CASE REPORT

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Subtotal splenectomy for the treatment of chronic lymphocytic leukemia

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Abstract Although splenectomy is helpful in the management of selected patients with chronic lymphocytic leukemia (CLL), in most cases this procedure is accompanied by a greater morbidity and mortality, mainly due to sepsis. Thus, it may be proposed that a conservative procedure that reduces the spleen size may have an effect similar to that of total spleen ablation for the treatment of CLL. The present paper describes our experience with an 81-year-old patient submitted to subtotal splenectomy for treatment of CLL. Indications for surgery were uncontrolled leukemic activity and intense abdominal discomfort due to the huge spleen. The good results obtained with subtotal splenectomy in the present case indicate that this procedure may be a new alternative for the treatment of CLL when removal of the spleen is indicated.

Keywords Leukemia · Chronic lymphocytic leukemia · Treatment · Splenectomy · Subtotal splenectomy

Introduction

In an attempt to preserve at least part of the splenic function, since 1984 we have performed subtotal splenectomy combined with central splenorenal shunt or with portal-variceal disconnection for the treatment of portal hypertension in 110 patients [1, 2]. We have also used subtotal splenectomy in 53 patients with severe splenic trauma [3], eight patients with myeloid metaplasia [4], five patients with Gaucher’s disease [5], four patients with retarded growth and sexual development associated with splenomegaly, and one patient with cystadenoma of pancreatic tail [6, 7].

Although splenectomy is helpful in the management of selected patients with chronic lymphocytic leukemia (CLL), in most cases this procedure is accompanied by a greater morbidity and mortality, mainly due to sepsis. These adverse effects are responsible for the exclusion of surgical treatment in most patients with leukemia. However, total splenectomy is indicated for patients who do not present adequate response to clinical therapy in order to attempt to reduce the resistance of the patient to drugs and to alleviate the symptoms due to the huge size of the spleen. In fact, the purpose of the splenectomy is not to make the patient asplenic, but only to obtain better clinical results. Thus, it may be proposed that a conservative procedure that reduces spleen size may have an effect similar to that of total spleen ablation for treatment of CLL.

Since a survey of the literature did not reveal any report of patients submitted to conservative spleen surgery for the treatment of CLL, the objective of the present paper was to describe our experience with one patient submitted to subtotal splenectomy for the treatment of CLL.

Case report

An 81-year-old white man with a diagnosis of CLL was admitted to the First Surgical Clinic of Santa Casa Hospital of Belo Horizonte, Brazil, to be submitted to splenectomy. Indications for surgery were uncontrolled leukemic activity and intense abdominal discomfort due to the huge spleen. A consultation with specialists in hematology, oncology, surgery and ethics indicated a conservative surgical procedure, considering the advanced age of the patient and the high risks of total splenectomy in the presence of leukemia.

The abdominal cavity was entered through a transverse left laparotomy, the splenic artery was tied in the retrogastric space, the spleen was displaced upward and its ligaments were dissected with an electrocautery. The lower splenic vessels and hilum were tied and cut. Care was taken to preserve the splenogastric vessels that maintain the vitality of the upper splenic pole. The spleen was cut at level of the limit between the normal color of the upper portion...
Table 1 Hematological exams performed before and after subtotal splenectomy in a patient with chronic lymphocytic leukemia

| Exams         | Preoperative | Postoperative |
|---------------|--------------|---------------|
| Red cells     | 4.8×10⁹/µl   | 4.10–5.37×10⁹/µl |
| White cells   | 12.1/µl      | 11.8–15.1/µl   |
| Platelets     | 140520/µl    | 315000–672000/µl |

of the organ and the darker colored lower portion. Two wide flaps (anterior and posterior) of the splenic capsule were retained. The bleeding large vessels of parenchyma were sutured with 3–0 catgut. A continuous 2–0 chromic catgut suture was used to close the two flaps of the splenic capsule and the splenic stump was returned to its normal position. The portion of the removed spleen weighed 6800 g and blood loss was minimal.

Histopathologic exam of the spleen confirmed the leukemic infiltration of the organ. The patient had an uneventful postoperative course and was discharged from the hospital on the third postoperative day.

