EDITORIAL

Cardiogenic Shock: ARGEN SHOCK 2 and the Hard Road of Knowing the Truth to Change Reality

Shock cardiogénico; ARGEN SHOCK 2 y el duro camino de conocer la verdad para modificar la realidad

RICARDO LEVÍN[1, MTSAC,]

...Truth? … You can't handle the truth!
Colonel Nathan Jessup (Jack Nicholson).
"A few good men"

The fact that, besides the high associated morbidity, cardiogenic shock (CS) is the main cause of mortality in acute myocardial infarction (AMI), would be sufficient to consider it an issue of priority interest. Furthermore, except for early and adequate revascularization, the different treatments attempted to date, such as the use of vasoactive drugs, intra-aortic balloon pump (IABP) or the increasing use of venoarterial extracorporeal membrane oxygenation (VA-ECMO), have resulted ineffective in reducing the high mortality rate reported. (1-5)

The results of the ARGEN SHOCK 2 multicenter registry shed light on the dark territory of CS, and when the light shines bright and intense, it can result unpleasant and even annoying. (6)

Probably, the main result of the study, with all the mitigating circumstances applicable to a registry, is far from what is desirable or expected, as despite a revascularization rate of 91.1%, in-hospital mortality was 60.5% while 30-day mortality was 62.5%, figures that excluded patients with mechanical complications (presumably with higher mortality rate).

But facing a truth must teach us lessons and forces us to try to understand and explain the reasons; and although it may seem argumentative, something that we will call the "pandemic effect" could have occurred, as part of the time patients were recruited coexisted with COVID-19. This theory is supported by the fact that of the 54 "initial" centers willing to participate, only 23 managed to include at least one patient with AMI and CS during the 14 months of the study.

Supporting this "effect", we can add that two-thirds of patients entered the registry with CS, with a time from onset of symptoms of six hours (360 minutes). However, this does not allow us to determine the "effective" time course of CS, a fact that clearly may have influenced the results observed, highlighting the reluctance observed in many patients to timely attend medical institutions during the pandemic.

Besides this observation, and analyzing the positive data expressed in the high revascularization rate obtained, we could consider whether the classic paradigm of defining successful reperfusion in percutaneous coronary interventions in AMI patients with CS should be limited "only" to TIMI flow grade (although this is universally accepted and used) or whether it would be advisable to add other criteria expressing, on the one hand, the extent of tissue involvement and, on the other hand, its effective reversal after treatment.

A probable but common bias in our registries is a certain degree of "imbalance" in the geographical distribution of the centers where, in ARGEN SHOCK 2, of the 54 "initial" centers, 33 (61.1%) belonged to CABA and the province of Buenos Aires, with 14 (60.1%) of the 23 institutions effectively including patients.

Some considerations about the resources used.

It is clear that Swan-Ganz catheter (used in 33.3% of cases) is not a treatment, it does not "cure" per se, and, at most in expert hands, it will allow to confirm the diagnosis and will contribute to the management of CS providing information that, properly processed, could change strategies, and thus influence the prognosis. (7-8)

Intra-aortic balloon pump was used in 30.1%, which in view of the 66% of patients admitted with CS, almost all of them on vasoactive drugs, would raise the theoretical possibility that its use could have resulted in better outcomes, although its benefit has not been demonstrated in clinical practice (although this idea is physiologically reasonable). In addition, insertion of IABP is not necessarily an early procedure,

ARGENT J CARDIOL 2023;91:235-236. http://dx.doi.org/10.7775/rac.v91.i4.20645

SEE RELATED ARTICLE: Argent J Cardiol 2023;91:239-245. http://dx.doi.org/10.7775/rac.v91.i4.20650

https://creativecommons.org/licenses/by-nc-sa/4.0/
©Argentine Journal of Cardiology

[1] Co-Head, Department of Cardiology, Sanatorio modelo de Burzaco

and the high rate of complications (29.4%) deserves a separate analysis.

In the case of VA-ECMO, besides additional logistic requirements, its implementation has not yet demonstrated any influence on prognosis.

Finally, coincidentally, or not, the Council on Cardiovascular Emergency Care has completed the Consensus Statement on Cardiogenic Shock, which will be presented during the next SAC 2023 Congress. This consensus statement and the excellent contribution of Castillo Costa et al., as well as those usually made by the SAC Research Area, together with the LATIN SHOCK registry (NCT:05246683) currently under development, are intended to contribute to the understanding and subsequent change of a reality that, inevitably, needs to be modified.

Conflicts of interest

None declared.

(See authors' conflict of interests forms on the web).

REFERENCES

1. Vahdatpour C, Collins D, Goldberg S. Cardiogenic Shock. J Am Heart Assoc. 2019;8:e011991. https://doi.org/10.1161/JAHA.119.011991

2. Bloom JE, Chan W, Kaye DM, Stub D. State of Shock: Contemporary Vasopressor and Inotrope Use in Cardiogenic Shock. J Am Heart Assoc. 2023;12:e029787. https://doi.org/10.1161/JAHA.123.029787

3. Levin RL, Ruano C, Rios I, Degrange M, Perna E, Vaca I, y col. Consenso de Inotrópicos y Asistencia Circulatoria Mecánica. Rev Argent Cardiol 2020;88:382-400.

4. Thiele H, Zeymer U, Neumann FJ, Ferenc M, Olbrich HG, Hausleiter J, et al. IABP-SHOCK II Trial Investigators. Intraaortic balloon support for myocardial infarction with cardiogenic shock. N Engl J Med. 2012;367:1287-96. https://doi.org/10.1056/NEJMoa1208410

5. Thiele H, Zeymer U, Thelemann N, Neumann FJ, Hausleiter J, Abdel-Wahabet M, et al. IABP-SHOCK II Trial (Intraaortic Balloon Pump in Cardiogenic Shock II) Investigators; IABP-SHOCK II Investigators. Intra-aortic balloon pump in cardiogenic shock complicating acute myocardial infarction: long-term 6-year outcome of the randomized IABP-SHOCK II trial. Circulation 2019;139:395-403. https://doi.org/10.1161/CIRCULATIONAHA.118.038201

6. Castillo Costa Y, Delfino F, Garcia Aurelio M, D'Imperio H, Macin SM, Villaroel R, et al. Cardiogenic Shock in the Setting of Acute Coronary Syndromes in Argentina: Results from the ARGEN SHOCK 2 Registry. Argent J Cardiol 2023;91:239-245. http://dx.doi.org/10.7775/rac.v91.i4.20650

7. Bilbao J, Ruano C, Roel V, Cohen Arazi H, Duronto E, Villarreal R, y cols. Consenso de monitoreo hemodinámico invasivo y no invasivo en cuidados intensivos cardiovasculares. Sociedad Argentina de Cardiología. Rev Argent Cardiol 2022;90 (Suplemento 3):1-50.

8. Tufo Pereyra A, Bilbao J. Catéter de Swan-Ganz. Descripción, fortalezas y debilidades. Revista CONAREC 2017;33:137-44. https://doi.org/10.1055/s-0043-112803

9. Ostadal P, Rokyta R, Karasek J, Kruger A, Vondrakova D, Janotka M et al for the ECMO-CS Investigators. Extracorporeal Membrane Oxygenation in the Therapy of Cardiogenic Shock: Results of the ECMO-CS Randomized Clinical Trial. Circulation 2023;147:454-64. https://doi.org/10.1161/CIRCULATIONAHA.122.062949

10. Levin R, Ruano C, Rios I. Consejo de Emergencias Cardiovasculares y Cardiología Critica. Consenso de Shock Cardiogénico (en redacción).