1550]

CONVEX VERSUS LINEAR TRANSDUCER IN COVID-19 LUNG ULTRASOUND: A PROSPECTIVE COMPARATIVE COHORT

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Purpose: Our aim was to describe and compare the results obtained using convex and linear transducers for image acquisition in COVID-19 lung ultrasound.

Methods: This is a single centre prospective cohort study, comparing convex and linear probes in 16 adult patients with SARS-CoV-2 pneumonia. We analysed 12 lung-fields and described the presence of pleural thickening, pleural irregularity, B-lines, >3 B-lines, coalescing B-lines, subpleural consolidation, pulmonary consolidation and pleural effusion in each of these fields and with both transducer. In addition, the lung ultrasound score (LUS) was calculated for every patient using the two transducers.

Findings: The mean LUS difference between both transducers was statistically significant in the right lower lateral, upper and lower posterior quadrants; as well as in the left lower anterior and upper posterior quadrants. Furthermore, mean total LUS difference was also statistically significant (15.81 convex vs. 10.81 linear; p = 0.001). The most frequently described findings with the convex transducer compared to the linear transducer were: pleural irregularity, pleural thickening, >3 B-lines, coalescing B-lines and subpleural consolidation. On the opposite side, pleural effusion was more frequently described with the linear probe.

Conclusions: Lung ultrasound in COVID-19 pneumonia is a transducer-dependent technique. This difference is more pronounced in posterior quadrants and in the cardiac area. Although both linear and convex transducers are suitable for the evaluation of COVID-19 pneumonia, the convex probe provides more information than the linear probe if only one of the two is accessible.

Keywords: *SARS-CoV-2, lung, ultrasound*

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[Abstract:1718]

IMPACT OF ASTHMA ON COUGH SYNCOPE INCIDENCE IN COVID-19 AND POST-COVID PATIENTS: A COMPREHENSIVE ANALYSIS

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Summary: This study examines the interaction between COVID-19 and autonomic dysfunctions such as cough syncope, emphasizing the virus's varied impacts on different patient groups. The importance of increased awareness and specialized care for those affected by COVID-19, particularly for patients with underlying conditions like asthma is highlighted.

Purpose: The objective was to analyse cough syncope, a less-explored condition in COVID-19 and post-COVID-19 syndromes. The study aimed to systematically explore the prevalence and characteristics of cough syncope during and after COVID-19 infection.

Methods: In a retrospective review, 516 confirmed COVID-19 patients were divided into two groups based on asthma status. Group 1 comprised 212 patients with asthma, and group 2 included 304 without. Of these, 77 (15%) met the criteria for cough syncope.

This subgroup consisted of 21 patients in the acute COVID-19 phase (14 with asthma, 7 without) and 56 in the post-COVID-19 phase (33 with asthma, 23 without). The timing of cough syncope symptoms ranged from immediate onset to 200 days post-infection.

Findings: Cough syncope was more prevalent in asthmatic patients during active COVID-19 infection, while post-COVID-19, its occurrence was similar in both asthmatic and non-asthmatic patients. In non-asthmatics, syncope episodes lacked other typical COVID-19 symptoms.

Conclusions: The study underscores the necessity of recognizing cough syncope as a potential complication in COVID-19 and post-COVID-19 patients. It calls for personalized medical strategies to address the varying impacts of COVID-19 in patients with and without asthma.

Keywords: *COVID-19, post-COVID-19 syndrome, cough syncope, asthma, autonomic dysfunction, retrospective study*

[Abstract:1812]

SPLENIC INFARCTION IN A SYPHILITIC PATIENT WITH COVID-19 PNEUMONIA

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Objective: Thromboembolic events can be occurred during COVID-19 infection. Untreated syphilis infection can also be a cause of thromboembolic events. In this case presentation we presented newly developed splenic infarction in a syphilitic patient with COVID-19.

Case Presentation: A 39-year-old male patient admitted to the emergency department with cough, fatigue, and sudden abdominal pain.

Physical Examinations: Coarse crackles were heard in the auscultation of lungs. There was no abdominal tenderness in the abdominal palpation. Laboratory tests were performed and nasal swab was taken. COVID-19 PCR test was positive, and patient hospitalized in Internal Medicine Pandemic Service. Thoracic and abdominal computed tomography (CT) scans were performed and pneumonic ground-glass opacities were detected in the right lung, along with widespread infarct areas in the spleen (Figure 1). CT angiography showed plaque formation proximal to the right renal artery with a thrombus-consistent hypodense filling defect. VDRL-RPR and *Treponema Pallidum* hemagglutination assay (TPHA) tests were positive. Lupus anticoagulant, and antiphospholipid antibodies were negative. After that, the patient stated that he was diagnosed with syphilis 20 years ago and did not receive regular treatment. Cardiovascular syphilis in the tertiary stage was considered. This case was consulted with infectious diseases and vascular departments. Anticoagulant (low molecular weight heparin), antiplatelet therapy, and penicillin G (2.4 million units) were administered. Patient's clinical status was improved, according to the treatment.

Conclusions: COVID-19 may enhance the risk of thromboembolic events in the course of syphilises. Early detection and initiation of treatment are essential to prevent potential complications.

Keywords: *COVID-19, syphilis, thrombotic events*

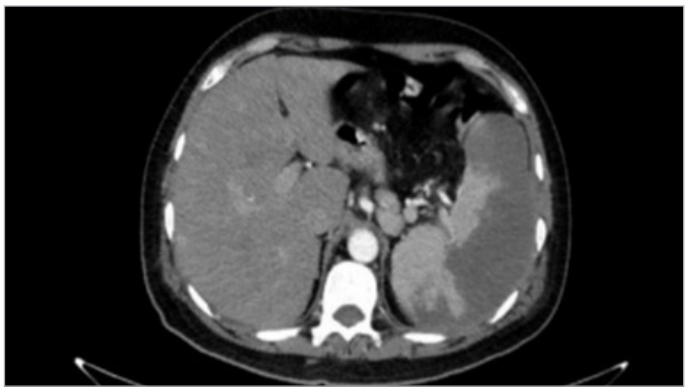

Figure 1. *Abdominal CT scan reveals splenic infarctus.*

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[Abstract:1875]

ANXIETY AND DEPRESSION IN HEALTHCARE WORKERS IN THE FIRST YEAR OF THE COVID-19 PANDEMIC

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Purpose: The overburden and uncertainty experienced during the COVID-19 pandemic have produced situations of intense stress. The aim of this study is to try to quantify it and evaluate its causes.

Methods: An anonymous survey is designed for the workers of the Hospital Universitario de Canarias (CHUC) with specific questions on the COVID-19 and the HADS scale for anxiety and depression. The first questionnaire was answered by 189 workers between April 10 and 27, 2020. The second survey, between February 15 and 26, 2021, was answered by 113 workers.

Findings: During the first wave, the HADS scale showed anxiety score: 9 [4-13] and depression score: 6 [3-9]. Anxiety was correlated with concern about SARS-CoV-2, about contagion, about infecting family members and about the risk of collapse ($p<0.001$ for all). Depression was also correlated with all of these ($p<0.001$ for all). Among physicians, those who did not directly attend COVID-19 were more fearful of health care collapse ($p=0.041$). Women showed greater concern about infecting family members ($p=0.001$) and greater anxiety ($p=0.001$). During the third wave, the anxiety score was 7 [3-11] and the depression score was 6 [3-9]. Both were related to fear of health system collapse ($p=0.023$ and $p=0.004$, respectively). Age was directly related to concern about SARS-CoV-2 ($p=0.024$). Women maintained higher incidences of anxiety ($p=0.042$).

Conclusions: Anxiety and depression were elevated in CHUC healthcare workers during the COVID-19 pandemic. This experience should be used to implement programmes for early detection and prevention of psychiatric illnesses and burnt-out syndrome.

Keywords: *COVID-19, anxiety, depression, healthcare workers*

[Abstract:1907]

REMDESIVIR TREATMENT AND CLINICAL OUTCOME IN NON SEVERE HOSPITALIZED COVID 19 PATIENTS: A PROPENSITY SCORE MATCHING MULTICENTER ITALIAN HOSPITAL EXPERIENCE

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Introduction: Remdesivir exerts positive effects on clinical improvement, even though it seems not affecting mortality among COVID-19 patients; moreover, it was associated with the occurrence of marked bradycardia.

Methods: We retrospectively evaluated 989 consecutive patients with non-severe COVID-19 (SpO_2 ≥94% on room air) admitted from October 2020 to July 2021 at five Italian hospitals. Propensity score matching allowed to obtain a comparable control group. Primary endpoints were bradycardia onset (heart rate <50 bpm), acute respiratory distress syndrome (ARDS) in need of intubation and mortality.