During the 3.5 years of follow-up he did not present any sign of severe infection and the leukemia was adequately controlled with drugs. The hematological exams before and after the surgery are presented in Table 1. Abnormal circulating particles (Howell Jolly, Heinz and Pappenheimer bodies) were not found in the blood specimens. Immunological postoperative counts were normal: IgG (561–1109 mg %), IgM (23–110 mg %) and IgA (46–132 mg %).

Scintigraphic images of the splenic remnant using ⁹⁹m technetium sulfur colloid were positive in all postoperative exams. A CT scan showed that the size of the splenic remnant did not change at 39 months of follow-up.

Discussion

Chemotherapy is the usual treatment of CLL, and most patients survive many years under drug control. However, the huge growth of the spleen, which may occur in some patients, leads to intense symptomatic discomfort and therapeutic resistance. In such cases, total splenectomy has been indicated. This procedure alleviates the symptoms and improves the results of chemotherapy.

On the other hand, it is well known that total splenectomy reduces the immune defense and may be followed by severe sepsis and precocious deaths. This complication is more frequent in previously immune suppressed patients such as those with leukemia. Chemotherapy is another procedure that reduces the organic defense and enhances the mortality due to severe sepsis.

Since the removal of the spleen is not necessary to treat CLL, it may be proposed that partial splenectomy is enough to reduce the symptoms of splenomegaly and the influence of the splenic growth on the hematologic system. Previous experiences with partial splenomegaly due to myeloid metaplasia and Gaucher disease have shown the enlargement of the splenic remnant when the vascular pedicle is preserved. Thus, after an apparent improvement during the early postoperative period, the symptoms and the hematological disturbances return, and the patient has to be submitted to total splenectomy [8, 9, 10, 11].

Our previous experience with subtotal splenectomy, preserving only the upper splenic pole supplied by the splenogastric vessels, has shown that these vessels cannot support a larger amount of spleen than the upper pole. Thus, the present procedure has the advantage of preserving part of the spleen without the risk of its enlargement and recurrence of symptoms [1, 2, 3, 4, 5, 6, 7].

In conclusion, the good result of subtotal splenectomy in the patient reported here indicates that this procedure could be a new alternative for the treatment of CLL when removal of the spleen is indicated. Further studies are needed to confirm the advantages of this procedure.

References

1. Petroianu A (1988) Treatment of portal hypertension by subtotal splenectomy and central splenorenal shunt. Postgrad Med J 64:38–41
2. Petroianu A (1993) Subtotal splenectomy and portal-variceal disconnection in the treatment of portal hypertension. Can J Surg 36:251–254
3. Resende V, Petroianu A (1998) Subtotal splenectomy in severe trauma of the spleen. J Trauma 44:933–935
4. Petroianu A (1996) Subtotal splenectomy for treatment of patients with myelofibrosis and myeloid metaphasia. Int Surg 81:177–179
5. Petroianu A (1996) Subtotal splenectomy in Gaucher’s disease. Eur J Surg 162:511–513
6. Petroianu A (1995) Treatment of cystadenoma of the pancreatic tail by distal pancreatectomy and subtotal splenectomy. Dig Surg 12:259–261
7. Petroianu A, Silva RG, Simal CJR, Carvalho DG, Silva RAP (1997) Late postoperative follow-up of patients submitted to subtotal splenectomy. Am Surg 63:735–740
8. Tesser A, Mesa RA, Naroney DM (2000) Splenectomy in myelofibrosis with myeloid metaplasia. Blood 95:2226–33
9. Akpek G, McAneny D, Weintraub L (2001) Risks and benefits of splenectomy in myelofibrosis with myeloid metaplasia. J Surg Oncol 77:42–48
10. Fleschner PR, Aufses AH Jr, Grabowski GA (1991) A 27-year experience with splenectomy for Gaucher’s disease. Am J Surg 161:69–75
11. Cohen I, Katz K, Freud E (1992) Long-term follow-up of partial splenectomy in Gaucher’s disease. Am J Surg 164:345–7