

COVID-19 and heart failure: the dark side of the moon

Antonio Cannata^{1,2*}, Daniel I. Bromage^{1,2}, and Theresa A. McDonagh^{1,2}

¹School of Cardiovascular Medicine & Sciences, King's College London British Heart Foundation Centre of Excellence, London, UK; and ²Department of Cardiology, King's College Hospital NHS Foundation Trust, London, UK

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Since the advent of the COVID-19 pandemic, the scientific community has rapidly and impressively diverted its attention to the generation of new evidence about the novel coronavirus; including the study of both its impact and management. However, this has been accompanied by opportunism and some of the published data have been partial, rushed and occasionally inaccurate.¹ Despite the high volume of research reports published, the quality, novelty, and impact of some of the work has been modest.²

For cardiovascular (CV) disease, most reports have characterised the impact of COVID-19 on patients with known CV disease or risk factors.^{3–5} A smaller body of research has focused on changes in the management and outcomes of patients with CV conditions who did not have COVID-19.^{4,5} However, nearly all such reports have reported on hospital admissions, in-hospital management, and in-hospital mortality,^{3,6–8} reflecting the easier availability of hospital admission data. Established registries investigating quality of care, such as the Get With The Guidelines registry in the US, and the National Heart Failure Audit in the UK, are ideal sources to retrieve useful information on patients admitted to hospital, including their short-term outcomes. Analysis of data from such registries led to the publication of many studies on the impact of the pandemic on inpatients with CV conditions with and without COVID-19.

In the heart failure (HF) setting, several studies have investigated admission rates during the pandemic, changes in in-hospital healthcare provision, and differences in in-hospital outcomes.^{3,9,10} To date, we have a good understanding of how the characteristics of HF patients and their management changed during the pandemic; patients admitted to hospital experienced more severe signs and

symptoms of HF, less treatment optimisation, and an increased in-hospital mortality.^{3,11,12}

In this issue of the Journal, Keshvani et al.¹³ highlight the impact of the COVID-19 pandemic on HF quality of care and in-hospital adverse events across different waves of the pandemic. Using the Get With The Guidelines registry, the authors identify how patients admitted with HF received a similar standard of care compared to previous years but experienced longer hospitalisations and a higher in-hospital mortality. This was driven by a three-fold higher risk of death in patients with HF admitted with concomitant COVID-19, highlighting the importance of COVID-19 infection as a trigger for adverse outcomes in HF patients. Their findings were consistent across geographical differences in the US and during different stages of the pandemic. The authors studied patients admitted throughout the first year of the pandemic; this is one of only a few publications on different waves of the pandemic.¹⁴ As such it reflects various strategies adopted to support struggling healthcare systems. Furthermore, it is important to note that, although clinical presentation and quality of care were similar to the pre-pandemic period, the higher mortality cannot be explained only by concomitant COVID-19 infection; worse optimisation rates of medical therapy may have played a major role.

There are both strengths and limitations of these analyses using high-fidelity data, allowing detailed characterisation of the in-hospital episodes. Among the limitations are that they leave important questions unanswered; was there a concurrent increase in mortality in the community?; what happened to the management of HF patients who were not admitted?; were patients appropriately followed up after discharge?; were pathways of care maintained despite lockdown measures? Although some epidemiological analyses are available, they lack the necessary granularity afforded by in-hospital data to understand completely the reasons behind the observed trends.^{4,13} For example, scant data are available on post-discharge follow-up or the management of HF in primary care.

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*Corresponding author. Department of Cardiovascular Science, Faculty of Life Science and Medicine, King's College London, 125 Coldharbour Lane, London SE5 9NU, UK. Tel: +44 20 78365454, Email: antonio.cannata@kcl.ac.uk

