A suicide attempt on a left ventricular assist device patient during COVID-19 pandemic: can we only blame the virus? A case report

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Background
Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) pandemic has emerged as a new threat, not only to Health Care systems but also to citizen’s freedom of movement in many developed countries.

Case summary
We report a suicidal attempt in a destination therapy left ventricular assist device patient, potentially triggered by coronavirus disease 2019 (COVID-19) lockdown, highlighting the importance of regular and long-term psychological support for this vulnerable population.

Discussion
The psychological consequences of this pandemic, particularly in chronically ill patients, are yet to be defined.

Keywords
SARS-CoV-2 • COVID-19 • Left ventricular assist device • Suicide attempt • Case report

Learning points
• Coronavirus disease 2019 (COVID-19) has emerged as a new global health threat with also profound psychological and social effects.
• Among psychological implications, suicide has come out especially in chronically ill patients, including those on left ventricular assist device.
• Regular and long-term psychological support plays an important role in this vulnerable population.

Introduction
Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) has emerged as a new threat to healthcare systems and to the world’s population, particularly to the elderly and those with chronic comorbidities.1 Its cardiovascular complications have been widely described,2 but the magnitude of its psychological impact on these high-risk patients is still under debate.3
We herein present the case of a 69-year-old man, with destination therapy HeartMate 3 left ventricular assist device (LVAD) implanted in November 2019.

His past medical history included dilated ischaemic cardiomyopathy with severe left ventricular dysfunction, a previous implant of a cardiac resynchronization therapy defibrillator and a device for baroreflex activation therapy (Barostim), permanent atrial fibrillation, hypertension, and type 2 diabetes mellitus. He underwent elective LVAD implantation on November 2019 due to end-stage heart failure in INTERMACS 3. He had no post-operative complications, and had been stable ever since he was discharged from the hospital on December 2019, 28 days after the surgery. He started a cardiac rehabilitation programme in February 2020, but the programme had to be suspended in early March due to coronavirus disease 2019 (COVID-19). People aged over 65 and those with chronic comorbidities were strongly encouraged to stay home all the time.

Forty-two days later, on 25 April 2020, our patient presented to the Emergency Department with decreased level of consciousness. His wife reported having found an empty blister of Zolpidem 10 mg at his bedside table. Upon arrival, his vital signs were: mean blood pressure 85 mmHg, heart rate 80 b.p.m., respiratory rate 12 rpm, and SpO2 98%. Glasgow Coma Scale was 13; he did not have any motor deficit but his language was confused and disoriented and his eyes only opened to verbal command. His pupils were miotic and responsive to light. Lab tests showed no significant abnormalities (pH 7.38, pCO2 37 mmHg, lactic acid 1.7 mmol/L, glucose 144 mg/dL, creatinine 1.03 mg/dL, Lactate Deshydrogenase (LDH) 221 U/L, haemoglobin 15.3 g/dL, INR 2.39). Reverse transcription polymerase chain reaction COVID-19 test performed on a throat swab was negative, and his Chest-X ray revealed no infiltrates (Figure 1).

He was admitted to our coronary care unit for strict observation, with the diagnosis of suicide attempt. Electrocardiogram continuous monitoring during his stay ruled out any significant arrhythmias. He had a favourable evolution during the first hours, and progressively regained normal consciousness (Figure 2).

On the following day, he underwent psychiatric evaluation. His wife referred he had been progressively irritable and in a bad mood over the past weeks, and that he had threatened to commit suicide at least twice. The patient confirmed having suicidal thoughts during the lockdown. He admitted that on one occasion he had almost sectioned the driveline with a scalpel, but the idea of deceiving his family and his Heart Failure doctors refrained him from going through with it. He was very tired of being trapped in his own house, and felt like the trouble of going through the LVAD surgery had not been worth it.

On the previous day, he had felt completely overwhelmed by the situation, and decided to take some tablets of Zolpidem 10 mg. He

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**Timeline**

| Date         | Event Description                                                                 |
|--------------|------------------------------------------------------------------------------------|
| 18 November 2019 | Left ventricular assist device implant.                                            |
| 16 December 2019 | Hospital discharge.                                                                |
| 4 February 2020  | Starts cardiac rehabilitation programme.                                           |
| 9 March 2020     | The programme is stopped due to coronavirus disease 2019 (COVID-19).              |
| 11 March 2020    | COVID-19 is declared a global pandemic by the World Health Organization.           |
| 14 March 2020    | State of alarm in Spain. No outdoor activities were allowed, and only essential services’ employees could go to work. People aged over 65 and those with chronic comorbidities were strongly encouraged to stay home all the time. |
| 26 April 2020    | Suicide attempt. The patient was admitted to our coronary care unit for observation. |
| 28 April 2020    | Hospital discharge after psychiatric evaluation.                                   |
| 2 May 2020       | Spanish Prime Minister announced the easing of confinement restrictions, allowing citizens to go out for exercise or walks in defined slots according to age and comorbidities. |
described the act as impulsive, not premeditated, and he immediately regretted it and notified his wife. He insisted he was utterly sorry for his behaviour and promised not to repeat it in the future.

