

Background

Antibody mediated rejection (AMR) is a significant complication post heart transplant (HT). The development of de novo donor specific antibodies (DSA) post-transplant may be associated with increased risk of allograft rejection, cardiac allograft vasculopathy (CAV), and death. Prognosis following late AMR episodes has generally been poor.

Patient Background

We present a case of 24 year old female with severe AMR of her second transplanted heart treated with mechanical circulatory support in addition to aggressive immunomodulatory therapy.

- First HT (2014), secondary to hypertrophic obstructive cardiomyopathy
- Second HT (2016)

Patient Case

- Nine months post-HT patient presented with chest pain, hypotension, positive troponin, lactic acidosis, supraventricular arrhythmias
 - EF was 20-24% at presentation
 - Steroids and anti-thymocyte globulin x 3 doses
 - Biopsy OR for ACR but 100% C4d positivity with diffuse intravascular macrophages (Figure 1)
 - Moderate DQ6 DSA, remained persistent despite therapy
 - Clinical status worsened - Impella™ CP assist device inserted for left ventricular support, along with milrinone for right ventricle support
 - AMR therapy: Plasmapheresis, bortezomib, and eculizumab were initiated (Figure 2)
 - Post-pheresis supplemental doses of eculizumab given during treatment course
 - Patient showed improvement following 2nd eculizumab dose (and 3rd plasmapheresis session)
 - Impella™ CP assist device was removed after 10 days of support
 - Inotropes weaned off 24 hours after removal of left ventricular support
 - EF improved to 40-44%
- 3 months after this episode patient required another course of plasmapheresis, IVIG, and bortezomib
 - Moderate D6 DSA

