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Introduction:

NO is involved not only in the regulation of vascular tone, but also in the inhibition of endothelial adhesion of leukocytes and inhibits inflammatory processes by reducing the synthesis of cytokines by NF-κB [1][2]. The aim of our work was to evaluate whether in patients with COVID-19 ARDS and treated with iNO this reduction of local inflammatory damage results in a concomitant reduction of systemic inflammatory indices.

Methods:

In this retrospective observational study, were included all patients who in the period from March 2020 to April 2021 were treated with iNO for at least seven days. For each patient, the values of: P/F, CRP, leukocytes, PCT, ferritin, fibrinogen and D-dimer were recorded before the start of therapy with iNO and subsequently on the first, third and seventh day. Data were compared with Student's t-test and $p < 0.05$ were considered statistically significant.

Results:

24 patients were enrolled in the study period, with an average age of 62 years. Table 1 shows the data collected. As can be seen, the improvement in the P/F ratio was immediate and has been maintained over time (pre-iNO: 95, G7: 167). A statistically significant reduction in CRP (pre-iNO: 129 mg/L, G7: 73 mg/L) and fibrinogen (pre-iNO: 6.08 g/L, G7: 4.76 g/L) was observed at three and seven days, at seven days of D-dimer (pre-iNO: 1.52 mg/L, G7: 1.1 mg/L). Ferritin showed a decreasing trend compared to baseline, reaching significance only on the third day. GB and PCT, on the other hand, did not show significant reductions.

Conclusion:

this study, while taking into account the limitation of the sample size and the absence of a control group, allowed to highlight a correlation between the use of nitric oxide and a reduction in systemic inflammation indices. Larger studies with control groups are needed to confirm these preliminary data.

References:

- [1] El Kebir D et al. Can J Physiol Pharmacol. 83(3):252-8, 2005
[2] Sun Z et al. Inflamm Res. 55(10):430-40, 2006

Table:

	pre-iNO	D1	D3	D7
P/F ratio	95	151 $p < 0.001$	168 $p < 0.001$	167. $p < 0.001$
CPR (mg/L)	129	109 $p = 0.098$	79 $p = 0.004$	73. $p = 0.001$
WBC ($10^9/L$)	11.72	12.14 $p = 0.292$	10.82 $p = 0.134$	12.39 $p = 0.284$
PCT (mcg/L)	7.79	2.29 $p = 0.085$	0.84 $p = 0.070$	0.63. $p = 0.073$
Ferritin (mcg/L)	2191	1931 $p = 0.120$	1564 $p = 0.040$	1590 $p = 0.060$
Fibrinogen (g/L)	6.08	5.88 $p = 0.235$	5.27 $p = 0.043$	4.76 $p = 0.002$
D-dimer (mg/L)	1.52	1.09 $p = 0,066$	1.20 $p = 0.055$	1.10 $p = 0.047$

Table 1