

Letter To The Editor: Long-Term Renal Function After Venoarterial Extracorporeal Membrane Oxygenation.

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To the Editor,

We recently reviewed the article “Long-term renal function after venoarterial extracorporeal membrane oxygenation” by Brian ayers MD et al.¹ with deep interest. The author’s effort on this vital topic is well-written. We concur with the study’s conclusion that veno-arterial extracorporeal membrane oxygenation patients are less vulnerable to long-term dialysis. Concerns threaten the study’s validity.

Prior to the commencement of ECMO, critically ill patients who are candidates for extracorporeal membrane oxygenation have a high risk of developing AKI. In addition, ischemia/reperfusion and systemic inflammation caused by blood contact to artificial surfaces may exacerbate AKI during ECMO.A 2019 study decided

to incorporate the numerical value of these two variables for illustration purposes and discovered a high correlation with renal damage. 3 As has been proven, sepsis has a propensity to affect several organs and can culminate in multi-organ failure. Therefore, the authors should have widened their inclusion criteria, as disregarding patient characteristics may have affected the study's results. For instance, a 2020 study decided to integrate SAPS11 and SOFA (sepsis-related organ failure assessment) scores as extra patient variables to bolster their research. Secondly, plasma-free hemoglobin level is highly related with a higher likelihood of renal damage. Consequently, the authors should have addressed the patient's plasma-free hemoglobin levels and the amount of blood units required during extracorporeal membrane oxygenation.

Prior to the commencement of extracorporeal support, critically ill patients who are candidates for ECMO are at high risk for developing AKI. Even though blood flow is nonpulsatile during VAECMO, the increased renal blood flow may aid in kidney recovery. Evaluating a patient's 24-hour urine production has proven to be a reliable predictor of patient mortality. A 2016 study, for example, used 24-hour urine collection as a patient variable. It was suggested that assessing short- and long-term mortality in patients having extracorporeal membrane oxygenation by analyzing 24-hour urine samples can lead to a dramatic improvement in the health of patients undergoing extracorporeal membrane oxygenation.⁵ To reduce renal impairment in patients undergoing extracorporeal membrane oxygenation, it is necessary to undertake more investigations from a variety of angles.⁵ In contrast, variables such as ischemia/reperfusion and systemic inflammation caused by blood contact to artificial surfaces may exacerbate AKI during ECMO. AKI is therefore prevalent in ECMO patients, although its frequency and impact on prognosis are extremely diverse and largely dependent on the categories used to identify renal failure, the rationale for ECMO, and the patient groups studied. Moreover, neurological evaluation is associated with different outcomes in patients undergoing extracorporeal membrane oxygenation. The author's in their study failed to process their participants through neurological evaluation. For example, a 2020 study at regular intervals did a neurological evaluation such as pupil sizes, reactivity to light, and brain stem reflexes and found out that patients with acute cerebral strokes tend to have recurrent chronic kidney disease and a more extended stay in ICU.⁴

References:

- 1- Ayers B, Bjelic M, Kumar N, Wood K, Barrus B, Prasad S, Gosev I. Long-term renal function after venoarterial extracorporeal membrane oxygenation. *J Card Surg.* 2021 Mar;36(3):815-820. doi: 10.1111/jocs.15277. Epub 2021 Jan 8. PMID: 33416196.
- 2- Vinclair C, De Montmollin E, Sonnevile R, Reuter J, Lebut J, Cally R, Mourvillier B, Neuville M, Ruckly S, Timsit JF, Bouadma L. Factors associated with major adverse kidney events in patients who underwent veno-arterial extracorporeal membrane oxygenation. *Ann Intensive Care.* 2020 Apr 20;10(1):44. doi: 10.1186/s13613-020-00656-w. PMID: 32307616; PMCID: PMC7167383.
- 3- Pabst D, Sanchez-Cueva PA, Soleimani B, Brehm CE. Predictors for acute and chronic renal failure and survival in patients supported with veno-arterial extracorporeal membrane oxygenation. *Perfusion.* 2020 Jul;35(5):402-408. doi: 10.1177/0267659119889521. Epub 2019 Dec 2. PMID: 31789108.
- 4- Laimoud M, Alanazi M. The clinical significance of blood lactate levels in evaluation of adult patients with veno-arterial extracorporeal membrane oxygenation. *Egypt Heart J.* 2020 Oct 27;72(1):74. doi: 10.1186/s43044-020-00108-7. PMID: 33108534; PMCID: PMC7588953.
- 5- Distelmaier K, Roth C, Binder C, Schrutka L, Schreiber C, Hoffelner F, Heinz G, Lang IM, Maurer G, Koinig H, Steinlechner B, Niessner A, Goliash G. Urinary Output Predicts Survival in Patients Undergoing Extracorporeal Membrane Oxygenation Following Cardiovascular Surgery. *Crit Care Med.* 2016 Mar;44(3):531-8. doi: 10.1097/CCM.0000000000001421. PMID: 26562346.