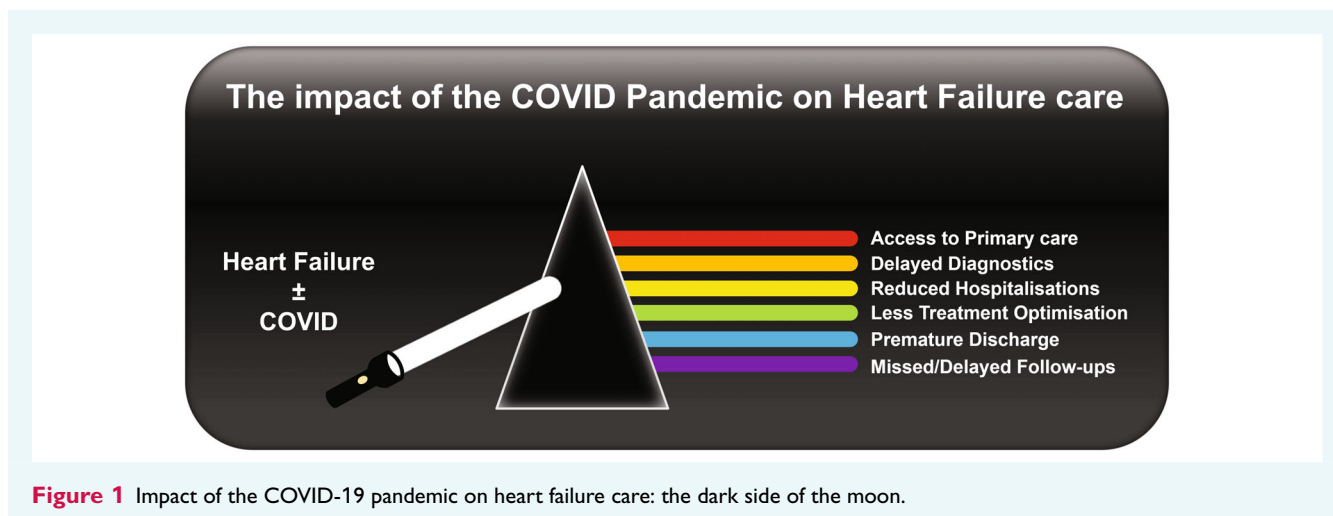


Figure 1 Impact of the COVID-19 pandemic on heart failure care: the dark side of the moon.

Of the limited number of reports that provide useful information on the post-discharge period for patients admitted with HF, it appears that mortality for patients discharged during the pandemic is higher compared to previous years.¹⁵ However, data here are limited and it will be crucial to understand the long-term impacts of a lack of appropriate follow-up, cardiac rehabilitation or physical exercise on patients with HF. A plus side of the pandemic is that it resulted in more remote monitoring, which may help mitigate against long-term deleterious outcomes, but such data are lacking for now.

Heart failure management in the community is similarly less well studied. The reported higher incidence of out-of-hospital cardiac arrests paralleled by a reduction in hospital admissions for multiple CV conditions may reflect both a reduction in access to primary care and patients' anxieties about going to hospital. Public health messages encouraged, at least during the first wave, avoiding visits to medical centres due to potential contagion. While optimisation of medical therapy in secondary care was maintained, granular data are not available for primary care. The prognostic significance of potentially later diagnosis and delayed optimisation of therapy in the community is still unknown. Furthermore, the reasons behind the fluctuation of HF hospitalisations need to be fully ascertained. It seems unlikely that they can be solely attributed to fears of hospital admission.

The prognostic implications of changing quality of care in settings other than the hospital need to be carefully investigated. However, regulatory barriers and the lack of interconnected electronic healthcare systems in primary care may have delayed the availability of these data. In the UK, to overcome these logistical issues, several independent initiatives such as OpenSafely (www.opensafely.org) and the British Heart Foundation Data Science Centre (www.hdruk.ac.uk) have been developed to allow scientists and clinical researchers to access anonymous primary and secondary care data for detailed analyses. These initiatives are both welcome and crucial in investigating the changes that occurred during the pandemic by providing the necessary granularity.

Holistic data are needed to understand the interconnected parts of healthcare systems before drawing definitive conclusions on

the real effects of the pandemic. The impact of the COVID-19 pandemic on patients with HF is much more complex than so far described. It encompasses different aspects of both primary and secondary care as well as the important interface between them. Careful analysis of every aspect is necessary to separate and understand the contributors to the overall effect of COVID-19 on patients with HF (Figure 1). Only when viewed through the prism of good science will we be able to disperse the beam and analyse its constituent parts. This understanding may provide sufficient information to prepare for future waves and pandemics, but only if the scientific community carefully use all available data.

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