



Splenectomy Before Kidney Transplantation for Hypersplenism: A Case Report

Abstract

Hypersplenism, although a rare hematological complication seen in chronic kidney disease patients, poses a significant challenge for successful kidney transplantation due to potential complications such as cytopenias and inadequate immunosuppressive therapy. We present a 40-year old end-stage kidney disease patient on dialysis with hypersplenism who underwent a laparoscopic splenectomy prior to high immunological risk renal transplantation. Post-splenectomy, there was a remarkable improvement in cytopenias, and effective immunosuppressive therapy could be administered prior to renal transplantation. Splenectomy remains a valuable strategy for managing hypersplenism, ensuring correction of cytopenias, for optimal immunosuppression prior to kidney transplantation. Pre-transplant vaccination further mitigates the risk infections with capsulated organisms. Our case underscores the importance of a multidisciplinary approach in decision-making and highlights splenectomy as a safe and effective intervention to address cytopenias due to hypersplenism prior to renal transplantation.

Keywords: *Hypersplenism, Splenectomy, Kidney transplant, Immunological risk, Cytopenia*

Introduction

Hypersplenism is seen in about 10% of chronic kidney disease patients on regular dialysis,¹ the cause is not entirely clear. In a patient with splenomegaly and hypersplenism who is scheduled to undergo kidney transplantation, splenectomy reduces the risk of worsening cytopenias posttransplant. In the past, splenectomy was performed to reduce rejection rates and increase azathioprine tolerance.²

We discuss a case of hypersplenism, for whom a laparoscopic splenectomy was performed before kidney transplant surgery.

Case Report

A 40-year old man presented seeking kidney transplantation with prospective donor being his mother. He had sensitizing events with a history of two blood transfusions and had a high immunological risk for transplant with donor-specific anti-human leukocyte antigens (HLA) antibodies. During transplant evaluation, he was found to have moderate splenomegaly with evidence of hypersplenism. On probing the history, he revealed that he had a history of scrub typhus with hemophagocytic lympho-histiocytosis. He had pancytopenia with a hemoglobin of 9.4 g/dL, a white blood cell counts (WBC) count of 2200/ μ L, and a platelet count of 56,000/ μ L with a peripheral blood smear showing no abnormal cells. There was no evidence of hemolysis or chronic liver disease with portal hypertension, and bone marrow trephine biopsy was normal. Being immunologically high risk mandated administering effective immunosuppression, and cytopenias were a hindrance to adequate immunosuppressive therapy. After a multidisciplinary meeting and discussion with the patient and family, it was decided to proceed with pretransplant splenectomy in view of the possibility of worsening cytopenias posttransplant with immunosuppressive therapy. He was

given pre-splenectomy vaccination for meningococcus, Haemophilus influenzae, and pneumococcus along with routine pretransplant vaccination. After a gap of one month after all mandated vaccinations, a laparoscopic splenectomy was performed, which was uneventful. The splenectomy specimen histopathology was unremarkable except for congestion. His blood counts improved markedly post-splenectomy, and he underwent a successful kidney transplantation a month after the splenectomy. His counts improved after transplantation [Figure 1]. At 4 months posttransplant, his creatinine is 1.4 mg/dl.

Discussion

Hypersplenism is a rare hematological complication seen in about 10% of end-stage kidney disease patients.¹ Hypersplenism can prevent effective posttransplant immunosuppressive therapy, thereby predisposing to rejection. In the presence of cytopenias, should a rejection happen, it cannot be treated with adequate immunosuppression without subjecting the patient to a high risk of infections.

The index patient had massive splenomegaly with hypersplenism. The risks of infection and surgical procedure were outweighed by the benefits of improvement in cytopenias and effective immunosuppression and longevity of the kidney allograft. This was especially important in his case as he was immunologically high risk. The chances of infection posttransplant were minimized by effective pretransplant vaccination for capsulated organisms such as meningococcus, Haemophilus influenzae, and pneumococcus along with routine vaccination for coronavirus disease 2019 (COVID-19) and hepatitis B.³

The timing of splenectomy can be variable. Pretransplant splenectomy has the advantage that adequate pre-splenectomy vaccination can be given, the risk of postoperative infection is lesser, and wound healing will not be impaired with immunosuppressive medications. Splenectomy may either be performed surgically or by a less

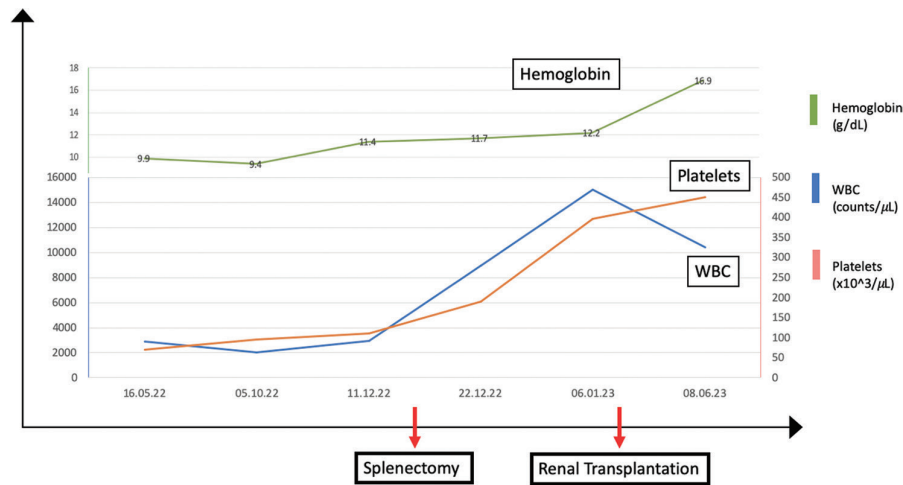


Figure 1: Trend of blood counts before and after splenectomy and renal transplantation. WBC: White blood cell counts

invasive approach of partial or total splenic embolization. Partial splenic embolization involves ablating 60–95% of the spleen, confirmed with pre- and post-embolization splenic arteriograms.² The proposed advantages of embolization over surgical removal are reduced hospital stay and that enough splenic parenchyma is preserved to continue its functions.

It was earlier thought that pretransplant splenectomy would reduce the amount of lymphoid tissue in the body and reduce the immunological risk posttransplant. Whether splenectomy has any effect on overall graft survival is controversial with the majority of data showing no clinically significant benefit. Mortality and serious morbidity were found to be comparable in splenectomy and non-splenectomy groups, and splenectomy was not found to reduce the number of rejection episodes per month of graft function.^{4,5} It can be concluded that although splenectomy before renal transplantation has doubtful benefit in reducing rejections, it is an effective strategy in tackling hypersplenism before kidney transplantations, whereby effective immunosuppression can be given without fear of worsening cytopenias.

Conclusion

Splenectomy is a safe and effective treatment option for correcting cytopenias in end-stage kidney disease patient with hypersplenism before renal transplantation.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent.

Conflicts of interest

There are no conflicts of interest.

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