VOLUME - 11, ISSUE - 10, OCTOBER - 2022 • PRINT ISSN No. 2277 - 8160 • DOI : 10.36106/gjra

Original Research Paper | General Surgery

SPONTANEOUS SPLENIC RUPTURE IN A CASE OF P. VIVAX INFECTION - A RARE CASE REPORT

Dr. Sampada V. Joshi*	Junior Resident, Department of General Surgery, Grant Medical College and Sir J.J Group of Hospitals, Mumbai, India. *Corresponding Author
Dr. P. D. Nichat	Associate Professor, Department of General Surgery, Grant Medical College and Sir J.J Group of Hospitals, Mumbai, India
Dr. Kashif Ansari	Assistant Professor, Department of General Surgery, Grant Medical College and Sir J.J Group of Hospitals, Mumbai, India
Dr. Snehal Dandge	Junior Resident, Department of General Surgery, Grant Medical College and Sir J.J Group of Hospitals, Mumbai, India
Dr. Avinash Dongre	Junior Resident, Department of General Surgery, Grant Medical College and Sir J.J Group of Hospitals, Mumbai, India
Dr. Shalmali Dharmadhikari	Senior Resident, Department of General Surgery, Grant Medical College and Sir J.J Group of Hospitals, Mumbai, India

ABSTRACT Non traumatic, spontaneous splenic rupture is a rare diagnosis. It has various etiologies one of which is malarial parasite, a common endemic infection seen in India. This is a rare case report of spontaneous splenic rupture due to malaria infection, successfully managed with emergency splenectomy. High index of suspicion and early use of ultrasonography in malaria positive patients can lead to early diagnosis with significant reduction of delay in the definitive management of patients with spontaneous splenic rupture.

KEYWORDS : Spontaneous Splenic Rupture, Malarial spleen, splenectomy.

INTRODUCTION:

Splenic rupture secondary to trauma is a common occurrence in the surgical emergency department. Non traumatic splenic rupture is a rare diagnosis requiring high index of suspicion, since it is fatal, if remains undiagnosed. Causes of non traumatic splenic rupture are malignancies, infections, vascular and hematological disorders[1]. The second most common infectious cause of spontaneous spleen rupture is malaria, after EBV infection[2].

Malaria is one of the most common infectious diseases in India. The causative microorganism is a parasite which belongs to the Plasmodium family. The four common species are Plasmodium falciparum, P. vivax, P. malariae and P. ovale. Plasmodium falciparum infection is associated with more risk of complications such as cerebral malaria, acute renal failure, liver damage and haemodynamic collapse. Though P. vivax is considered to be benign but splenic complications are more common with P. vivax infections[3]. This article reports one such instance of spontaneous malarial splenic rupture encountered in our department.

Case Presentation:

A 37 year old male presented with complaints of generalized abdominal pain, with no radiation or referral and no aggravating or relieving factors along with high grade fever for 5 days. Clinical examination revealed abdominal distension with tenderness in the left hypochondrium region. Blood investigations revealed leukocytosis and a positive malarial parasite antigen detection test for Plasmodium vivax. Ultrasonography of the abdomen was suggestive of moderately enlarged spleen (16.5cm) with a hypoechoic, partially liquified collection in the subcapsular region of the spleen with posterosuperior aspect measuring about 416cc. Patient was hemodynamically stable and was immediately started on intravenous antimalarial treatment. He was being monitored closely for vitals, abdominal girth and hemoglobin value. Computed Tomography Scan revealed subcapsular splenic haematoma (volume 1365cc) along with mild hemoperitoneum. (Figure 1)

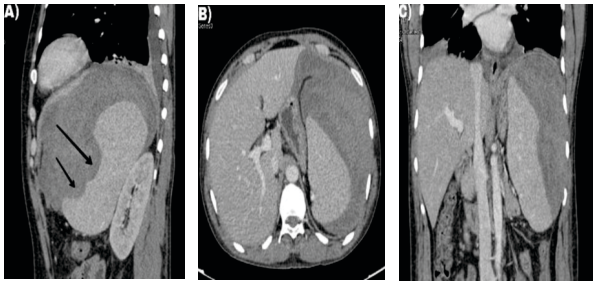

Figure 1: Computed Tomography image in A)Sagittal B)Axial C) Coronal section showing subcapsular splenic haematoma

In the due course along with the increase in volume of subcapsular collection, patients hemoglobin was found to be significantly dropped (from 10.3 to 4.6 g/dL). Decision of emergency exploratory laparotomy with splenectomy was taken. Intraoperatively actively bleeding ruptured subcapsular haematoma along posterosuperior surface of spleen was encountered along with hemoperitoneum. (Figure 2) Patient successfully underwent a splenectomy. Radical antimalarial treatment was given in the postoperative course. Post splenectomy vaccinations were administered as per guidelines.