He was discharged on Bromazepam 1.5 mg o.d., and an out-patient visit was scheduled in the Psychiatric clinic for the following week.

On 2 May 2020, 7 days after the suicide attempt, Spanish Prime Minister announced the easing of confinement restrictions, allowing citizens to go out for exercise or walks in defined slots according to age and comorbidities. This partly alleviated the psychological stress that our patient had been suffering. We have contacted the patient on a weekly basis since discharge, and he is stable and continues to show steady progress.

Discussion

Data regarding suicide risk in LVAD population is rather scarce, but it seems that suicidal attempts are not that uncommon on these patients. According to a recently published study, in a cohort of 494 French LVAD patients, 10 (2%) attempted or completed suicide over 18 months of follow-up. This rate is particularly high, especially when compared with the world’s average suicide rate (0.01–0.03%). Out of these 10 patients, four did not have a psychiatric evaluation before LVAD surgery, but the majority of them (8 of 10) had expressed symptoms of a possible psychological disorder, such as sadness, solitude, or hopelessness after the implant.

Prior to the surgery, our patient did not present any symptoms suggestive of a psychiatric condition. He was a very joyful man, had an out-standing family support and a positive mind-set towards the implant, becoming a strong advocate of the LVAD therapy ever since it was proposed to him. On top of that, he had a very good relationship with the Heart Failure team and had never missed a single appointment. Altogether, he fully matched the criteria for a sound destination therapy candidate.

After the implant, and before COVID-19 lockdown, he had been coming to the Heart Failure out-patient clinic on a weekly or fortnight basis and had been receiving regular psychological support. During this time, he never showed any signs of regret, but continued to express excitement about the opportunities LVAD provided him.

COVID-19 lockdown forced the suspension of the scheduled visits to the Heart Failure out-patient clinic, which were replaced by regular telephone calls, and also reduced the frequency of the psychological support interactions.

The lockdown stressful context, combined with a less frequent monitoring scheme, triggered a psychiatric response in an LVAD patient that had never expressed these symptoms before. This case suggests that not only pre-implant psychiatric evaluation is important, but rather highlights the criticality of regular and long-term psychological support for this vulnerable population, emphasizing the role of psychiatrists and psychologists as part of a multidisciplinary LVAD team.

Many advanced heart failure patients, and particularly those on LVAD, require regular medical visits that had to be cancelled during the first wave of the pandemic. As a result, heart failure units faced an enormous challenge: reducing the number of outpatient visits while at the same time providing a continuum of care to this particularly demanding population. A recent article by Bansal et al. summarizes...
some of these strategies into four ‘C’s: Capacity, Cohort, Care, and Collaboration, emphasizing the need to shift to telemedicine and remote monitoring.

On the other hand, COVID-19 pandemic outbreak represents a unique stressor, with the potential of posing a mental health threat of great magnitude across the globe. A recently published study that surveyed 1210 subjects in China concluded that 53.8% rated the psychological impact as moderate or severe, 16.5% reported moderate to severe depressive symptoms and 28.8% moderate to severe anxiety symptoms. Female gender and poor self-rated health status, amongst others, were significantly associated with a greater psychological impact of the outbreak and higher levels of stress, anxiety and depression. Some authors have even suggested the diagnosis of ‘pandemic acute stress disorder’, which would include a wide range of symptoms: obsession, reduced mood, dissociative, or avoidance symptoms or hyperactivity.

In summary, SARS-CoV-2 has emerged as a new threat to health care systems and to the world’s population, but also to citizen’s freedom of movement in many developed countries. Never before in recent history had we been so limited in our freedom of movement as we have been with this pandemic, and the long-term psychological consequences of this unprecedented time are yet to be defined.

**Conclusion**

In conclusion, COVID-19 lockdown should rise the suspicion of potential psychological damage in chronically ill patients, and further studies should be pursued to assess this aspect.

**Lead author biography**

Dr Marta Jiménez-Blanco Bravo has been a Consultant in the Advanced Heart Failure Unit at University Hospital Ramon y Cajal (Madrid, Spain) since April 2019. Her main field of interest is mechanical assist devices, particularly left ventricular assist devices as destination therapy.

**Supplementary material**

**Supplementary material** is available at European Heart Journal - Case Reports online.

**Slide sets:** A fully edited slide set detailing this case and suitable for local presentation is available online as Supplementary data.

**Consent:** The authors confirm that written consent for submission and publication of this case report, including images and associated text, has been obtained from the patient in line with COPE guidance.

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