Case Report/Relato de Caso

Splenectomy in a patient with treatment-resistant visceral leishmaniasis: a case report

A esplenectomia na leishmaniose visceral refratária ao tratamento clínico: relato de caso

Robson Azevedo Dutra[1], Laura Ferreira Dutra[1], Milene de Oliveira Reis[1] and Raul Coelho Lambert[1]

ABSTRACT

Visceral leishmaniasis (VL), also known as Kala-azar, is a systemic infection caused by a protozoan (*Leishmania*) and, in its classic form, is a serious illness associated with malnutrition, anemia, hepatosplenomegaly, infectious processes and coagulopathies. The effect of splenectomy in patients with visceral leishmaniasis is not well defined; however, it is known that the spleen is the largest reservoir of infected cells belonging to the reticulo endothelial system. Therefore, the surgical procedure is an option for the debulking of parasites, providing a cure for refractory VL and minimizing the complications of hypersplenism.

Keywords: Splenectomy. Leishmaniasis. Hypersplenism.

RESUMO

A leishmaniose visceral (LV) ou calazar é uma infecção sistêmica causada por um protozoário (*Leishmania*) e na sua forma clássica é uma doença grave. Cursa com desnutrição, anemia, hepatoesplenomegalia, processos infecciosos e coagulopatias. O papel da esplenectomia em pacientes com leishmaniose visceral não é bem definido; entretanto, sabe-se que o baço é o maior reservatório de células parasitadas do sistema reticulo endotelial e o procedimento cirúrgico é, dessa forma, uma opção para *debulking* de parasitas, propiciando a cura da LV refratária e minimizando as complicações do hiperesplenismo.

Palavras-chaves: Esplenectomia. Leishmaniose. Hiperesplenismo.

INTRODUCTION

Visceral leishmaniasis (VL), also known as Kala-azar, is a systemic infection caused by a protozoan of the family *Trypanosomatidae*, genus *Leishmania*, which has two forms: a flagellated form or promastigote, found in the digestive tract of the insect vector, and a nonflagellated form or amastigote, which is an obligate intracellular form that is found in the cells of the mononuclear phagocytic system of the vertebrate host. The primary vector is *Lutzomyia*, for which the dog is the reservoir and humans are the final host. Visceral leishmaniasis is one of the six most important endemic diseases in the world, given its incidence and high mortality rates in untreated individuals, malnourished children and HIV-positive individuals. The disease exists in all continents except Australia and Antarctica[1]. Visceral leishmaniasis has been documented in all regions of Brazil except the southern region. The disease occurs in rural and urban areas of Cities such as Rio de Janeiro/RJ, Belo Horizonte/MG, Araçatuba/SP, and Corumbá/MS. Currently in Brazil, VL is registered in 19 of 27 states[2]. The classic symptoms consist of fever, sweating, adynamia, hepatosplenomegaly, malnutrition, cough, diarrhea, abdominal pain and distention, edema and ascites[3]. The diagnosis is based on the presence of the parasite in the bone marrow, spleen, liver, or lymph nodes. Several tests have been developed for the serologic diagnosis of VL, including molecular biology techniques[4]. Meglumine antimoniate remains the first-choice drug for treatment, and amphotericin B is the second-line drug used in cases of meglumine antimoniate resistance[5,6]. The effect of splenectomy on VL is unknown. The importance of splenectomy has been described in the treatment of VL vases refractory to medical treatment, with relative success[7]. This case report aims to demonstrate that in certain circumstances splenectomy can minimize the complications of hypersplenism and provide a cure for refractory VL.

1.Departamento de Cirurgia Pediátrica, Santa Casa de Franca, Franca, SP.
***Address to*:** Dr. Robson Azevedo Dutra. Av. Lázaro de Souza Campos 990, 14401-295 Franca, SP, Brasil.
Phone: 55 16 3711-4000
e-mail: robsonmarcia@netsite.com.br
Received in 26/03/2011
Accepted in 20/10/2011

CASE REPORT

The patient was JESB, 12 years old, born at Ipubi, PE, and a resident of Igarapava, State of São Paulo, Brazil.

