Managing a Patient with Post-Heart Transplant Associated with COVID-19: A Case Report from Qatar

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Abstract

This is a case of an elderly female with comorbidities and a history of cardiac transplant 13 years back, presented with diarrhea and diagnosed with COVID-19. She was hospitalized and found to have a cardiac injury and urinary tract infection, treated with antibiotics, antivirals, immunosuppressives, and required non-invasive ventilatory support.

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Short title: Post-Heart Transplant and COVID-19

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Abstract

This is a case of an elderly female with comorbidities and a history of cardiac transplant 13 years back, presented with diarrhea and diagnosed with COVID-19. She was hospitalized and found to have a cardiac injury and urinary tract infection, treated with antibiotics, antivirals, immunosuppressives, and required non-invasive ventilatory support.

Keywords: COVID-19; comorbidities; heart transplant; immunosuppression; intensive care therapy.

Key Clinical Message:

Post-heart transplant patients can have COVID-19 infection; the patient's outcome and adjustment in immunosuppression therapy depend upon the severity of the COVID-19 infection.

BACKGROUND

COVID-19 Pneumonia was initially described in China and quickly became a pandemic with high morbidity and significant social and financial loss. (1) More than 70% of COVID-19 infections are mild, 20% require hospitalization, and 5% need intensive therapy. (2, 3) Post-organ transplant patients are at a higher risk of developing COVID-19 infection due to immunosuppression. These patients are also at a higher risk for severe COVID-19 infection and its complications than the general population. (4, 5) Cardiac transplant recipients' are at a higher risk of developing COVID-19 infection due to having multiple comorbidities and receiving immunosuppression therapy. (6)

We are reporting a case of COVID-19 infection in cardiac transplant recipient patients as well as reviewing the available literature.

CASE PRESENTATION

The patient is a 73 years old female with a history of non-ischemic cardiomyopathy prior to orthotropic heart transplantation in 2007, percutaneous coronary intervention (PCI) to the left anterior descending artery (LAD) in 2014, diabetes mellitus, hypertension, obesity, stroke, gouty arthritis, recurrent urinary tract infection (UTI) on treatment. The immunosuppression regimen consisted of tacrolimus 1 mg twice daily on milrinone 200 mg daily infusion at home.

The patient presented on April 2020 to the hospital because she was having loose, watery stools for one day, vomiting, and oliguria in addition to shortness of breath not associated with cough, sore throat, or runny nose. The clinical examination showed temperature 38.4°C, heart rate of 109, blood pressure of 149/70, respiratory rate 20 and oxygen saturation 89% bilateral lung crepitation on auscultation, abdomen soft, no guarding, non-tender grossly normal extremities, no pitting edema, pale palpebral conjunctiva, anicteric sclera, pale lips, and nailbeds. COVID-19 (PCR) was done, which came positive, and urine culture showed *E. coli and K pneumonia* . Chest X-ray showed pulmonary congestion, blunted left cost phrenic angle, suggesting mild pleural effusion/thickening. Notable laboratory values include: Hb 7.8 g/dl (12-15 g/dl), Urea 9.8 mmol/L (2.5 – 7.8 mmol/L), CRP 103.2 mg/L (0.0- 5.0 mmol), Procalcitonin 0.70 ng/mL (0.15 ng/mL), Troponin 24 ng/L (3 – 10 ng/L), Pro-BNP 1276 pg/mL .

Hence, she was admitted to the intensive care unit (ICU) as a case of COVID-19 infection and UTI; she was started on amlodipine 10 mg, aspirin 75 mg once daily, azithromycin 500 mg for 5 days ertapenem 1g infusion for 5 days, hydroxychloroquine for 5 days, furosemide 20 mg for 5 days, prednisolone 5mg for 5 days, pantoprazole 40 mg for 5 days, oseltamivir 75 mg twice daily day 2 to day 5. On day 2 She was in distress, requiring continuous positive airway pressure (CPAP) therapy, then she was stable on room air alternating with non-invasive ventilation and never required intubation. Her ICU course of admission was for a total five days without any complications; she was subsequently improved and transferred to the medical floor for one-day observation and discharged the next day.

An echocardiogram was done on 29 April 2020 for follow up it showed a mild precordial effusion, no right pulmonary hypertension, Normal global systolic LV function (EF 61 %). There were no significant valvular abnormalities.

DISCUSSION

The rate of COVID-19 infection in cardiac transplant patients is double compared to the general population. (7) According to an Italian study, out of 47 post-heart transplant patients with COVID-19 infection, 37% required hospitalization, and only 8.5% required intensive care therapy. (7) Another single-centre, case-series

form the US described the characteristics, treatment, and outcomes of post-heart transplant patients with COVID-19 infection; 28 patients required hospitalization, majority of these patient presented with respiratory symptoms whereas 48% of these patients had gastrointestinal symptoms. The case fatality rate in recipients of heart transplant who were infected with COVID-19 infection was around 25%. (6)

Latif et al described that majority of their patients had multiple comorbidities, mainly hypertension, diabetes mellitus, obesity, and chronic kidney disease. In the majority of their patients post COVID-19 infection were complicated by the cardiac injury (77%), 20% of their patients required oxygen supplementation, and 7 patients required intensive care therapy with supportive organ management. Seventy-seven percent of patients required reduction in immunosuppression therapy, along with antibiotics and COVID-19 therapy. None of their patients had graft rejection.(6)

According to Biottio et al, 66% of their patients had a reduction in immunosuppression therapy along with other COVID-19 therapy. (7)

Both above-mentioned studies (6, 7) described the mortality in post-heart transplant patients with COVID-19 infection to be around 30% and mainly due to respiratory and other multiple organ failure.

Our patient also had multiple comorbidities, presented with gastrointestinal symptoms, had cardiac injury, and required support with non-invasive ventilation. As in our patient, COVID-19 infection was mild; it did not require any changes or reduction in their immunosuppression therapy, and the patient was discharged home without any complications.

CONCLUSION

Post-heart transplant patients can have COVID-19 infection; the patient's outcome and adjustment in immunosuppression therapy depend upon the severity of the COVID-19 infection.

Declarations

Ethics approval and consent to participate

The article describes a case report. Therefore, no additional permission from our Ethics Committee was required.

Consent for publication

The consent for publication was obtained.

Availability of data and material

All data generated or analyzed during this study are included in this published article.

Competing interests

The authors declare that they have no competing interests.

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Authors' contributions

NS, MK, AE, MW, FO, MA, AN: Data Collection, Literature Search, Manuscript Preparation

All authors read and approved the final manuscript

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