

# Unresolving COVID-19 acute respiratory distress syndrome: effect of prolonged low-dose corticosteroid rescue therapy. A retrospective monocentric case series.

Dott. LUCA DAVICCO (1), Dott. LORENZO GIOSA (2), Dott. GUIDO BUSSONE (1), Dott. ANDREA LAGUZZI (1), Dott.ssa FEDERICA MURACA (1), Dott. MICHELA GALATÀ (1)(2), Dott. GIACOMO BERTA (1), Dott.ssa CLAUDINE CANEPA (1), Dott. ROBERTO RUSSO (1), Dott. ROBERTO PENSO (1), Dott. MARCO MANTOVANI (1), Dott. PIETRO AIMAR (3), Dott. VINCENZO RUSSOTTO (1), Prof. PIETRO CAIRONI (1)(2)

(1) AOU San Luigi Gonzaga, Regione Gonzole 10, Orbassano, To, Italia.

(2) Università degli Studi di Torino - Dipartimento di Scienze Chirurgiche - Anestesia e Rianimazione, Via Verdi 8, Torino, Italia.

(3) Università degli Studi di Torino - Dipartimento di Scienze Mediche - Medicina e Chirurgia, Via Verdi 8, Torino, Italia.

Argomento: COVID-19

**Background:** In a subgroup of patients with COVID-19 related ARDS, respiratory function does not improve despite maximal support therapy, and evolves into a form of organ damage characterized by low respiratory system compliance and widespread alteration of the parenchymal structure. In the absence of therapeutic alternatives, we decided to apply prolonged low-dose steroid rescue therapy as described by Meduri (Meduri.GU et al, JAMA 1998) in non-COVID-19 ARDS population.

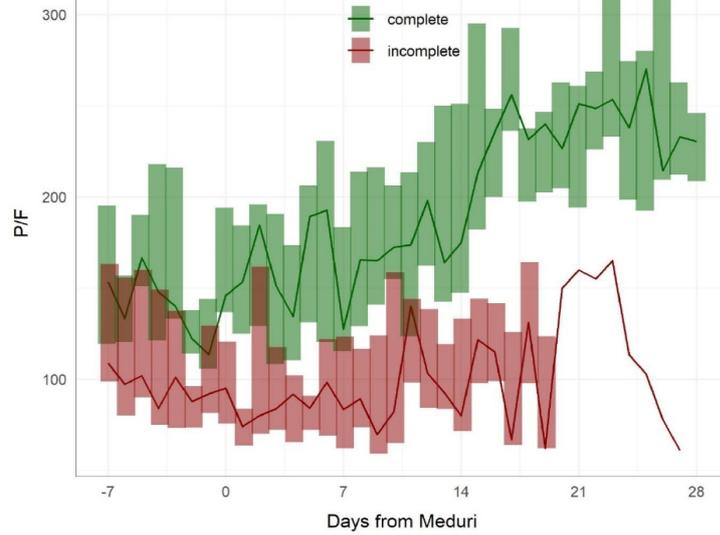
**Methods:** Retrospective analysis of patients with COVID-19 pneumonia admitted from 01/2020 to 09/2021 to the ICU of University Hospital San Luigi Gonzaga, Turin, Italy.

**Results:** A total of 158 patients were admitted to ICU with an overall-ICU mortality of 36%; of them, 16 (10%) patients received a 30-days low-dose methylprednisolone rescue therapy because of an un-resolving low-compliance ARDS evolution, with an ICU mortality of 81%. Patients who completed treatment protocol (n=7, 44%) showed a significant improvement in oxygenation (PF from 122[86-150] to 230[209-246] in a 28-days interval,  $p < 0.001$ ) and a reduced necessity of the ventilatory support applied after 16[13.5-18.0] days. In contrast, no variation in respiratory system compliance was observed ( $p$ -overall=0.5). In this subgroup of patients, ICU-mortality equaled 43% (n=4), showing an infectious cause in 75% of cases after 63[45.5-69.5] days from protocol initiation. Patients who did not complete treatment protocol (n=9, 56%) showed a disease progression with a significant worsening of both oxygenation ( $p < 0.05$ ) and lung compliance ( $p$  0.03) during the first two weeks, and an ICU-mortality of 100%. Incidence of new infectious events was 69% before the protocol and 87% during treatment ( $p$  0.19); no other clinically relevant complications related to steroid protocol has been observed.

**Conclusions:** Despite some limitations (retrospective analysis and small sample size), our experience suggest improved oxygenation and ventilatory weaning in patients who concluded steroid treatment in the absence of a documented increased infectious risk.

**Figure – PaO<sub>2</sub>/FiO<sub>2</sub> ratio variation during “Meduri” steroid rescue protocol**

[Results are expressed in terms of median and interquartile range]



	D-7	D 0	D +7	D +14	D +21	D +28
<b>COMPLETE</b>						
PF	153 [119-195]	146 [136-194]	128 [115-184]	175 [147-251]	251 [194-260]	230 [209-246]
Pt alive, (n)	6	7	7	7	7	7
Pt ventilated (n)	6	9	6	4	2	2
<b>INCOMPLETE</b>						
PF	108 [98-163]	95 [75-121]	83 [62-123]	80 [71-133]	160	-
Pt alive, (n)	6	9	6	4	1	0
Pt ventilated (n)	6	9	6	4	1	-

