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Dear Editor,

We read with great interest the article by Yeh *et al.* about microcirculation in cardiogenic shock supported by venoarterial Extracorporeal Membrane Oxygenation (VA ECMO) (1). We would like to commend the authors for their efforts to shed some light on this promising field. However, we would like to comment several points.

The heterogeneity of cardiogenic shock (CS) aetiologies and its complex pathophysiology requires to thoroughly study selected populations, especially when studying microcirculation. The inflammatory component in CS pathophysiology has become increasingly acknowledged (2) and it may vary significantly depending on its aetiology. The authors did not specify the causes of heart failure, and most importantly, half of the patients included in each group were patients who received ECMO for refractory cardiac arrest (E-CPR). Such patients usually present with systemic inflammation response syndrome and thus have important endothelial dysfunction, inflammation and vasoplegia. In fact, post-cardiac arrest patients have intrinsic impaired sublingual microcirculation (3). In our opinion, the heterogeneity of that studied population makes difficult the interpretation of the outcomes related to microcirculation.

The authors outlined the usefulness of early microcirculatory parameters in predicting 28-day mortality in CS shortly after VA ECMO implantation (1). They found a well-known lack of relationship between microcirculation and macrocirculation in CS (4). However, the microcirculatory assessment was performed only after VA ECMO implantation, with no information about the pre-ECMO macro and microcirculation situation. Thus, we wonder if the worse outcome may also dues to a profound pre-ECMO microcirculation impairment not sufficiently restore by VA-ECMO despite global haemodynamic normalization. In our opinion, further studies on microcirculation in CS should specifically assess microcirculation prior to ECMO implantation.

Finally, as almost 50% of CS patients are known to die despite having restored cardiac output (5), it would have been interesting to report the number of non-surviving patients eventually weaned-off ECMO and their death-leading causes (multiorgan failure, cerebral anoxia, septic shock…), especially when including such large population of E-CPR. In that line, an interesting primary outcome for next studies might be the success of weaning-off VA ECMO instead of global 28-day mortality.

List of abbreviations:

CS : cardiogenic shock

ECMO: extracorporeal membrane oxygenation

E-CPR: ECMO for refractory cardiac arrest

VA ECMO : venoarterial ECMO

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