Results: A total of 200 patients (20.2%) received remdesivir, while 789 standard of care (79.8%). In the matched cohorts, severe ARDS in need of intubation was experienced by 70 patients (17.5%), significantly higher in the control group (68% vs. 31%; $p<0.0001$). Conversely, bradycardia, experienced by 53 patients (12%), was significantly higher in the remdesivir subgroup (20% vs. 1.1%; $p<0.0001$). During follow-up, all-cause mortality was 15% (N=62), significantly higher in the control group (76% vs. 24%; log-rank $p<0.0001$), as reported by Kaplan–Meier (KM) analysis. KM furthermore showed a significantly higher risk of severe ARDS in need of intubation among controls (log-rank $p<0.001$), while an increased risk of bradycardia onset in the remdesivir group (log-rank $p<0.001$). Multivariable logistic regression showed a protective role of remdesivir for both ARDS in need of intubation

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(OR 0.50, 95%CI 0.29–0.85; p=0.01) and mortality (OR 0.18, 95%CI 0.09–0.39; p<0.0001).

Conclusions: Remdesivir treatment was associated with reduced risk of severe ARDS in need of intubation and mortality. Remdesivir-induced bradycardia was not associated with worse outcome.

Keywords: *bradycardia, COVID-19, pharmacovigilance, remdesivir, mortality, ARDS*

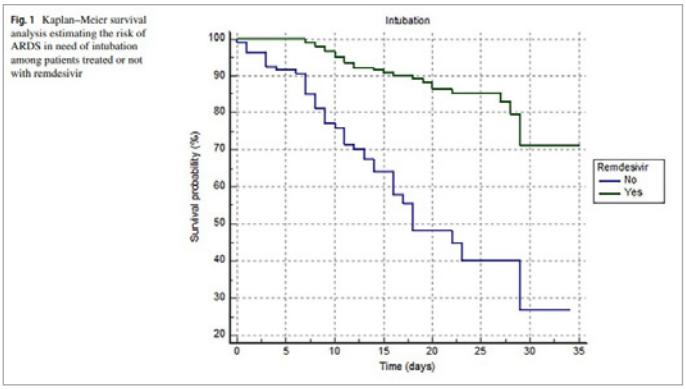

Figure 1. *Kaplan–Meier survival analysis estimating the risk of ARDS in need of intubation among patients treated or not with remdesivir.*

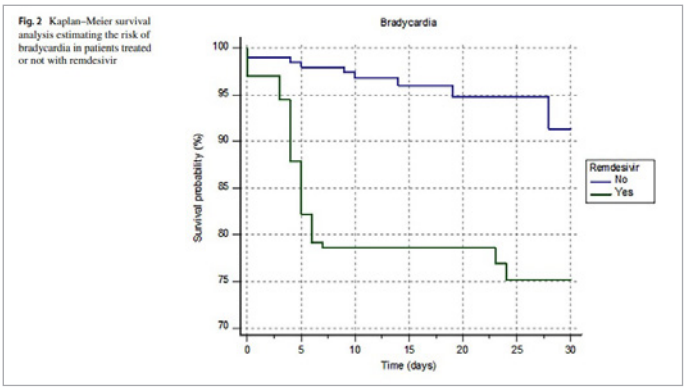

Figure 2. *Kaplan–Meier survival analysis estimating the risk of bradycardia in patients treated or not with remdesivir.*

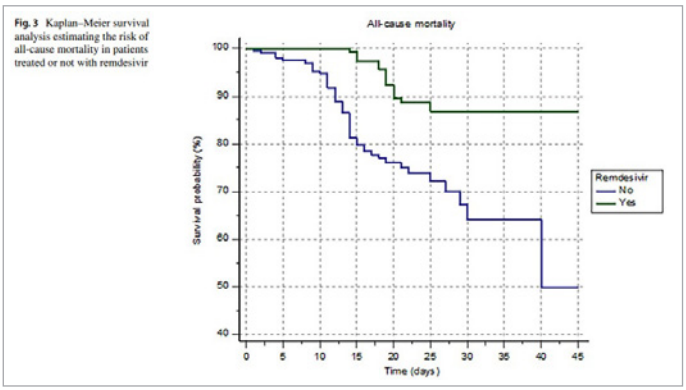

Figure 3. *Kaplan–Meier survival analysis estimating the risk of all-cause mortality in patients treated or not with remdesivir.*

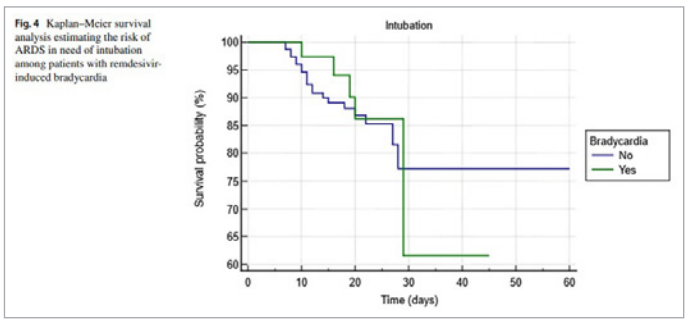

Figure 4. *Kaplan–Meier survival analysis estimating the risk of ARDS in need of intubation among patients with remdesivir induced bradycardia.*

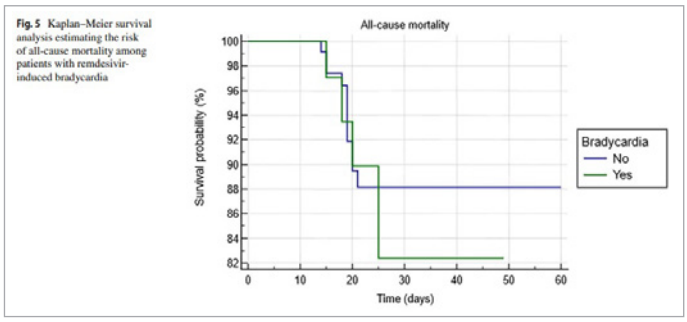

Figure 5. *Kaplan–Meier survival analysis estimating the risk of all-cause mortality among patients with remdesivir induced bradycardia.*

Variables	Remdesivir group *n*: 200	Control group *n*: 789	*p* value	Matched control group *n*: 200	*p* value
Age, years	64.32 11.6	71.2 12.5	0.0001	64.4 14.1	0.95
Male, *n* (%)	148 (74%)	543 (69%)	0.17	139 (69%)	0.32
Obesity, *n* (%)	39 (19.5%)	55 (7%)	0.0001	39 (19.5%)	0.99
COPD, *n* (%)	20 (10%)	174 (22%)	0.0001	27 (13%)	0.27
Non-permanent AF, *n* (%)	9 (4.5%)	95 (12%)	0.50	15 (7.5%)	0.20
Permanent AF, *n* (%)	0 (0%)	24 (3%)	0.002	0 (0%)	0.99
Diabetes mellitus, *n* (%)	39 (19%)	205 (26%)	0.04	37 (18%)	0.8
Hepatopathy, *n* (%)	5 (2.5%)	24 (3%)	0.70	11 (5.5%)	0.13
Arterial hypertension, *n* (%)	112 (56%)	536 (68%)	0.0014	117 (58%)	0.61
CAD, *n* (%)	32 (16%)	189 (24%)	0.01	29 (14%)	0.68
DCM, *n* (%)	6 (3%)	87 (11%)	0.0005	2 (1%)	0.15
CKD, *n* (%)	13 (6.5%)	102 (13%)	0.01	23 (11.5%)	0.08
Heart rate, bpm	82.84 16.03	77.3±8.2	0.001	85.03 15.93	0.17
First-degree AV block	10 (5%)	87 (11%)	0.01	8 (4%)	0.63
LBBB, *n* (%)	1 (0.5%)	16 (2%)	0.14	2 (1%)	0.56
RBBB, *n* (%)	25 (12%)	142 (18%)	0.04	17 (8.5%)	0.19
Correct QT, ms	412.43 42.6	422.55 34.7	0.005	403.83 29.23	0.12
ACE-I/ARBs, *n* (%)	70 (35%)	623 (79%)	0.0001	65 (32%)	0.59
Beta blockers, *n* (%)	53 (26%)	260 (33%)	0.06	61 (30%)	0.38
Amiodarone, *n* (%)	2 (1%)	32 (4%)	0.036	4 (2%)	0.41
Class IC AAR, *n* (%)	12 (6%)	91 (11.6%)	0.02	5 (2.5%)	0.08
Ca channel blockers, *n* (%)	38 (19%)	213 (27%)	0.02	36 (18%)	0.81
Digitalis drugs, *n* (%)	2 (1%)	16 (2%)	0.34	1 (0.5%)	0.56
Ivabradine, *n* (%)	3 (1.5%)	24 (3%)	0.24	1 (0.5%)	0.31
Antiplatelets, *n* (%)	43 (21%)	184 (23%)	0.54	32 (16%)	0.23
Anticoagulants, *n* (%)	12 (6%)	102 (13%)	0.006	11 (5.5%)	0.83
Statins, *n* (%)	37 (18%)	252 (32%)	0.0001	31 (15%)	0.42

COPD chronic obstructive pulmonary disease, *AF* atrial fibrillation, *CAD* coronary artery disease, *DCM* dilated cardiomyopathy, *CKD* chronic kidney disease, *AV* atrio ventricular, *LBBB* left bundle branch block, *RBBB* right bundle branch block, *ACE* angiotensin-converting enzyme, *ARBS* angiotensin II receptor blockers, *AAD* antiarrhythmics drugs

Table 1. *Characteristics of the study population before and after matching.*

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[Abstract:1915]

SILENT DAMAGE FROM LONG COVID

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50-year-old man with a history of smoking, hypertension and hypercholesterolaemia had an acute oligosymptomatic SARS-CoV-2 infection. He was referred to Internal Medicine for long COVID syndrome, highlighting symptoms of dyspnoea on moderate effort and diarrhoea with 8-9 stools per day, with a weight loss of 10 kg in 2 months. The computed tomography scan revealed a defect of the cardiac apex compatible with ischemic pathology with apical thrombus and dilatation of the left ventricle. Laboratory tests including autoimmunity, serology, myocardial damage biomarkers and nutritional profile reported no pathological findings. An echocardiogram confirmed an anormal left ventricular systolic function compatible with hibernating myocardium due to severe apical ischemia. Severe bile acids malabsorption was diagnosed by 75SeHCAT.

