PRO-ADRENOMEDULLIN IN COVID-19 PATIENTS UNDERGOING VV-ECMO, MAY IT BE USEFUL?

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BACKGROUND

Adrenomedullin (ADM) is a peptide mainly produced by vascular endothelial cells with vasodilatory, positive inotropic, diuretic, natriuretic, and bronchodilator activities. The mid-regional fragment of ADM precursor (MR-proADM) reflects the levels of active ADM and a number of clinical studies [1,2] seem to suggest that MR-proADM could be a useful biomarker for early diagnosis, risk stratification and prognosis prediction in critically ill patients with pulmonary infections [3]. Extracorporeal Membrane Oxygenation therapy (vv-ECMO) is the last supportive step in the refractory hypoxemia scenarios and its effect on the inflammatory response is debated [4]. No data are still available about its use in assessing patients with COVID-19 associated pneumonia and requiring vv-ECMO cause of refractory severe acute respiratory distress syndrome (ARDS). In the study, MR-proADM was investigated as a possible biomarker in ARDS COVID-19 patients undergoing vv-ECMO[5].

Patient ID	Age	Sex	BMI	Comorbidities	SOFA score	28 days mortality	Days of ICU	Days of MV	Days of VV-ECMO	Septic shock	Sovrinfections
1	55	F	46,38	1	4	death	33	35	18	yes	VAP / BSI
2	53	M	26,78	1	8	death	19	13	19	yes	VAP
3	52	M	26,23	0	12	death	32	33	31	yes	VAP
4	69	M	28,41	0	7	alive	46	42	22	no	no
5	55	M	32,53	1	8	death	38	39	16	yes	VAP / BSI
6	50	M	26,23	0	14	death	24	25	15	yes	VAP
7	51	M	30,1	0	12	death	9	11	6	no	no
8	49	M	25,74	1	9	alive	34	26	5	no	VAP / BSI
9	41	M	40,12	0	10	alive	56	47	24	yes	VAP
Median	**52**	-	**28,41**	-	**9**	-	**33**	**33**	**18**	-	-

Figure 1(A)

METHODS

During the COVID-19 outbreak we prospectively collected the values of MR-proADM in 9 patients admitted in ICU for vv-ECMO support, for a time frame of 14 days. All sequential adult patients requiring ICU admission of at least 48 hours and suffering from SARS-CoV-2 pneumonia, confirmed by the real-time polymerase-chain-reaction (RT-PCR) on at least one respiratory specimen, were enrolled. Patient's demographic characteristics (age, gender, body mass index, comorbidities) as well as length of mechanical ventilation and ECMO support, were collected from medical records. We considered the MR-proADM at admission and then assessed it as a trend (in both survivors and non-survivors). The MR-proADM measures were determined by the B.R.A.H.M.S. KRYPTOR compact PLUS (Thermo Fisher Scientific, Hennigsdorf, Germany) automated method using the TRACE (Time-Resolved Amplified Cryptate Emission) technique. The detection limit of the assay was 0.05 nmol/L.

RESULTS

The clinical characteristics of the patients are showed in Figure 1(A). The MR-proADM trend analysis evidenced a statistically significant difference between survivors (3 patients) and non-survivors (6 patients) (p=0.0461), especially at ICU admission with higher values in non-survivor patients, but not over the time (p=0.2047). Figure 1(B)

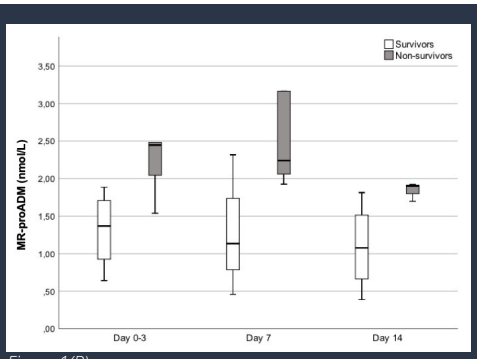

Figure 1(B)

CONCLUSIONS

Higher value of MR-proADM at admission seems to depict patients with a negative outcome as well as a lower value is observed in survival patients.Even if the clinical setting we examined is a very peculiar one – MR-proADM trend in COVID-19 patients in vv-ECMO – we believe the results obtained so far deserve further investigation.

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