Pure Red Cell Aplasia due to Parvovirus B19 in a Heart Transplant Recipient

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Background

Parvovirus B19 is a single stranded linear DNA virus which replicates within and causes lysis of erythroid progenitor cells. (1) Most patients develop immunity after childhood infection, with an estimated 80% of adults showing seropositivity. (2) However, in patients who are immunocompromised, reinfection can occur. (3)

There is no prophylaxis available against parvovirus B19 (4). Although there is no consensus about treatment, many patients have been treated with variations of dosing and scheduled IVIG, as well as reduction in immunosuppressive regimen.

We report a case of pure red cell aplasia due to human parvovirus B19 following orthotopic heart transplant.

Case Presentation

The patient is a 53-year-old white man with ischemic cardiomyopathy who received an orthotopic heart transplant. Immunosuppression consisted of prednisone, tacrolimus and mycophenolate mofetil and antimicrobials of valganciclovir and atovaquone. His other medical conditions were diabetes mellitus, chronic kidney disease, peripheral vascular disease, hypertension and hyperlipidemia.

Three months following transplant, the patient presented to the emergency department with dizziness, fatigue and dyspnea. Labs revealed a hemoglobin of 5.5 g/dL.

The patient underwent an extensive workup to evaluate the etiology of anemia. Esophagogastroduodenoscopy, colonoscopy and capsule endoscopy did not reveal a source of blood loss. His vitamin B12 was >2000 pg/mL and iron 191 ug/dL. There was no evidence for hemolysis.

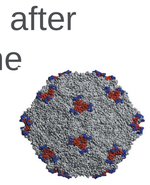
Parvovirus serologies were negative with parvovirus IgM 0.3 and IgG 0.1.

His valganciclovir was discontinued and his mycophenolate mofetil dose reduced.

After initial workup and treatment with transfusions, he was admitted twice more with anemia requiring transfusions.

Case presentation continued

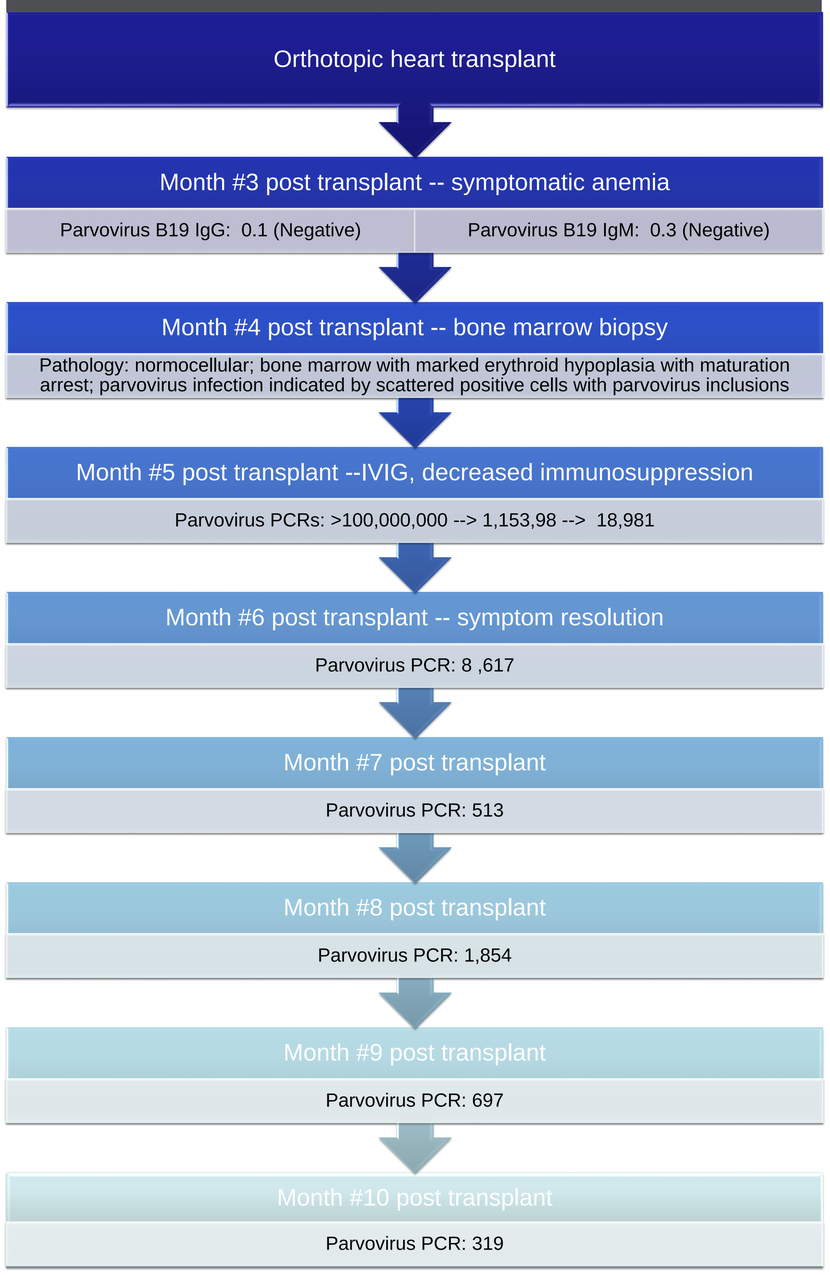
He underwent bone marrow biopsy 4 months after transplant which showed a normocellular bone marrow, erythroid hypoplasia and parvovirus inclusions.



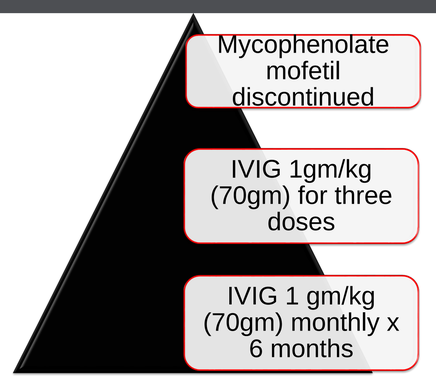
Intravenous immune globulin was ordered outpatient but could not be obtained due to a national shortage.

He re-presented 1 month later with dizziness and dyspnea, hemoglobin 6.5g/dL and temperature to 99.1 Fahrenheit. His parvovirus PCR was >10,000,000. IVIG 1gm/kg (70gm) was given. His mycophenolate was discontinued for two weeks. His fevers resolved. His parvovirus PCR decreased to 1,153,983. As an outpatient, he received IVIG 1gm/kg monthly for 6 months with reduction in his PCRs, resolution of symptoms and stable hemoglobin without further need for transfusions.

Clinical Findings



Treatment



Discussion

In the evaluation of post-heart transplant anemia, organisms with red blood cell tropism such as parvovirus B19 must be included in the differential. Active parvovirus B19 infection can cause persistent anemia without serologic conversion and may require PCR testing and bone marrow biopsy for diagnosis. Multiple case reports have described treatment of parvovirus B19 with IVIG. IVIG, derived from pooled plasma, has large amounts of neutralizing IgG to parvovirus B19 (4). Dosing has ranged from 0.25g/kg/d for a series of days to up to 2g/kg/d x 2 days (4). However, no optimal dose and schedule have been established. Additionally, recurrence with or without treatment is about 27% (4). In our patient, a regimen of IVIG 1gm/kg for three doses and then monthly lowered parvovirus PCRs and improved the anemia. This may be an optimal regimen based on the reduction in PCR and resolution of symptoms. More studies are needed to evaluate this dosing schedule and also evaluate for re-infection.

References

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