COVID-19 is an infectious agent that triggers a systemic inflammatory reaction with release of acute phase reactants leading to a state of hypercoagulability and vascular endothelial damage with microhaemorrhages; increasing the risk of ischaemic events. Although its symptoms are predominantly pulmonary, many cases are associated with myocardial injury due to both coronary thrombosis and hypoxemia during the inflammatory phase of the disease.

Numerous studies suggest the need to cardiac evaluation in moderate and severe cases of COVID-19 with echocardiogram and monitoring of troponins and N-terminal pro B- type natriuretic peptide during acute infection; as well as an organ-specific study according to the patient's symptomatology.

These data underline the importance of active surveillance of heart diseases caused by this infection both during the acute phase and during convalescence, a period called long COVID.

Keywords: long COVID syndrome, ischaemic events, active surveillance

[Abstract:1952]

AUTOIMMUNE HEPATITIS TRIGGERED BY COVID19 INFECTION: CASE REPORT

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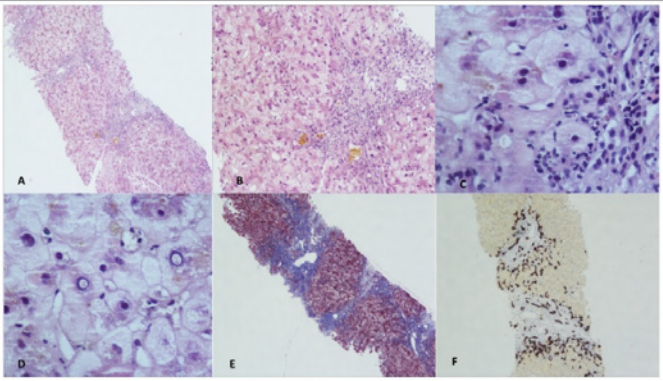
Autoimmune hepatitis (AIH) is an idiopathic, chronic, inflammatory liver disease characterized by histological features such as the presence of autoantibodies, hypergammaglobulinemia, and interface hepatitis. In the differential diagnosis, chronic viral hepatitis, toxic hepatitis caused by drugs or herbal substances, ischemic hepatitis, congestive hepatopathy, immune cholangiopathies like primary biliary cholangitis (PBC) and primary sclerosing cholangitis (PSC), and other causes of chronic liver disease with similar features should be excluded (1). Liver transaminase and bilirubin abnormalities are observed in 14-53% of COVID-19 patients. The prevalence of liver damage is not known exactly among asymptomatic patients infected with SARS-CoV-2, since there is no hospital admission or hospitalization. The most common abnormalities are mild elevation of transaminases, hypoalbuminemia, increased gamma-glutamyltransferase (GGT) levels, and hyperbilirubinemia (2,3). It has been shown that systemic COVID-19 infection triggers many autoimmune diseases such as acute haemolytic anaemia, macrophage activation syndrome, Kawasaki disease, Guillain-Barré syndrome, and autoimmune thrombotic thrombocytopenic purpura, and AIH (4). This article presents a case of AIH developed after COVID-19 infection presenting with acute fulminant hepatitis symptoms and signs.

Keywords: autoimmune hepatitis, COVID-19, immunosuppression



A, B, C) Mixed type, severe inflammatory cell infiltration, sparse plasma cells, irregularity in the portal area-parenchyma borders, cytoplasmic bile pigment granules, diffuse canalicular and ductular bile plugs, few extensive necrosis with portal-central fusion tendency, pseudo glandular cords sequence. H&E, x40, x200, x400 (respectively).
D) Intranuclear inclusion-like appearance. H&E x400
E) Significant fibrosis with frequent portal-to-portal bridging and a tendency to a nodule in several areas. Masson-trichrome, x40
F) Ductular proliferation, a ductular reaction in bile ducts. CK 7 and CK 19 immunoreactivity, x40.

Figure 1. *Liver tru-cut biopsy, microscopically, histomorphological, histochemical, and immunohistochemical findings.*

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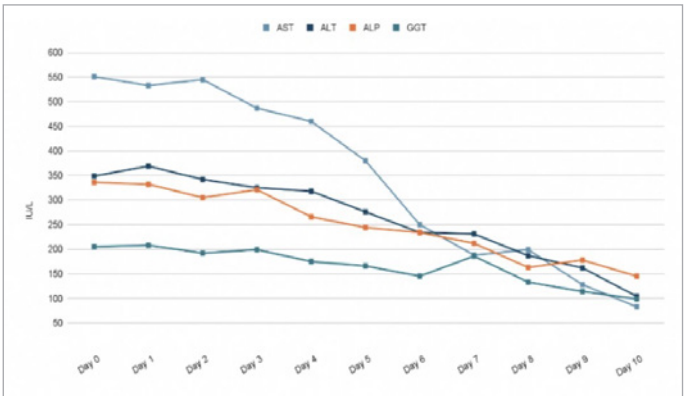

	T. bilirubin	D. bilirubin	INR
Day 0	18,72	15,91	4,2
Day 2	17,83	14,36	3,9
Day 4	14,26	11,34	3,3
Day 6	12,43	8,93	2,3
Day 8	7,31	5,37	2,1
Day 10	4,82	3,56	1,7
Day 12	2,78	1,65	1,4

Figure 2. Serum bilirubin, INR, serum aminotransferases, and biliary enzyme values during the hospitalization.

[Abstract:1962]

THE RELATIONSHIP OF TOTAL OXIDANT AND ANTIOXIDANT LEVELS TO THE CLINICAL COURSE OF THE DISEASE IN COVID-19 PATIENTS

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Purpose: TAS and TOS measurements are strong candidates as reliable biomarkers for prognosis of various diseases. This study aims to investigate whether total oxidant and antioxidant levels could be used as a prognostic factor in the clinical course of the disease in patients diagnosed with COVID-19.

Methods: Subjects were selected from patients who applied to University Hospital between January 2021 and June 2021. COVID-19 subjects (n = 73) and control subjects (n = 81) were included in this study and blood samples were drawn within 24 h of the onset of symptoms. The control group was followed up for 2 weeks and the patients group was followed up for 8 weeks for their clinical progression. TAS and TOS were measured with a commercially available assay kit.

Findings: The TAS values in patient and control groups were in consecutive order 1.13± 1.33 vs 2.64 ±0.97 mmol/L. This difference was statistically significant (p <0.0001). The TOS values in patient and control groups were in consecutive order 10.80±6.30 vs 13.10±5.6 μmol/L (p <0.0001). Additionally, as a result of the clinical follow-up of the patients, a significant relationship was found between the clinical course (mild, moderate, and severe) and TAS TOS values in the initial phase (p <0.0001).

Conclusions: In this study, TAS and TOS levels were significantly different in patients and control group and in different clinical presentations. Therefore, TOS and TAS levels might be used as prognostic factors in patients with COVID-19 at the beginning stage of the disease.

Keywords: COVID-19, pathophysiology, total oxidant level, total antioxidant level, clinical course

[Abstract:1976]

LONG-TERM CYTOKINE PROFILE COMPARISON BETWEEN SARS-COV-2 INFECTED AND NON-INFECTED PATIENTS

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Purpose: The acute phase of COVID-19 often involves heightened cytokine levels, potentially leading to a cytokine storm in infected individuals. However, the long-term cytokine profile and inflammatory status in individuals previously affected by COVID-19 remain poorly understood. This study aims to investigate and compare the extended cytokine profiles between individuals previously infected with SARS-CoV-2 and those who were not infected, shedding light on the enduring effects of the virus on immune responses.

Methods: This study enrolled 100 volunteers aged between

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18 to 60 years, consisting of 50 individuals who had previously experienced a COVID-19 with a minimum three-month recovery period and another 50 who had not encountered the virus. None of the participants displayed clinically detected active infections at the time of sampling. Serum samples were obtained from each volunteer, and cytokine levels including IL-1, IL-6, TNF-α, and IL-17β were measured using a bead-based flow cytometry assay. Statistical analysis was performed on the collected data to comprehensively assess and compare the cytokine profiles between the two groups by SPSS.