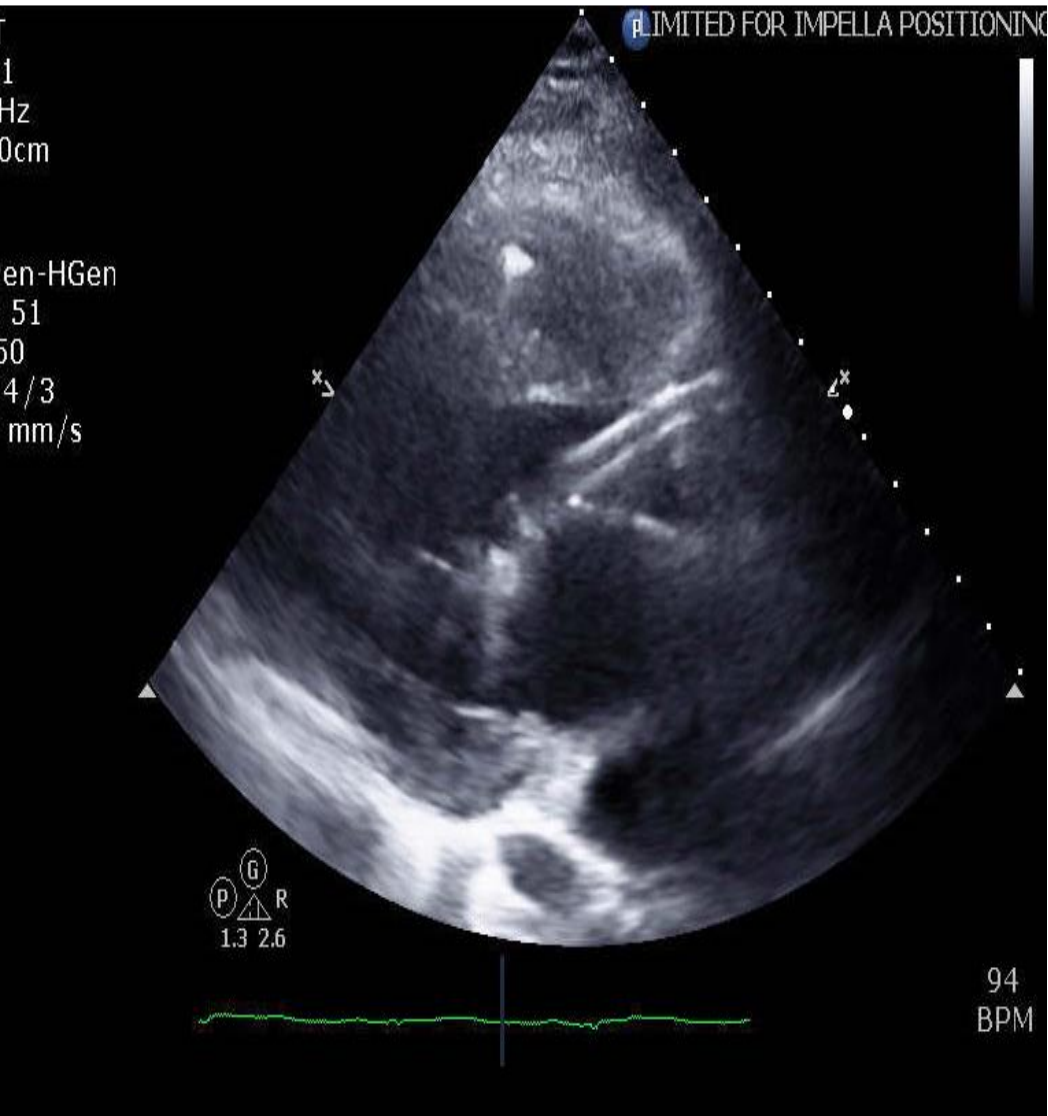


Figure 1

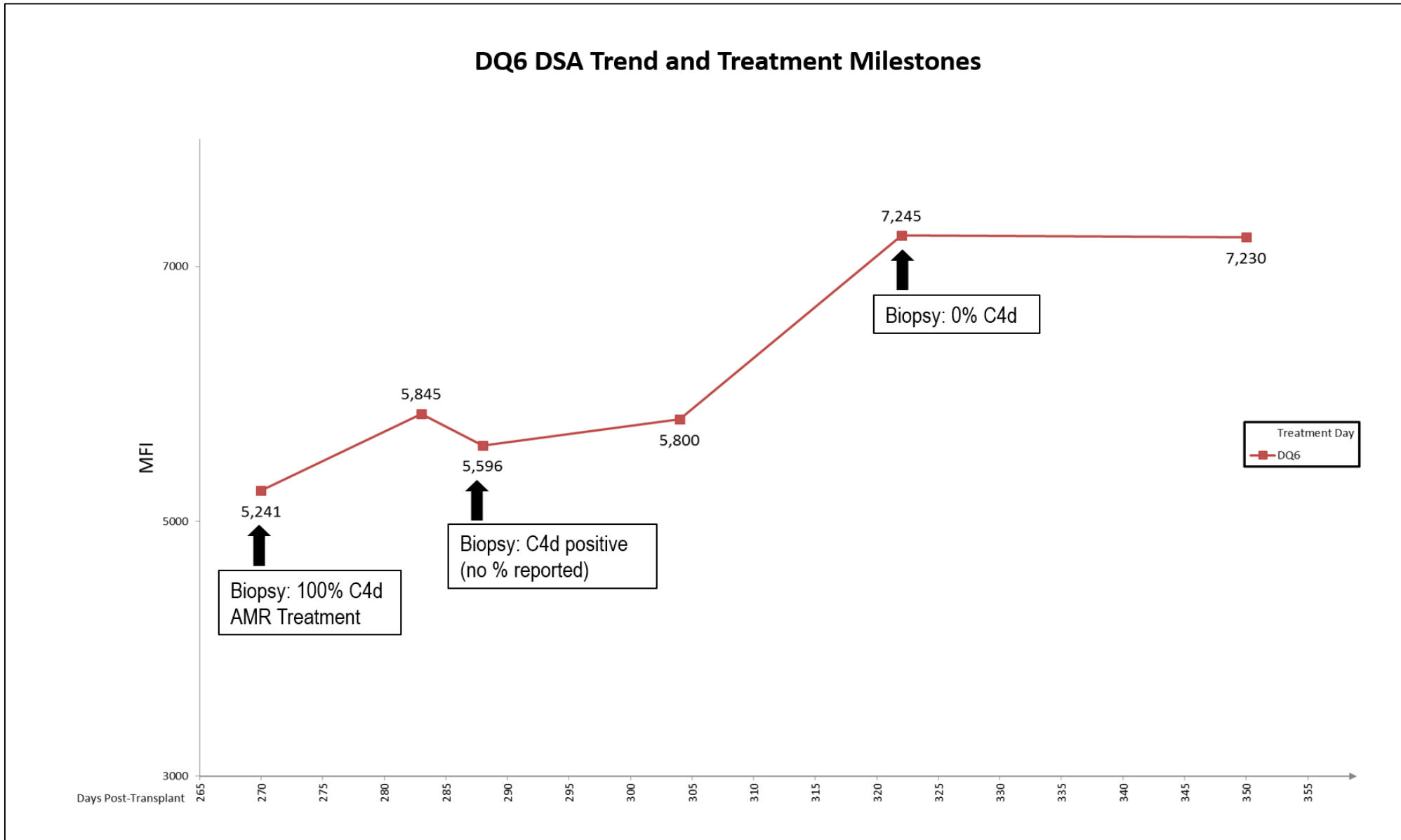
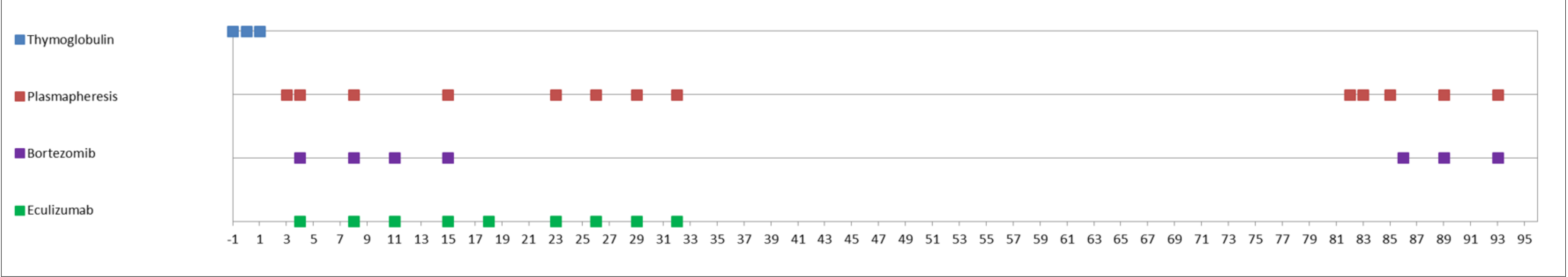


Figure 2



Discussion

There is a paucity of data on the use of eculizumab in post-HT recipients for the treatment of AMR. Available literature in adult HT patients has been limited to use as part of desensitization protocols. Eculizumab, an anti-c5 monoclonal antibody, inhibits the terminal end of the complement cascade. This inhibition halts the destructive effects of activation of the membrane attack complex. The removal of circulating antibodies and immunomodulation of plasma cells with plasmapheresis and bortezomib has been studied more extensively, primarily in the kidney transplant population. There is little data on the use of short term mechanical circulatory support (MCS) devices used as a bridge to recovery in patients with severe rejection episodes, and is primarily been limited to the use of ECMO.

Conclusion

This case report describes a patient with severe AMR who was successfully treated with mechanical circulatory support, eculizumab, plasmapheresis, and bortezomib. Following this rejection her graft function remains stable. DSA have remained persistent despite these aggressive treatment strategies. She is maintained on a 4 drug regimen – sirolimus, mycophenolate, tacrolimus, and prednisone.

References

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