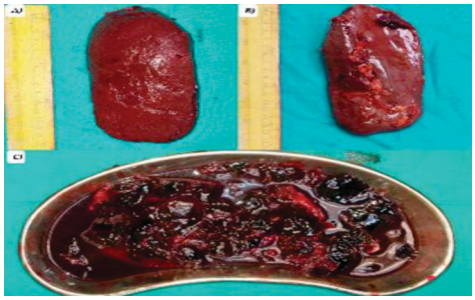

Figure 2: Surgical specimen of spleen with ruptured subcapsular haematoma

A) Rough diaphragmatic surface of spleen with denuded capsule due to ruptured subcapsular haematoma
B) Shiny visceral surface with intact capsule
C) Ruptured subcapsular haematoma

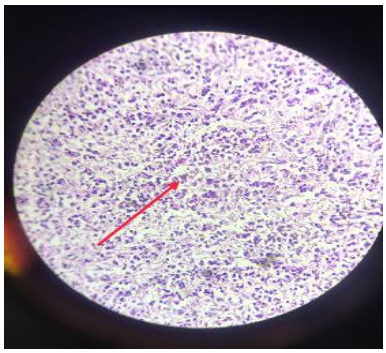

Figure 3: Histopathological examination of spleen showed the presence of malarial pigment

DISCUSSION:

Malaria is a prevalent disease in India. In India, Plasmodium vivax is known to cause infection in approximately 55% of the cases, whereas Plasmodium falciparum is found in 40–42% of the cases. P. falciparum is more commonly responsible for causing complicated malaria[3]. However, splenic complications are commonly associated with non-falciparum species, especially P. vivax[4]. Spontaneous splenic rupture in malaria patients can be attributed to the hypothesis that spleen provides a niche for P. vivax causing subsequent splenomegaly and thereby low peripheral parasitaemia[1]. Rarely, P. ovale is also known to cause spontaneous splenic rupture. Very first case of Plasmodium ovale splenic rupture described in the literature dates back to October 1991.

Another significant consideration is acute versus chronic malaria. In cases of acute malaria spleen is softer in consistency compared to chronic malaria. In cases with acute disease, there is rapid enlargement and stretching of the splenic capsule secondary to vascular congestion and cellular hyperplasia, and the lack of fibrosis predisposes to splenic rupture[4]. In chronic malaria, fibrosis renders the spleen and its capsule rather resistant to spontaneous rupture and can thus have delayed presentation after days to weeks of infections[1]. Patients with no prior immunity to malaria are at a greater risk of splenic rupture and patients with acute malaria should be advised to avoid activities causing raised intra abdominal pressure[5].

There are two theories for the mechanism of spontaneous splenic rupture. Both have been reported to cause rupture in acute presentation of malaria. The first is, deformed infected red blood cells that have altered cell surface characteristics along with activated lymphatic tissue of the spleen cause marked stasis of blood in splenic sinuses[5].

The second mechanism is due to abdominal wall muscles compressing spleen during physiological activities involving raised intra-abdominal pressure like coughing, sneezing, defecation[6].

Clinically high index of suspicion is necessary in patients presenting with abdominal pain and fever especially in countries harboring endemic malaria. In diagnosed malaria patients of any subtype, new onset abdominal pain and distension should be immediately evaluated with portable abdominal ultrasonography especially when hemodynamically unstable, as it can be life saving. Computed Tomography Scan can be considered in hemodynamically stable patients for better assessment of severity. Splenectomy is definitive surgical management and life saving in an emergency setting.

CONCLUSION:

High index of suspicion is necessary for diagnosing spontaneous splenic rupture in cases presenting as acute abdomen with fever, especially in countries like India where malaria is an endemic disease.

Ultrasonography and CT imaging of the abdomen should be considered in diagnosed cases of malaria developing acute abdominal pain to rule out spontaneous splenic rupture.

REFERENCES:

1. Elizalde-Torrent, A., Val, F., Azevedo, I., Monteiro, W. M., Ferreira, L., Fernández-Becerra, C., Del Portillo, H. A., & Lacerda, M. (2018). Sudden spleen rupture in a Plasmodium vivax-infected patient undergoing malaria treatment. Malaria journal, 17(1), 79. https://doi.org/10.1186/s12936-018-2228-2
2. Wankap, R., Amzallag, Y., Diouf, M., Moalic, G., Cracco, C., & Riche, A. (2020). A rare case of non-traumatic rupture of spleen secondary to Plasmodium ovale malaria. IDCases, 21, e00757. https://doi.org/10.1016/j.idcr.2020.e00757
3. Gupta, N., Lal, P., Vindal, A., Hadke, N. S., & Khurana, N. (2010). Spontaneous rupture of malarial spleen presenting as hemoperitoneum: a case report. Journal of vector borne diseases, 47(2), 119–120.
4. Dayal, M., Sharma, R., Jeyaseelan, N., Sood, R., Mathur, S. R., & Chitragar, S. (2013). Non-traumatic rupture of malarial spleen. Tropical gastroenterology : official journal of the Digestive Diseases Foundation, 34(3), 191–193.
5. Gockel, H. R., Heidemann, J., Lorenz, D., & Gockel, I. (2006). Spontaneous splenic rupture, in tertian malaria. Infection, 34(1), 43–45. https://doi.org/10.1007/s15010-006-4126-8
6. Hussein, B., Ani, A., Al-Mayoofi, O., Mehraj, M., Joher, A. A., Bonilla, J. A., Al-Mazrouei, A. S., & Badri, F. M. (2016). Spontaneous rupture of splenic hematoma in a malaria patient: Case report and review of literature. International journal of surgery case reports, 29, 241–244. https://doi.org/10.1016/j.ijscr.2016.10.017