Findings: No statistically significant differences were observed between the two groups concerning IL-1, and TNF-α levels. However, the increased levels of IL-6 and IL-17β were found in individuals with a history of previous COVID-19 ($p<0.05$)

Conclusions: Our results suggest that chronic inflammation can be a long-term effect and IL-6 and IL-17β also may be associated with this chronic inflammation in individuals with a history of previous COVID-19. Further researches are needed to explore the underlying pathophysiology of long-term effects of COVID-19.

Keywords: *COVID-19, flow-cytometry assay, interleukin-1 interleukin-6, interleukin-17β, TNF-α*

[Abstract:2006]

MULTISYSTEM INFLAMMATORY SYNDROME OF THE ADULTS (MIS-A). THE UNDERCOVER THREAT FOR YOUNG ADULTS. A SYSTEMATIC REVIEW OF MEDICAL CASES

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Background: COVID-19 related syndromes are not yet well described and understood. MIS-A is a recently characterized syndrome affecting multiple organs of young adults, causing serious complications, and resulting in shock, and serious complications even death.

Objectives: To determine clinical characteristics, course, and complications of MIS-A in a systematic way and summarize used treatments.

Methods: Literature search in March 2023 in PubMed and Scopus databases. Case reports and case-series that fulfilled the CDC criteria for MIS-A were eligible for inclusion.

Results: A total of 71 patients from 60 reports were included. 66% of the patients were male and the mean age of the synthetic cohort was 32.9 years old. The majority (70.4%) of the cases had no significant medical history. MIS-A was diagnosed after a median of 4 weeks. All but two patients presented with cardiac symptoms, while the most common secondary diagnostic criterion was abdominal pain, vomiting or diarrhoea followed by shock or hypotension. Heart failure therapy and immunomodulation were used as therapeutic options. Although more than half of the cohort was admitted to the ICU (n=39) only 4 deaths were reported.

Conclusions: MIS-A can affect patients independently of age, sex, and comorbidity status, resulting in serious complications, often including severe cardiac disease, shock, acute kidney injury and sometimes death. It can occur immediately after COVID-19 acute infection until two months later, usually manifesting four weeks after acute infection.

Keywords: *COVID-19, MIS-A, acute cardiac disease, hyperinflammation*

[Abstract:2106]

IN-HOSPITAL MORTALITY AND POST-DISCHARGE ALL-CAUSE MORTALITY OF COVID-19 INFECTION: A TERTIARY CENTER EXPERIENCE

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Aim: Coronavirus disease 2019 (COVID-19) primarily involves respiratory system has been the most overwhelming pandemic in last decade. We aimed to demonstrate in hospital and long-term mortality rates and effective factors in COVID-19 infection.

Methods: 939 patients hospitalized due to moderate-severe COVID-19 infection between January 2020 and June 2021 enrolled retrospectively. COVID-19 disease severity was defined according to WHO guidelines. Descriptive characteristics, co-morbidities and laboratory results were evaluated according to in-hospital death, death in follow up and survival status. Cox regression analysis was performed for effective factors on mortality.

Results: Among 939 patients, 822 patients were discharged, and in-hospital mortality was 12.4%. 131 (13.9%) were followed in ICU and 119 (12.6%) patients were intubated. Mean post-discharge follow up period was 554±202 days. Among discharged patients 744 (79%) patients were survived after discharged and 81(8.6%) patients were deceased at follow up. Age (HR:1.029 (1.007-1.051), p=0.009), serum ferritin (1.000, p=0.002) and chronic renal failure (HR:2.309, p=0.044) had an effect on in-hospital mortality. In addition, age (HR:1.048, p<0.001), and the presence of malignancy (HR:0.124, p<0.001) had an effect on post-discharge mortality.

Conclusions: Overall, we demonstrated that older patients with COVID-19 infection had an increased risk of both in hospital mortality and post-discharge mortality. While high ferritin levels and the presence of chronic renal failure increases the risk of in-hospital mortality, presence of malignancy increases post-discharge mortality.

Keywords: *mortality, COVID-19, survival*

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[Abstract:2135]

EVOLUTION OF SARS-COV-2 INFECTION IN PATIENTS WITH SYSTEMIC AUTOIMMUNE DISEASES AND OTHER IMMUNE-MEDIATED INFLAMMATORY DISEASES IN A REGIONAL HOSPITAL

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Summary: Patients undergoing immunosuppressive or immunomodulatory (IS/IM) therapy for systemic autoimmune or immune-mediated inflammatory diseases (SAID/IIMID) infected with SARS-CoV-2 do not exhibit a more adverse clinical outcome than the general population.

Purpose: This study aims to compare the progression of COVID-19 in patients receiving chronic IS/IM therapy for SAID/IIMID with those not undergoing IS/IM treatment. Utilizing a composite endpoint, including the need for respiratory support, admission to the intensive care unit (ICU), and mortality, the study seeks to analyse factors associated with the composite endpoint, differences in readmission rates, and 30-day mortality.

Methods: Conducted as a retrospective, single-centre cohort study on patients with microbiologically confirmed SARS-CoV-2 infection from March 2020 to March 2021. The population diagnosed with SAID/IIMID undergoing IS/IM treatment will be identified, and a well-matched control group will be generated using propensity score matching. Investigating differences in the composite endpoint, the study will employ univariate and multivariate analyses with binary logistic regression to evaluate factors associated with the composite endpoint.

Findings: The study population comprises 3.08% of the overall sample, with the composite endpoint occurring in 36.1%, showing no discernible disparities compared to the control group. Correlations were observed between the composite endpoint and the administration of convalescent plasma, as well as C-reactive protein levels exceeding 9.45. No statistically significant differences were noted in readmission rates or 30-day mortality, and these findings remained consistent across subgroup analyses.

Conclusions: Chronic IS/IM therapy in patients with SAID/IIMID is not associated with adverse outcomes in COVID-19.

Keywords: *immunomodulatory therapy, autoimmune diseases, SARS-CoV-2*

Multivariate analysis:

- Systemic autoimmune disease with immunosuppressive or immunomodulatory treatment.
- Gender.
- Diabetes mellitus.
- Hospitalization treatment.
- Complications during admission.

	ORa	IC 95%	p
Female Sex	0,303	0,08-1147	0,079
SEIMC Score	3370	0,864-13136	0,080
CRP>9,45	17854	2806-113623	**0,002**
Fungal infection	25787	1748-380368	**0,018**
Plasma	4884	0,953-25018	0,057

Figure 1. *Multivariate analysis was conducted, incorporating the following variables: Systemic autoimmune disease with immunosuppressive or immunomodulatory treatment. (EAS/EIIM with IS/IM treatment); gender; diabetes mellitus; PCR > 9.45; SEIMC score > 9.5; in-hospital treatment with antibiotics, corticosteroids, plasma, hydroxychloroquine, tocilizumab, and remdesivir; and complications during admission such as bacterial infection, fungal infection, acute renal failure, anaemia, and haemorrhage. Variables with >10% missing data and those subsumed within others were excluded. The Hosmer-Lemeshow test yielded a result of 0.778.*

[Abstract:2143]

INCIDENCE STUDY OF IMMUNE-MEDIATED INFLAMMATORY DISEASES AND AUTOIMMUNE PHENOMENA IN PATIENTS WITH A HISTORY OF SARS-COV-2 INFECTION IN THE ORIHUELA HEALTH DEPARTMENT

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Summary: This study investigates the incidence of autoimmune events following COVID-19 admission at a Spanish regional hospital during the initial three pandemic waves. The objective is to discern any correlation between infection severity and autoimmune disorder development.

Purpose: The primary aim is to analyse the occurrence of immune-mediated inflammatory diseases and autoimmune phenomena in COVID-19 patients, probing into potential associations with infection severity. The study spans from March 2020 to March 2021, tracking patients until February 15, 2023.

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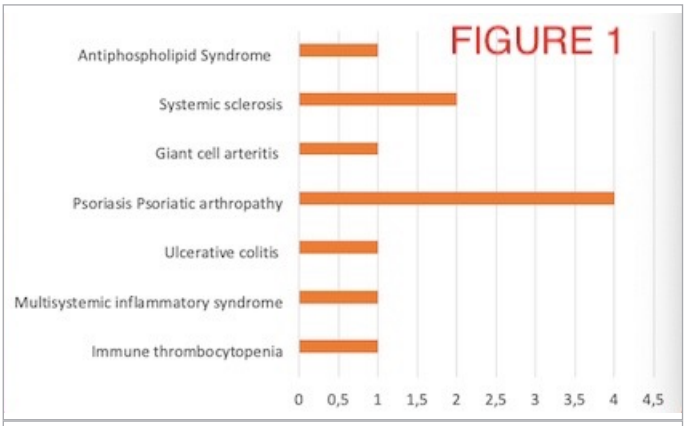
Methods: A unicentric longitudinal retrospective study utilizes a historical cohort approach. Patients initially admitted for COVID-19 are examined for autoimmune events, considering vaccination status and time from infection or vaccination to event onset. A binary logistic regression model explores associations between factors and autoimmune event development.

