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A case report

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Non-operative management of a pathological malaria splenic rupture. A case report

Malaria continues to be a major health problem in many parts of the world especially in the endemic countries. Though, because of the international travelling, any physician everywhere should know this disease and its complications such as splenic rupture which is rare but life threatening. We report the case of an expatriate Tunisian man who had been working in Togo and who had consulted in Tunisia for an acute abdominal pain. Explorations concluded to a splenic rupture, a rare complication of malaria. Our attitude was conservative based on ressuscitation with monitoring and watchful waiting. The evolution was favorable marked by a significant regression of the splenic hematoma 5 months after hospital discharge.

KEY WORDS: Haematoma, Malaria, Splenic rupture, Sub capsular

Background

The non traumatic spleen rupture is a rare condition with serious consequences if unrecognized and untreated. While numerous diseases can result in splenic rupture, malarial infection is known as the most common cause and is described in the medical literature mainly as case reports or at time as case reports with literature review [1-3].

Frequent international and transcontinental traveling carries malaria to non-endemic areas. Physicians must be aware of the common, but also the rare and severe complications of malaria because the ability to properly diagnose and manage these complications is important. Traditionally all types of splenic rupture have been treated with splenectomy but with the emerging trend of splenic conservation in splenic trauma, similar approach has been applied to the ruptured malarial spleen [4]. Spleen-conserving measures should be the standard whenever possible to preserve the role of the spleen in the immune response against malaria and other infections.

We report a case of a Tunisian expatriate in Togo with *Plasmodium falciparum* acute malaria who developed pathological splenic rupture during his holiday in Tunisia and which was managed successfully non-operatively.

Case description

A 33-year old Tunisian man, who had been living in Togo because of his job from July 2014 to May 2015,

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Fig. 1: CT scan findings at the admission

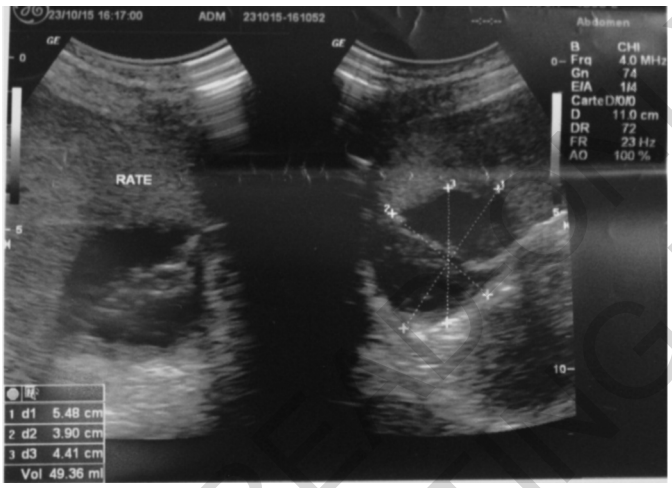

Fig. 2: Ultrasonography findings five months later

presented to the emergency department on the 25th of May 2015 at Sahloul teaching hospital (Sousse city, Tunisia) for a two day history of fever and abdominal pain. He was compliant in his malaria prophylactic medication (Mefloquine: Lariam*). An acute malaria attack was suspected, because of the clinical history and presentation, and confirmed with a peripheral blood smear test showing protozoan parasite in at least 1 ‰ of the normocytic erythrocytes. The morphology of the parasites was most consistent with that of *Plasmodium falciparum*. The patient was admitted to the internal medicine department where he started oral treatment with Artmether/lumefantrine (coartem*). One day after, the abdominal pain worsened especially in the left-upper-quadrant with diffuse upper abdominal tenderness and a tender palpable spleen, in addition to fever (39°C), hypotension, and tachycardia. Laboratory findings revealed a hemoglobin level at 14.4 g/dl and a hematocrit at 43.5%. A computerized tomography scan has objectified an enlarged spleen (17 cm) as well as a subcapsular hematoma (12x8x5 cm) and free hyperdense fluid in the peritoneal cavity (Fig. 1). The patient was transferred to Intensive Care Unit. Shortly after the hemoglobin level dropped to 11 g/dl, but with stable hemodynamic state, a non-operative management was discussed and decided by the multidisciplinary team including internal medicine specialist, surgeon and intensivist. After 7 days of hospitalization, an echographic control revealed a reduction in size of the subcapsular hematoma. Then the patient was discharged on day 15 of admission. Many follow ups with imaging control confirmed the uneventful evolution. The last control done with ultrasonography on the 23rd of October 2015 showed no intra-peritoneal fluid with splenic liquefied hematoma of (5,48 x 3,9 x 4,41 cm) (Fig. 2).

