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## Neurohormonal treatment in tako-tsubo cardiomyopathy precipitated by COVID-19



### Tratamiento neurohormonal en miocardiopatía de tako-tsubo precipitada por COVID-19

#### To the Editor,

We read with interest the case report by Oyarzabal et al.<sup>1</sup> on tako-tsubo cardiomyopathy precipitated by the novel coronavirus disease 2019 (COVID-19). The reported case study should raise awareness among clinicians regarding the diversity of cardiovascular complications associated with COVID-19, which now includes tako-tsubo cardiomyopathy. Due to the rarity of this complication, it may be useful to document the treatment and clinical outcomes of such patients. Although Oyarzabal et al.<sup>1</sup> mentioned the use of neurohormonal treatment in their patient with tako-tsubo cardiomyopathy, the specifics of the regimen were not detailed.

Indeed, the evidence concerning the use of neurohormonal treatment in patients with tako-tsubo cardiomyopathy is thus far inconclusive. This treatment approach usually comprises beta-blockade or renin-angiotensin system inhibition. However, beta-blocker therapy has not been found to be effective in preventing the recurrence of tako-tsubo cardiomyopathy. In a systematic review and meta-analysis of the incidence and correlates of tako-tsubo cardiomyopathy recurrence, it was reported that the recurrence rate was independent of the clinical use of a beta-blocker.<sup>2</sup> In addition, over 30% of the 1750 patients in the International Takotsubo Registry study were receiving beta-blockers at the time when tako-tsubo cardiomyopathy developed.<sup>3</sup> The study also reported no evidence of a mortality benefit at 1 year with the use of a beta-blocker upon discharge after tako-tsubo cardiomyopathy admission. Moreover, in a retrospective analysis of 2672 patients with tako-tsubo cardiomyopathy, 423 of whom received beta-blocker therapy within the first 2 days of diagnosis,

there was no significant association between the use of beta-blockers and 30-day in-hospital mortality.<sup>4</sup>

There is mixed evidence on the use of a renin-angiotensin system blocker in patients with tako-tsubo cardiomyopathy. As reported in the International Takotsubo Registry study, the use of an angiotensin-converting enzyme inhibitor or angiotensin receptor blocker was associated with a survival benefit at 1 year.<sup>3</sup> However, a subsequent Mayo Clinic study that included 265 patients with tako-tsubo cardiomyopathy found that the use of an angiotensin-converting enzyme inhibitor at discharge was not a significant predictor of 1-year survival.<sup>5</sup>

It is nonetheless possible that the clinical outcomes associated with the use of neurohormonal treatment differ according to precipitating condition. Therefore, it would be useful for the authors to detail the treatment regimen of their patient, as well as the outcomes, to add to the literature regarding what treatments may or may not be valuable in tako-tsubo cardiomyopathy precipitated by COVID-19.

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## Neurohormonal treatment in tako-tsubo cardiomyopathy precipitated by COVID-19. Response



### Tratamiento neurohormonal en miocardiopatía de tako-tsubo precipitada por COVID-19. Respuesta

#### To the Editor,

The neurohormonal treatment received by our patient comprised a beta-blocker, bisoprolol, and an angiotensin-converting enzyme inhibitor (ACE-I), enalapril. At 3 months of follow-up, he had no further episodes of chest pain or signs of heart failure.

As mentioned in the Letter, although treatment with beta-blockers may slow the effect of catecholamine release thought to be the pathophysiological mechanism behind tako-tsubo cardiomyopathy, clinical benefits have not been demonstrated. However, treatment with ACE-I, which has shown improved survival in a registry, could contribute to ventricular remodeling.

In the case of coronavirus disease 2019 (COVID-19), treatment with ACE-I has generated controversy. When the disease first emerged, animal studies<sup>1</sup> demonstrated that coronavirus uses angiotensin-converting enzyme 2 (ACE-2), an aminopeptidase with abundant expression in the lungs and heart, as a receptor for cell entry. Treatment with ACE-I increases the expression of ACE-2, leading to the hypothesis that it may affect susceptibility to the infection or its virulence. Later, a case-control study<sup>2</sup> with more than 6000 patients found no evidence of an association between these drugs and COVID-19; current protocols therefore recommend continuing treatment with ACE-I in patients with SARS-CoV-2 infection in the absence of other contraindications.

As tako-tsubo cardiomyopathy is a rare complication of SARS-CoV-2 infection, to date there are no specific studies on the

recommended treatment. The only treatment with evidence on survival in COVID-19 is corticosteroids<sup>3</sup> (dexamethasone), possibly due to its effect on the inflammatory cascade that occurs in this disease. Bearing in mind that the systemic inflammatory status could contribute to the development of tako-tsubo cardiomyopathy, treatment with dexamethasone may affect its onset and outcome, although specific studies are needed to assess this.

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## Clinical management indicators for the cardiovascular area. A note for the debate



### Indicadores de gestión clínica en el área cardiovascular. Un apunte para el debate

#### To the Editor,

The editorial by González-Juanatey et al.<sup>1</sup> is of great interest and stimulates the debate on the metrics to be used by cardiology units

(CU) (services, clinical management units, institutes, etc) to assess their management results. The focus of the proposal and the 111 indicators it contains deserve joint reflection by those responsible for CUs, which could be promoted by the Spanish Society of Cardiology (SEC). The following points are offered in relation to this proposal:

- “Measure outcomes. Add value”. In line with Porter's strategy of “adding value”,<sup>2</sup> the authors suggest that health outcome indicators should be prioritized. Although this approach is correct, only a third of the proposed indicators—many of which overlap—are outcome indicators (mortality, readmissions, complications). It is also difficult to understand the rationale underlying some of the process or activity indicators (does

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