Findings: The incidence density rate of autoimmune events in COVID-19 patients during hospitalization is 8.4 per 1000 person-years, involving 12 immune-mediated inflammatory diseases and 7 autoimmune phenomena. Psoriasis is the most prevalent disorder. The median time between COVID-19 symptoms and autoimmune event onset is 125 days. Vasoactive drug administration during ICU admission is the sole factor associated with autoimmune event development.

Conclusions: A notable percentage of patients experience autoimmune events post-COVID-19 admission, with psoriasis being prominent. Importantly, no significant association is observed between COVID-19 severity and autoimmune disease risk.

Keywords: *autoimmune events, COVID-19, immune-mediated diseases*



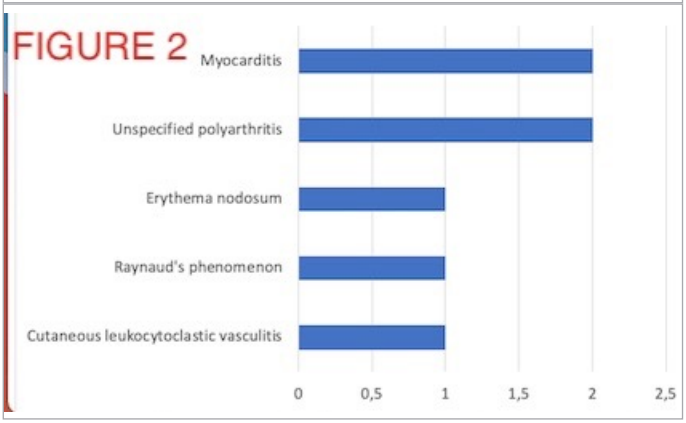


Figure 1 and 2. *In the follow-up conducted until February 15, 2023, 19 cases of autoimmune events were identified in 18 patients, resulting in an incidence density of 8.48 per 1000 patient-years of follow-up. There were 12 newly emerging systemic autoimmune diseases (1.2%) and 7 autoimmune phenomena (0.7%). One patient concurrently presented with both a systemic autoimmune disease and an autoimmune phenomenon. Figures depict the frequency distribution of each of the developed pathologies.*

[Abstract:2144]

LONG-TERM COGNITIVE DECLINE RISK AND ASSOCIATED FACTORS IN DISCHARGED OLDER ADULTS WITH COVID-19: A LONGITUDINAL PROSPECTIVE STUDY

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Insufficient information on long-term brain health and risk factors related to cognitive decline after recovery from COVID-19 is available at advanced ages. Our aim was to explore the prevalence of cognitive decline and its associated factors among older adults discharged after COVID-19 infection. This prospective observational study enrolled older individuals (aged ≥65 years) hospitalized for COVID-19 infection at a tertiary hospital. Discharged patients were contacted after an average of 15 months and a brief battery was administered during telephone interviews to assess their mental status. Of 174 patients, 77 (44.3%) showed cognitive decline after follow-up. Female gender and each increase in the Deyo/Charlson comorbidity index score were independent risk factors for long-term cognitive decline on multivariate analysis. Our study provides key insights into discharged older adults with COVID-19 at risk of cognitive decline in the long term and helps us ascertain the factors associated with this problem.

Keywords: *COVID-19, cognitive dysfunction, older adult, long term adverse effects*

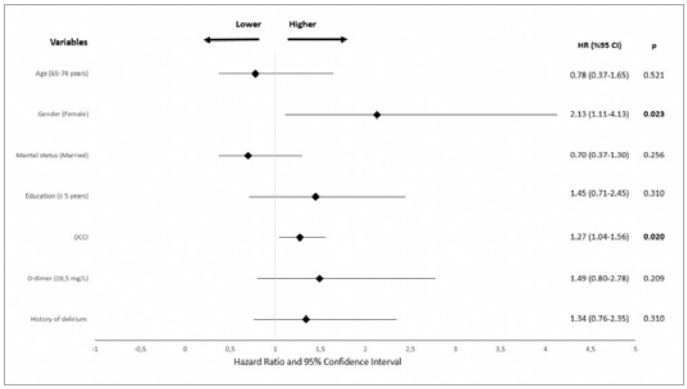

Figure 1. *Multivariate analysis of the relationship between cognitive decline and clinical variables.*
In the univariate Cox regression analyses, age (>75 years) (HR=1.98; 95% CI:1.24-3.15; p=0.004), female gender (HR=2.57; 95% CI:1.50-4.41; p=0.001), education (≤5 years) (HR=2.51; 95% CI:1.66-3.78; p<0.001), each point increase in DCCI score (HR=1.34; 95% CI:1.16-1.56; p<0.001), D-dimer (≥0.5 mg/L) (HR=2.37; 95% CI:1.33-4.23; p=0.003), and a history of delirium (HR=1.90; 95% CI:1.21-2.99; p=0.006) were associated with the risk of cognitive decline. Current smoking and anticholinergic burden (≥1) were not different in the univariate Cox regression analysis. In the multivariable analysis,

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female gender (HR=1.27; 95% CI:1.04-1.56; p=0.020) and each point increase in DCCI score (HR=1.34; 95% CI:1.16-1.56; p<0.001) were independently associated with cognitive decline risk

Table 1. Characteristics of the study sample.

Variables	Total (n=174)	Cognitive Decline		p
		Yes (n=77)	No (n=97)	
Demographics				
Age (years), mean ± SD	70.4±6.8	73.0±7.8	68.3±5.0	**<0.001***
65-74, n (%)	133 (76.4)	47 (61.0)	86 (88.7)	**<0.001**
75+, n (%)	41 (23.6)	30 (39.0)	11 (11.3)	
Gender (female), n (%)	97 (55.7)	60 (77.9)	37 (38.1)	**<0.001**
Marital status (married), n (%)	122 (70.1)	42 (56.8)	80 (82.5)	**<0.001**
Education (≤ 5 years), n (%)	21 (12.1)	21 (28.4)	0 (0.0)	**<0.001**
Current smoking, n (%)	45 (25.9)	13 (16.9)	32 (33.0)	**0.016**
Comorbidities				
DCCI, n (%)	3.8±1.5	4.2±1.5	3.5±1.3	**0.001***
Drug count, mean ± SD	3.8±2.9	4.0±2.6	3.6±3.1	0.100*
Polypharmacy, n (%)	57 (32.8)	28 (38.4)	29 (29.9)	0.367
Anticholinergic burden (≥1), n (%)	58 (33.3)	35 (45.5)	23 (23.7)	**0.003**
Laboratory parameters				
Neutrophil (<4 x 10⁹/L), n (%)	82 (47.1)	42 (54.5)	40 (41.2)	0.081
Lymphocyte (<1 x 10⁹/L), n (%)	61 (35.1)	32 (41.6)	29 (29.9)	0.109
N/L (≥8), n (%)	31 (17.8)	12 (15.6)	19 (19.6)	0.493
Anemia (F<12 g/dl, M<13 g/dl), n (%)	47 (27.0)	22 (28.6)	25 (25.8)	0.680
CRP (>30 mg/L), n (%)	95 (54.6)	37 (48.7)	58 (60.4)	0.124
D-dimer (≥0.5 mg/L), n (%)	99 (56.9)	50 (74.6)	49 (57.6)	**0.029**
GFR (<60 ml/min), n (%)	48 (27.6)	23 (29.9)	25 (25.8)	0.548
LDH (>300 U/L), n (%)	68 (39.1)	32 (45.7)	36 (44.4)	0.876
Hospitalization characteristics				
ICU admission (yes), n (%)	25 (14.4)	8 (10.4)	17 (17.5)	0.183
Delirium (yes), n (%)	51 (29.3)	38 (49.4)	13 (13.4)	**<0.001**
Length of stay (>7 days), n (%)	131 (75.3)	55 (71.4)	76 (78.4)	0.293
Follow-up time (months), mean ± SD	15.0±3.2	15.5±2.8	14.5±3.5	0.194*

Abbreviations: DCCI, Deyo/Charlson Comorbidity Index Score; N/L, Neutrophil/Lymphocyte ratio; F, Female; M, Male; CRP, C-Reactive Protein; GFR, Glomerular Filtration Rate; LDH, Lactate Dehydrogenase; ICU, Intensive Care Unit. Missing data: Education (7), CRP (2), D-dimer (22), and LDH (23). *Mann Whitney-U test

Table 1. *Characteristics of the study sample.*

We enrolled 174 patients (mean age 70.4±6.8 years), with slight female predominance (55.7%). The mean follow-up period was 15.0±3.2 months (min-max:11-18 months). At the follow-up, 77 participants (44.3%) had cognitive decline. Those who developed cognitive decline were older (p<0.001), predominantly women (p<0.001), less married (p<0.001), lower educated (≤5 years) (p<0.001), had more current smoking (p=0.016), more DCCI score (p=0.001), more anticholinergic burden ≥1 (p=0.003), more D-dimer level ≥0.5 (p=0.029), and more delirium history during hospitalization (p<0.001) than those without cognitive decline. The number of medications, polypharmacy, other laboratory parameters, ICU admission, length of hospital stay, and follow-up period were no different between the two groups. The characteristics of all the participants are displayed in Table 1.