In February 2008, this patient was admitted to Santa Casa de Franca/SP, with anemia (hemoglobin: 7.7g/dl), leukopenia (total leukocytes: 1,900), hepatosplenomegaly and malnutrition. Bone marrow aspiration revealed inclusions of *Leishmania* in macrophages. Meglumine antimoniate treatment was performed for a 30-day period. In January 2010, the patient returned to the hospital with a high fever and severe epistaxis. The patient's hemoglobin was 5.8g/dl, total leukocytes were 2,800, the prothrombin activity was 40%, and the platelet count was 50,000. He received 2 units of blood via transfusion, antibiotic therapy and a new cycle of meglumine antimoniate.

In March 2010, the patient experienced a new epistaxis with abdominal pain, fever and asthenia. His hemoglobin was 5.2g/dl, total leucocytes were 1,700, the prothrombin activity was 30%, and the platelet count was 45,000. The hepatosplenomegaly was very significant (**Figure 1**).

Liposomal amphotericin B was initiated for 5 days, along with blood transfusion and broad-spectrum antibiotic therapy. Despite clinical treatment, the clinical and laboratory signs of cytopenia persisted due to hypersplenism. Therefore, the surgical team was consulted, and a splenectomy was performed 7 days after the end of the amphotericin treatment. The spleen weighed 2,170g and was 28cm long, 18cm wide and 10cm thick (**Figure 2**). The spleen had spots characteristic of *Leishmania*. The liver biopsy was negative for parasites. Two months after the splenectomy, the patient's clinical condition improved rapidly, with weight gain, a hemoglobin level of 13.5g/dl, a platelet count of 25,0000 and a leukocyte count of 8,200 (**Figure 3**).

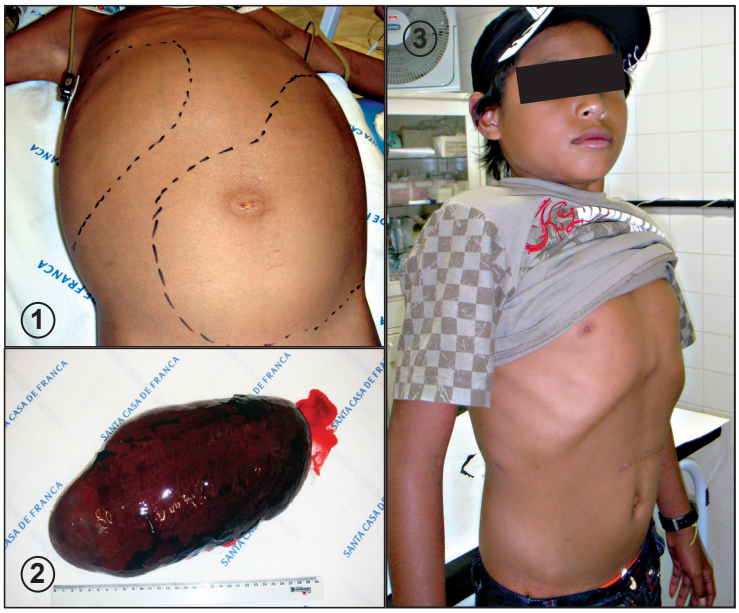

FIGURE 1 - Malnutrition and hepatosplenomegaly.

FIGURE 2 - Spleen: 2.700g, 28cm long, 18cm wide and 10cm thick.

FIGURE 3 -Two months after splenectomy.

DISCUSSION

Visceral leishmaniasis is a serious illness that is associated with protein-calorie malnutrition, anemia, hepatosplenomegaly, hypersplenism, infectious processes and coagulopathies. The main causes of death include infection, bleeding, anemia and liver failure. Visceral leishmaniasis is fatal in approximately 50% of cases. When assessing the response to medical treatment, patients can be considered to be cured at the end of therapy when they present with no fever, a decrease in splenomegaly of at least 40% of the initial value, improvements in both the general condition and laboratory exam results, and no reappearance of signs and symptoms within six months[7].

