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Research Article

When Size Matters: Splenectomy for Massive Splenomegaly in Tyrosine Kinase Inhibitor-Resistant Chronic Myeloid Leukemia: A Case Report

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ABSTRACT
Background: The advent of tyrosine kinase inhibitors (TKIs) has significantly reduced the need for splenectomy in chronic myeloid leukemia (CML). However, massive, symptomatic splenomegaly remains a challenging clinical scenario in selected patients with treatment-resistant disease.
Case Presentation: A 40-year-old male with a three-year history of chronic myeloid leukemia presented with progressive abdominal distension and dyspnea on exertion for six months. He had developed resistance to first-line Imatinib therapy and was receiving second-line Dasatinib. Clinical examination and imaging revealed massive splenomegaly with minimal ascites. Following correction of anemia, the administration of preoperative vaccinations, and multidisciplinary evaluation, an e please let me know which book you would like to proceed with from these options. This is the updated poster.lective open splenectomy was successfully performed. The patient experienced significant symptomatic improvement after surgery.
Conclusion: Massive splenomegaly secondary to TKI-resistant CML continues to pose unique surgical challenges. Careful patient selection, meticulous preoperative preparation, and appropriate surgical technique can result in favorable outcomes.

Keywords: Chronic Myeloid Leukemia, Massive Splenomegaly, Splenectomy, Dasatinib, Imatinib Resistance, Case Report.

INTRODUCTION

Chronic Myeloid Leukemia (CML) is a clonal myeloproliferative neoplasm characterized by the presence of the Philadelphia chromosome resulting in the BCR-ABL fusion oncogene. The introduction of tyrosine kinase inhibitors (TKIs) has revolutionized management and significantly improved survival outcomes.

Despite advances in targeted therapy, a subset of patients develops resistance to first-line treatment and may present with progressive splenic enlargement. Massive splenomegaly can cause abdominal discomfort, early satiety, respiratory compromise, hypersplenism, and reduced quality of life surgical management in such cases remains technically challenging because of distorted anatomy, increased vascularity, and risk of major hemorrhage.

We present a case of symptomatic massive splenomegaly in a patient with TKI-resistant CML successfully managed with elective splenectomy.

Case Presentation

A 40-year-old male presented to the surgical outpatient department with progressive abdominal distension and difficulty breathing for six months. He also reported dyspnea on exertion that had gradually worsened during the same period. There was no history of fever, bleeding manifestations, recurrent infections, or significant weight loss.

The patient had been diagnosed with CML three years earlier. Initial therapy involved Imatinib. Owing to treatment resistance, he subsequently transitioned to Dasatinib and remained on regular hematology follow-up.

On examination, the patient was conscious and oriented. Vital signs were stable. Oxygen saturation was 94% on room air. Abdominal examination revealed marked distension with a massively enlarged spleen occupying a substantial portion of the abdominal cavity.

Laboratory investigations demonstrated anemia, which was corrected preoperatively. Other biochemical parameters were within acceptable limits.

Contrast-enhanced computed tomography of the abdomen revealed massive splenomegaly with trace ascites. The enlarged spleen occupied most of the abdominal cavity, exerting significant mass effect on surrounding structures.

Considering the patient's progressive symptoms and impaired quality of life, elective splenectomy was planned after multidisciplinary discussion. Preoperative vaccination against encapsulated organisms was administered according to institutional protocol.

Surgical Technique

After induction of general anesthesia, an open splenectomy was performed through a midline laparotomy incision with appropriate extension. Intraoperatively, a massively enlarged spleen was identified. The splenocolic, splenorenal, and splenophrenic ligaments were carefully divided. Early ligation of the splenic artery was performed to reduce splenic congestion and facilitate manipulation.

The short gastric vessels were meticulously controlled. Careful hilar dissection was undertaken with preservation of the pancreatic tail. Following complete mobilization, the spleen was delivered and removed intact.

Hemostasis was secured, a drain was placed in the splenic bed, and the abdomen was closed in layers.

Postoperative Course

The postoperative period was uneventful. The patient demonstrated gradual improvement in respiratory symptoms and abdominal discomfort.

Oral intake was resumed as tolerated. Serial hematological investigations remained stable. Appropriate thromboprophylaxis and antibiotic prophylaxis were administered according to institutional guidelines.

The patient was discharged in stable condition and remained asymptomatic during follow-up visits.

DISCUSSION

Figure Legends

Massive splenomegaly is an uncommon presentation in the current era of tyrosine kinase inhibitor therapy. Historically, surgeons frequently performed splenectomy in patients with CML for symptomatic splenomegaly, hypersplenism, and cytoreduction.

Patients with treatment-resistant disease may continue to experience progressive splenic enlargement despite optimal medical management. Symptoms commonly arise due to the mechanical effects of the enlarged spleen, including abdominal distension, pain, early satiety, and respiratory compromise.

Splenectomy in cases of massive splenomegaly presents several technical challenges, including:

- Distortion of normal anatomy.
- Restricted operative space.
- Increased splenic vascularity.
- Risk of significant intraoperative hemorrhage.
- Potential injury to the pancreatic tail.
- Postoperative thromboembolic complications.

Successful outcomes require meticulous preoperative planning, vaccination against encapsulated organisms, optimization of hematological parameters, and coordinated multidisciplinary care.

In the present case, splenectomy provided substantial symptomatic relief and significantly improved the patient’s quality of life.

CONCLUSION

Although tyrosine kinase inhibitors have reduced the need for splenectomy in Chronic Myeloid Leukemia, surgery continues to have an important role in selected patients with symptomatic massive splenomegaly and treatment-resistant disease.

Careful patient selection, thorough preoperative preparation, and meticulous surgical technique are essential for successful outcomes.

Patient Consent

Written informed consent was obtained from the patient for publication of this case report and accompanying images.

Conflict of Interest

The authors declare no conflict of interest.

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Figure 1: Preoperative CT scan Showing Massive Splenomegaly Occupying Most of the Abdominal Cavity

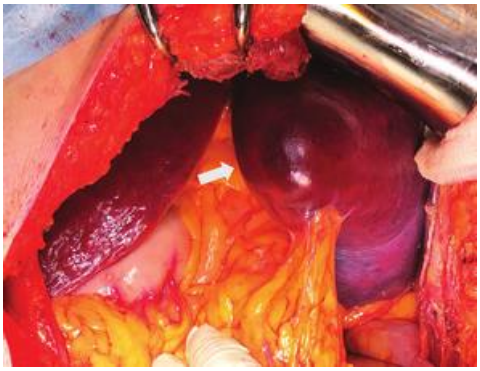

Figure 2: Intraoperative View Demonstrating Massive Splenomegaly

Figure 3: Resected Spleen Specimen Following Splenectomy

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