Table 2. Long-term mental health status after Covid-19 infection

Variables	Total (n=174)	Cognitive Decline		p
		Yes (n=77)	No (n=97)	
Mood status				
PHQ-2, median (min-max)	1 (0-6)	2 (0-6)	1 (0-6)	0.065*
PHQ-2 (≥3), n (%)	38 (21.8)	23 (29.9)	15 (15.5)	**0.022**
GAD-2, median (min-max)	1 (0-6)	1 (0-6)	0 (0-6)	**0.003***
GAD-2 (≥3), n (%)	34 (19.5)	24 (31.2)	10 (10.3)	**0.001**
Cognitive status				
T-CogS-TR, mean ± SD	21.6±3.3	18.7±2.5	24.0±1.3	**<0.001***

Abbreviations: PHQ-2, Patient Health Questionnaire-2; GAD-2, Generalized Anxiety Disorder-2; T-CogS-TR, The Turkish Version of the Telephone Cognitive Screen. *Mann Whitney-U test p<0.05 was statistically significant.

Table 2. *Long-term mental health status after Covid-19 infection.*

The mean score of all subjects on the T-CogS-TR questionnaire after follow-up was 21.6±3.3. In the cognitive decline group, the mean T-CogS-TR score was 18.7±2.5, whereas in the group without cognitive decline it was 24.0±1.3. The cognitive decline group had more clinically significant depression and anxiety symptoms (p=0.022 and p=0.001, respectively) (Table 2).

[Abstract:2278]

TO ANALYZE THE CHARACTERISTICS OF PATIENTS WITH COVID-19 HOSPITALIZED IN AN INTERNAL MEDICINE SERVICE IN THE MONTH OF MARCH 2023, THEIR READMISSION AND MORTALITY RATES

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Of the 412 patients hospitalized during March, there were 39 with SARS-CoV-2 infection (9.9% of all those admitted). The predominant sex was female with 21 women (53.85%) and the mean age was 79.74 years (σ 13.71). As for the degree of functionality according to the Barthel scale, 8 (25.64%) were independent compared to 23 who presented some degree of dependence (10 mild (20.51%), 5 moderate (12.82%), 1 severe (2.56%), and 7 total (17.95%), with the degree of dependence not being reflected in the clinical history of the remaining 20.51% of patients)With regard to comorbidities, they had a mean Charlson scale score of 2.87 points (σ 2.28), the most frequent being cerebrovascular disease, heart failure, dementia, COPD and moderate diabetes mellitus.

Finally, their average length of stay was 9.43 days (σ 9.52). Two patients (5.14%) died during admission and another two died in the first month after hospital discharge, making a total of four deaths in the first 30 days. Thus, there was a 10.26% mortality rate in the group of patients admitted with COVID-19, compared to 54 deaths (14.5%) without SARS-CoV-2 infection, although there was no statistical difference between the two groups (p 0.630). Furthermore, although 5 patients attended the ED in the first month after discharge (13.51% of those alive at discharge), finally no patient required readmission, showing here significant differences compared to the group of patients without COVID-19 infection (37 readmissions (11.4%); p 0.003)

Keywords: *COVID-19, comorbilities, mortality*

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[Abstract:2392]

EXPERIENCE IN THE CARE OF PATIENTS WITH SUSPECTED LONG COVID SYNDROME AT A SECONDARY LEVEL HOSPITAL

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Purpose: The current study focuses on long COVID syndrome, a collection of symptoms affecting individuals who have recovered from COVID-19.

Methods: A descriptive study was conducted by reviewing the electronical medical records of all patients attended for this suspicion in the specific area of a secondary level hospital from February 2022 to February 2023.

Results: Out of 113 patients, less than 10% required hospitalization during the acute phase and only two patients experienced severe sequelae due to admission. The average age was 49.5 years, with an average of 2.16 diagnoses per patient. Respiratory pathologies were the most prevalent (28.3%), encompassing sleep apnea/hypopnea syndrome, gastroesophageal reflux-induced cough, chronic obstructive pulmonary disease and asthma. Digestive pathologies accounted for 17.7%, with gastroesophageal reflux, sugar intolerance, and hepatic steatosis/fibrosis being most frequent. Other diagnoses included migraine and fibromyalgia. Over 57% of patients had additional pathologies such as atrial fibrillation, hemochromatosis and autoimmune diseases. A previously unidentified high or very high cardiovascular risk was present in 24% of patients. Concerning long COVID syndrome, 30% exhibited symptoms meeting diagnostic criteria, although only in 23% patients these symptoms were the ones prompting consultation (e.g., brain fog and dysautonomia).

Conclusions: More than 75% of patients with suspected long COVID syndrome showed concurrent pathologies, emphasizing the importance of thorough medical history and evaluation for accurate diagnosis and timely treatment.

Keywords: long COVID syndrome, comorbidity, respiratory diseases

[Abstract:2486]

CORONAVIRUS DISEASE 2019 INFECTION IN A GITELMAN SYNDROME PATIENT: A CASE REPORT

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Introduction: Patients with Gitelman syndrome (GS) are rare genetic tubulopathies with endogenously elevated levels of ACE2. *In vivo* data from GS patients may shed light on the beneficial role of RAS blockers in COVID-19 and its complications, as their use further increases ACE2 levels. It is therefore possible that this rare tubulopathy may offer a protective effect against COVID-19. In light of the current data, this is the first case of Gitelman syndrome with COVID-19 reported in the literature from Turkey.

Case Presentation: A 26-year-old female patient with Gitelman syndrome presented to our outpatient clinic complaining of sore throat, cough, fatigue. At the time of admission, her vital signs were stable, no abnormalities were noted on physical examination except for a hyperaemic oropharynx. She was taking spironolactone 25 mg, potassium citrate, potassium bicarbonate, and magnesium oxide 365 mg. Real-time PCR was positive. She was hospitalized for severe hypokalaemia and hypomagnesemia. Because of the electrolyte imbalance, potassium and magnesium were administered intravenously. The patient had not been vaccinated against COVID-19 and refused specific treatment. The diagnosis of Gitelman syndrome was made 9 years ago on the basis of clinical and laboratory data. Therefore, a genetic mutation study was performed; a homozygous c.513del p.Trp172Glyfs*10" mutation in the *SLC12A3* gene was detected. After supportive treatment, she was discharged.

Discussion: GS is characterized by metabolic alkalosis, hypokalaemia and normohypotension with elevated levels of angiotensin II and markedly increased levels of ACE2 and Ang 1-7 with activation of the RAS. The RAS was not only an integral part of the SARS-CoV-2 infection process throughout the pandemic but was also observed to play an important role in lung injury, which is a major cause of morbidity and mortality.

Keywords: angiotensin-converting enzyme 2, coronavirus disease 2019, Gitelman syndrome, renin-angiotensin system

[Abstract:2533]

FACTORS RELATED WITH DURATION OF HOSPITALIZATION IN PATIENTS WITH COVID-19 INFECTION

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Aim: Coronaviruses are a large family that causes severe infections ranging from self-limiting mild infections to ARDS, which are common in the community. This study aimed to determine the factors associated with the length of stay (LOS) in hospitalized patients diagnosed with COVID-19.

Materials and Methods: This study included hospitalized PCR positive COVID-19 patients and, patients with a negative PCR but diagnosed with COVID-19 based on clinical and laboratory findings at a tertiary facility between April 2020 and April 2021. Comorbid diseases, medications and laboratory data were obtained from the patient files. The predictors of LOS longer than the median were sought with regression analysis.

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Results: A total of 295 patients 18 years and older (women: 52.5%) were analysed. The mean±SD LOS (ward plus+intensive care) were 12±SD days, 10.4±SD days for women, 13.7±SD days for men. There was no significant difference in LOS between women and men. The LOS of PCR positive patients was 9.9 times longer than those with a negative PCR ($p<0.05$). LOS was longer in the presence of hypoalbuminemia, with the use of oseltamivir and favipiravir ($p<0.05$). The patients who needed supplemental oxygen stayed significantly longer in the hospital ($p<0.001$).
Conclusions: This study showed that PCR positivity, need for supplemental oxygen at baseline, hypoalbuminemia, use of oseltamivir, and use of favipiravir were associated with longer than the median LOS.