The patient covered herein did not exhibit clinical or laboratorial improvements despite the two cycles of meglumine antimoniate treatment and one cycle of treatment with liposomal amphotericin B. Kumar et al reported a case involving multiple relapses and a multi-drug unresponsive disease that was successfully treated with combination therapy[8].

The effect of splenectomy in patients with visceral leishmaniasis is not well defined. The success of the splenectomy in our patient might be due to the removal of large masses of parasites from the system and the correction of the hypersplenism[9,10]. There have been two reported cases in which parasites remained present in the lymph nodes after clinical cure[1], demonstrating that the reticuloendothelial system, especially the spleen, can be a reservoir of infected cells. Mukhopadhyay et al.[11] reported six patients with drug-resistant VL who were submitted to elective splenectomy.

In the presence of severe splenomegaly, the levels of drugs in the spleen for the treatment of VL may not be sufficiently high to eradicate the parasite and cure the disease. Therefore, splenectomy may be indicated in cases of serious cytopenia, if periodic blood transfusions are required, and in the cases of recurrent VL.

This case report highlights that splenectomy may be an option for the debulking of parasites in cases of severe splenomegaly, thus minimizing the complications of hypersplenism and providing a cure for refractory VL[12].

REFERENCES

1. Dereure J, Duong TH, Lavabre-Bertrand T, Cartron T, Bastides F, Richard-Lenoble D, et al. Visceral leishmaniasis. Persistence of parasites in lymph nodes after clinical cure. J Infect 2003; 47:77-81.
2. Ministério da Saúde. Fundação Nacional de Saúde (FUNASA). Controle, diagnóstico e tratamento da leishmaniose visceral (calazar): Normas Técnicas. Brasília; Ministério da Saúde; 1999.
3. Badaró R, Jones TC, Lourenço B. A prospective study of visceral leishmaniasis in an endemic area of Brazil. J Infect Dis 1986; 154:639-649.
4. Arias JR, Monteiro OS, Zicker F. The reemergence of visceral leishmaniasis in Brazil. Emerg Infect Dis 1996; 2:145-146.
5. Queiroz MJA, Alves JGB, Correia JB. Leishmaniose visceral: características clínico-epidemiológicas em crianças de área endêmica. J Pediatr 2004; 80; 141-146.
6. Santos MA, Marques RC, Farias CA, Vasconcelos DM, Stewart JM, Costa DL, et al. Predictors of a unsatisfatory response to pentavalent antimony in the treatment of the American visceral leishmaniasis. Rev Soc Bras Med Trop 2002; 35:629-633.
7. Brustoloni YW, Cunha RV, Consolo LZZ, Oliveira ALL, Dorval MEC, Oshiro ET. Treatment of visceral leishmaniasis in children in the Central-West Region of Brazil. Infection 2010; 38:261-267.
8. Kumar N, Kumar Sinha P, Pandey K, Verma N, Shekhar Lal C, Ranjan A, et al. A rare case of Visceral leishmaniasis with multiple relapse and multi-drug unresponsive: successfully treated with combination therapy. Int J Clin Pharm 2001; 33:726-729.
9. Napier LE. Splenectomy in the treatment of Kala-azar. J Trop.Med Hyg 1949; 52:243-248
10. Rees PH, Kages PA, Kyambi JM, Ayim EN, Bhatt KM. Eeftinck JKM. Splenectomy in Kala-azar. Trop Geogr Med 1984; 36:285-292
11. Mukhopadhyay B, Sarkar AK, Dasgupta A, Mukhopadhyay M, Chowdhury MM, Sarkar S. Drug - resistant childhood visceral leishmaniasis. Is splenectomy a solution? Pediatr Surg Int 1993; 8:314-315.
12. Lyngdoh E, Jain SC, Barua P. Splenectomy in treatment of drug-resistant Kalazar. J Indian Med Assoc 1971; 57:458-461.