Keywords: *COVID-19*, *length of hospitalization*, *SARS-CoV-2*

[Abstract:2554]

CLINICAL PROFILE OF PATIENTS WITH COVID-19 PNEUMONIA WHO REQUIRE HIGH-FLOW OXYGEN THERAPY IN AN INTERNAL MEDICINE WARD

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Aim: Analyse the profile of COVID-19 pneumonia patients admitted to an internal medicine ward who required high-flow oxygen therapy.
Methods: An observational, descriptive and retrospective study, including patients with pneumonia and a positive COVID-19 test, admitted to the internal medicine ward who required high-flow oxygen therapy during their hospital admission from year 2021 to 2022.
Results: A total of 53 patients were included with a mean age of 78.3 years, most of them hypertensive, diabetic and with two or more comorbidities. 35.2% were not vaccinated against COVID-19 and 27.8% received three doses. Mortality was 64.8%, with no statistical differences between vaccination groups. The average number of days from a positive COVID-19 test to hospitalization was 3.79 days and to requiring high flow oxygen therapy was 6.38 days, lasting a mean number of 6.79 days with the device, with no statistical differences between improvement, death or vaccines doses. Analytical and gasometric parameters were evaluated both at the beginning and end of high-flow oxygen therapy without finding differences in the studied groups.
Conclusions: The majority of patients were middle-aged patients with no clear gender predominance, most of them not vaccinated, followed by patients with all three doses, probably related to the appearance of new variants. It may be possible that vaccinations modify the severity of the infection in the initial stages, reducing mortality and admissions, but in those patients that reach severe pulmonary involvement, do not modify the course of the disease or its prognosis. More studies are necessary.

Keywords: *COVID-19*, *high flow oxygen*, *pneumonia*

[Abstract:2671]

ANALYSIS OF REAL-LIFE USE OF REMDESIVIR IN IMMUNOCOMPROMISED PATIENTS INFECTED WITH SARS-COV-2 VIRUS

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Background: Remdesivir was the first antiviral approved for the treatment of SARS-CoV-2 infection. An association between immune dysfunction and COVID-19 infection has been demonstrated.
Objectives: To evaluate the efficacy of remdesivir treatment in immunocompromised patients and to compare the results with the ACTT-1 study.
Materials and Methods: Observational and retrospective study from January 2021 to August 2023. Immunocompromised patients infected with SARS-CoV-2 virus, treated with remdesivir, were included. Demographic data, reason for immunosuppression, vaccination status, days of admission, treatment duration, concomitant treatments and outcome were recorded. The patient's maximum daily temperature and the lowest daily oxygen saturation were also recorded. These data were compared with those provided in the ACTT-1 study.
Results: 40 patients were selected. The mean age was 71.9 + 12.9 years. Of the haematological patients, six were receiving anti-CD20 and two chronic corticosteroids; of the oncological patients, one was receiving immunotherapy; and the rheumatological patient was receiving anti-CD20. 38 patients had received at least two doses of the vaccine. The median days of admission was 15.
Treatment with remdesivir had a median duration of 7 days. Five patients were concomitantly treated with monoclonal antibodies (three with sotrovimab, two with tixagevimab/cilgavimab), and six with corticosteroids.
Conclusions: Remdesivir has proven to be effective in immunocompromised patients, although our small sample had a slightly higher median recovery time compared to the ACTT-1 study (15 vs 10 days), and a slightly higher mortality (14% vs 11.4%).

Keywords: *remdesivir*, *COVID-19*, *immunosuppression*, *recovery*

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[Abstract:2716]

NEUROPSYHIC STATUS OF PATIENTS WITH BRIDGE SYNDROME: IDEAS OF DRUG REHABILITATION

Olga Krasnorutskaya, Natalia Strahova, Daniil Bugrimov

VSMU named after N.N. Burdenko, Voronej, Russia

Neuropsychiatric disorders in patients with post COVID syndrome are the leading factors that reduce the quality of life of the patient. The inclusion of immunoregenerative drug therapy in the rehabilitation of patients with post COVID syndrome seems relevant to us.

Objective: To study the dynamics of neuroprotective biomarkers and based on the results obtained, to evaluate the effectiveness of rehabilitation of the neuropsychic status (NPS) of patients with post COVID syndrome using PDRN drug.

Materials and Methods: 180 patients (59.4±5.8 y.o.) with post COVID syndrome and with NPS dominance divided into 2 groups: main (n=90) – inclusion of PDRN drug (sodium deoxyribonucleate) in rehabilitation and reference (n=90) groups. Biomarkers were evaluated before and after rehabilitation courses.

Results: The debut values of S-100A and NGF in the patients in the study were 37.7% higher and 24.1% lower, respectively, than in healthy people, and the NPS corresponded to pronounced moderate disorders. After rehabilitation, the main group showed a decrease in S-100A to almost normal values, and NGF recovered to a level 12-28% lower than that of a healthy person. The NPS in 50% of the patients in the main group was completely restored. In the reference group, the values of biomarkers were without dynamics, and the NPS corresponded to mild disorders in 90% of patients.

Conclusions: The inclusion of drug support in the rehabilitation process in the form of a PDRN drug (sodium deoxyribonucleate) increases the conditions and possibilities for restoring the neuropsychic status of patients with post COVID syndrome.

Keywords: *post COVID syndrome, neuropsychic status, neuroprotective biomarkers*

[Abstract:2717]

THE EFFECT OF PDRN DRUG REHABILITATION ON BIOMARKERS OF ENDOTHELIAL DYSFUNCTION IN PATIENTS WITH POST COVID SYNDROME

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Pathological hypoxic changes in endotheliocytes caused by the action of SARS-CoV-2 are accompanied by changes in biomarkers of endothelial dysfunction: the aerogematic barrier (SP-D, vWF) and other systems (HCY, VEGF-A). We consider it relevant to include immunoregenerative drug therapy in the rehabilitation of patients with post COVID syndrome.

Objective: To study the dynamics of biomarkers of endothelial dysfunction of surfactant human protein (SP-D), vWF, homocysteine (HCY) and VEGF-A, and based on the results obtained to evaluate the effectiveness of rehabilitation of patients with post COVID syndrome using PDRN drug.

Materials and Methods: 240 patients (56.8±6.3 years old) with post COVID syndrome, divided into 2 groups: the main (n=120) – inclusion of a PDRN drug (sodium deoxyribonucleate) in rehabilitation and a reference (n=120) group; biomarker assessment was carried out before and after rehabilitation courses.

Results: The debut values of SP-D and vWF in the patients in the study were 31.5% and 27.3% lower, and HCY and VEGF-A were 1.5 and 3 times higher than in healthy people. After rehabilitation, the main group showed a recovery of SP-D and vWF indicators to normal values, and a decrease in HCY and VEGF-A levels by 40% and 86%. No changes in biomarkers were observed in the reference group: SP-D and vWF remained below normal; HCY and VEGF-A were above normal.

Conclusions: The inclusion of drug support in the rehabilitation process increases the possibility of restoring the vascular endothelium of the aerogematic barrier of the lungs and reducing hypoxic manifestations of post COVID syndrome in patients.

Keywords: *endothelial dysfunction, post COVID syndrome, sodium deoxyribonucleate*

[Abstract:2804]

SOMATIC SYMPTOM DISORDER IN PATIENTS WITH POST COVID-19 NEUROLOGICAL SYMPTOMS: THE SOMATIC STUDY (SOMATIC SYMPTOM DISORDER TRIGGERED BY COVID-19)

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Purpose: To assess the diagnosis of somatic symptom disorder (SSD) in patients with unexplained neurological symptoms occurring after SARS-CoV-2 infection, also referred to as long COVID.

Methods: The study was single centre and observational. Participants were adult patients experiencing unexplained long-lasting neurological symptoms after mild COVID-19. Of the 58 consecutive patients referred in our centre, 50 were included. Patients were contacted for a standardized psychometric evaluation by phone, followed by a self-survey. Positive diagnosis of SSD was assessed according to the criteria of the diagnostic and statistical manual of mental disorders-5 (DSM-5).

Findings: SSD diagnosis based on DSM-5 criteria was positive in 32 (64%) patients. In the remaining 18 patients, SSD was

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considered possible given the high score on diagnostic scales. Physical examinations were normal for all. Brain MRI showed unspecific minor white matter hyperintensities in 8/46 patients. Neuropsychological assessment showed exclusively mild impairment of attention in 14 out of 15 tested patients, in discrepancy with their major subjective complaint. Forty-five (90%) patients met criteria for chronic fatigue syndrome. Seventeen (32%) patients were screened positive for mood-anxiety disorders, 19 (38%) had a history of prior SSD and 27 (54%) reported past trauma. Additional self-survey highlighted post-traumatic stress disorder in 12/43 (28%). Long-lasting symptoms had a major impact with a high rate of insomnia (29/43, 67%), psychiatric follow-up (28/50, 56%) and work or pay loss (25/50, 50%).

Conclusions: A majority of patients with unexplained long-lasting neurological symptoms after mild COVID-19 met diagnostic criteria for SSD, requiring specific management.

Keywords: *long COVID, post-acute sequelae of COVID-19, somatic symptom disorder*

[Abstract:2853]

CHANGES IN NATIONWIDE THYROID HORMONE REPLACEMENT CONSUMPTION DURING THE PANDEMIC: THE EFFECT OF COVID-19 PANDEMIC RESTRICTIONS ON DRUG CONSUMPTION IN TURKEY

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Purpose: The COVID-19 pandemic and consequent nationwide measures have substantial impact on various areas of healthcare service, including drug use in routine practice. We aimed to examine the changes in the utilization of thyroid hormone preparations (THP) during the COVID-19 pandemic in Turkey.

Methods: We obtained nationwide outpatient drug sales data from March 2018 till December 2022 and nationwide projection data of prescribed drug units from IQVIA Turkey. In this analysis, we evaluated mean monthly THP utilization and costs and quarterly THP prescription units for the pre-restriction period (Pre-RP, 01.03.2018-31.03.2020), restriction period (RP, 01.04.2020-31.03.2022), and post-restriction period (Post-RP, 01.04.2022-31.12.2022). We assessed utilization and prescription trends with the DID (defined daily dose/1000 inhabitants) unit.

Findings: Mean THP consumption showed an upward trend across Pre-RP (15.8±3.0 DID), RP (18.2±4.0 DID), and Post-RP (21.1±3.7 DID, p=0.001 vs. Pre-RP). Prescribed THP decreased from 7.0±0.4 DID in Pre-RP to 6.2±0.5 DID in RP (p=0.005), then increased to 7.3±0.03 DID in Post-RP (p=0.003 vs. RP). Mean THP costs increased from 2.5±0.4 m€ in Pre-RP to 2.8±0.6 m€ in RP and 3.5±0.7 m€ in Post-RP (p<0.001 vs. Pre-RP, p=0.01 vs. RP).

Conclusions: Our study revealed a consistent rise in THP consumption and costs in Turkey after the onset of the COVID-19 pandemic, contrary to transiently reduced prescription rates during the restrictions. The increase in THP utilization might be attributed to a potentially increased need for pharmacotherapy of hypothyroidism, but also contributed by the decisions of the health authority towards facilitation of less-supervised access to chronic prescription drugs.

Keywords: *hypothyroidism, drug utilization, COVID-19 restrictions*

[Abstract:2859]

EPIDEMIOLOGY AND ASSISTANCE OF PATIENTS TREATED WITH RUXOLITINIB AT ZAMORA HEALTHCARE COMPLEX I

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Purpose: During the COVID-19 pandemic, we have used multiple treatments trying to avoid its morbidity and mortality. In this descriptive study, we have analysed the results obtained in the population in which it has been used, belonging to the health area of Zamora, Spain.

Methods: A descriptive and observational study was carried out on patients who have received treatment with ruxolitinib at Zamora Healthcare Complex. The variables of sex, age, days of admission, month and year in which the infection occurred, origin prior to admission, previous respiratory or immunosuppressive pathologies, treatments previously used for COVID-19, oxygen therapy used, treating Service, support in Intensive Care as well as reason for discharge and readmissions in the month after discharge.

Findings: This treatment was used in our centre when other therapies were impossible or failed in 155 patients, generally in high-age population (mean age: 70 years). The average length of hospital stay in our series was 17 days.

Conclusions: In our series, greater use of this treatment is evident in the intermediate period of the pandemic, possibly due to the greater inflammatory component of the patients.

Keywords: *COVID-19, ruxolitinib, therapy*

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YEAR/MONTH	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER
2020	0	0	0	0	0	0	0	0	4	10	4	4
2021	11	5	3	13	10	4	22	21	4	1	3	9
2022	10	9	1	1	3	2	1	1	0	0	0	0
2023	0	0	0	0	0	0	0	0	0	0	0	0

Table 1. Patients who received treatment with ruxolitinib according to the month in which they were hospitalized

[Abstract:2941]

EPIDEMIOLOGY AND ASSISTANCE OF PATIENTS TREATED WITH RUXOLITINIB AT ZAMORA HEALTHCARE COMPLEX II

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Purpose: Analysis of the results after the use of treatment with ruxolitinib in patients with COVID-19 in patients belonging to the health area of Zamora, Spain.
Methods: Descriptive and observational study was carried out on patients who have received treatment with ruxolitinib at Zamora Healthcare Complex. The variables of sex, age, days of admission, month and year in which the infection occurred, origin prior to admission, previous respiratory or immunosuppressive pathologies, treatments previously used for COVID-19, oxygen therapy used, treating Service, support in Intensive Care as well as reason for discharge and readmissions in the month after discharge.
Findings: Internal Medicine in our Healthcare Complex has been the service that has treated the most patients with SARS-CoV-2 infection, as well as with the most use of uncommon drugs in our usual clinical practice. 87% of the patients who received treatment with ruxolitinib were admitted to the Internal Medicine service. Mortality in our series was 27% with a readmission rate in the first month after discharge of 19% of discharged patients (14% of the total who received this treatment). 11% required support in Intensive Care. The treatments previously used for the indication of ruxolitinib were:
- Dexamethasone 44 mg (96%)
- Tocilizumab: 45%
- Baricitinib: 48%
- Anakinra: 7%
7% of the patients received three drugs, 38% received two of the same before the analysed drug.
Conclusions: High mortality and readmission rate in our series. Need to use several lines of treatment to try to control the inflammatory component. High oxygen requirements.

Keywords: ruxolitinib, dexamethasone, mortality

System Oxygen Therapy	Percentage (Number of patients)
Nasal cannulas	21% (32)
Ventury system	29% (45)
High-flow nasal cannula	47% (73)
Bilevel positive airway	2% (3)
Without oxygen therapy	1% (2)

Table 1. Oxygen therapy delivery systems.
The high oxygen requirements of the patients analysed have made them require oxygenation systems that were rarely used previously in Internal Medicine services.

[Abstract:2978]

POST-COVID ASEPTIC OSTEONECROSIS: COURSE AND THERAPEUTIC TREATMENT POSSIBILITIES

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Summary: Data about a course and a treatment possibility of avascular necrosis occurred after COVID-19 are limited. Purpose of the study is to assess the peculiarities and treatment options in post-covid AON.
Methods: A sample of 89 cases with verified diagnosis «AON» was formed from 1650 patients of St. Petersburgs' rheumatic centre from 01SEP2021 to 01SEP2022. One year follow-up was performed.
Findings: Totally, 30 from the 89 patients with AON had an anamnesis of COVID-19 infection, table 1. Demographic characteristics of post-COVID AON patients are presented in table 2. No differences of AON locations and treatment were found. Surgical treatment was performed in 17 patients (19%), only therapeutical treatment – in 72 (81%) patients (tables 3-4).
Conclusions: Previous COVID-19 infection should be rate as a risk factor of AON, but no differences in clinical course and treatment of post-COVID and non-COVID AON were found. Therapeutic treatment is effective in 81% of patients with AON after the 1 year of follow-up.

Keywords: aseptic, necrosis, COVID-19

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	Patients, n (%)
Manifestation in 12 weeks after COVID-19	18 (60.0)
Worsening in 12 weeks after COVID-19	5 (16.67)
No worsening after COVID-19	7 (23.33)

Table 1. COVID-19 infection and manifestation of AON, n= 30.

	Mean age, years Clinical manifestation of AON, years Age of first X-ray detected AON, years	Clinical manifestation of AON, years	Mean age, years Clinical manifestation of AON, years Age of first X-ray detected AON, years
POST-COVID AON (n=30)	53.4±11.41	47.33±17.54	50.0±21.8
Non-COVID AON (n=59)	59.34±24.31	47.42±23.31	55.92±25.44
Total	55.31±13.0	45.81±14.05	51.46±12.72

Table 2. AON manifestation in the study sample, n=89.

Drugs	Patients, n (%)
NSAIDs	69 (77.53)
Glucocorticoids, per os*	30 (33.7)
Osteotropic therapy	11 (12.36)
Bisphosphonates	17 (19.1)
denosumab	4 (4.49)
teriparatide	2 (2.25)
SYSADOA	13 (14.61)

Table 3. Drug treatment of AON, n=89.
**- treatment of co-morbidity*

	Patients, n (%)
Decompression of bone	2 (11.77)
Autograft on a vascular pedicle	3 (17.65)
Total joint replacement	12 (70.59)

Table 4. Surgical treatment of AON, n=17.

[Abstract:2983]

FACTORS ASSOCIATED WITH DEPRESSIVE SYMPTOMS IN SECONDARY SCHOOL STUDENTS AFTER THE COVID-19 PANDEMIC IN LIMA, PERU 2023

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Introduction: The objective of the present study is to determine the factors associated with depressive symptoms in 4th and 5th grade secondary school students from a public school in Lima, Peru after the COVID-19 pandemic.

Methods: Analytical cross-sectional study with a population of 127 students, considered through a census.

Results: 51.61% of students presented depressive symptoms. Of the total participants, 58.06% were women, while 41.94% were men; 87.90% had a bad relationship with their colleagues; 21.77% had family dysfunction; 54.84% of the students did not live with both parents; 45.16% had a family member die from COVID-19 during the pandemic. In the bivariate analysis (Chi 2), female sex (p= 0.001) and family dysfunction (p = 0.002) were the two factors associated with depressive symptoms in this study. And in the multivariate analysis these associations were confirmed.

Conclusions: Being female and having family dysfunction are factors associated with depressive symptoms in 4th and 5th grade secondary school students from a public school in Lima post-pandemic in 2023.

Keywords: *COVID-19, depressive symptoms, secondary school*

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