Discussion

Involvement of the spleen in malaria that results in splenomegaly makes this organ prone to complications such as rupture. "Spontaneous splenic rupture" is the most frequent expression used in the literature to describe splenic rupture in the absence of recent trauma. However, the published expression that best reflects the key features of this complication is "pathological rupture" of the spleen [1]. The general phenomenon is indeed analogous to the pathological fracture of a bone fragilized by an underlying disease. Better than "spontaneous rupture", "pathological rupture" implies both the absence of overt trauma (though minor trauma may play a role) and the presence of an underlying pathological condition [1].

The incidence of pathological malaria splenic rupture is approximately 1/50,000 cases [5]. The true incidence is unknown, since no prospective studies are available. But in endemic areas, cases of splenic rupture are likely to be underdiagnosed and underreported.

The present case presented to us on the second day after the onset of fever and acute abdominal pain in the absence of any trauma. In a country (Tunisia) which is not malaria area [6], the diagnosis of malaria could have been missed if a thorough medical history was not well done. Furthermore, the CT scan played a major role in avoiding exploratory laparotomy by comprehensively assessing acute splenic disorders such as partial or complete infarctions, abscess, collections and rupture. Also this medical imaging technic allows identifying or excluding coexistent perisplenic and intraperitoneal haemorrhage, presence and source of active bleeding [7].

The reasonable decision made by the multidisciplinary team, to opt for watchful waiting, was facilitated by the fact that our institution recruits many trauma patients.

A sizeable number of them have blunt hepato-splenic injuries managed non-operatively, option made more feasible with the facility of embolization in the radiology department having an interventional radiology room installed since 3 years.

The conservative management consists of observation for one to two weeks in ICU with strict bed rest, administration of fluid, blood and blood products as needed, serial monitoring of haemoglobin and haematocrit along with monitoring of vital parameters. Repeated ultrasonography or CT scan is done to assess the healing of the ruptured spleen, which is usually complete in 2–3 weeks [8]. Splenectomy should be reserved for patients with uncontrolled bleeding and in the absence of embolization facility [1,9]. Sometimes even with interventional radiology facility, the laparotomy with partial or total splenectomy remains the saving procedure as angiographic embolization is time consuming in haemodynamically unstable patients. However, splenic preservation is strongly recommended when possible due to the important role of the spleen in immunity.

Osman et al worked out a flowchart for the management of malarial splenic rupture after reviewing 252 cases previously reported in the literature. They gave priority to non-operative management of hemodynamically stable patients but recommended splenectomy for persistent hemodynamic instability. Arteriography with embolization may also be a potential therapy. However, angiographic embolization was omitted from the flowchart because this modality may not be available as a salvage therapy in many clinical settings [2].

In his review, Imbert et al retrieved 55 cases of malarial splenic rupture, published between 1958 and 2008 in five languages. They concluded that the treatment offered, whether splenecotmy or conservative management, had no effect on prognosis probably because of the correct choice of treatment by the physicians based on clinical judgement [1]. But it is obvious that long term outcome and infectious risks in asplenic patients is in favour of conservative treatment using or not embolization. The effect of antimalarial chemotherapy is not to neglect, because earlier the diagnosis and the treatment, better the prognosis is. Our patient started his medication two days after the onset of the symptomatology; this could have mitigated the course of malaria splenic rupture and had helped getting a good outcome.

Most cases of pathological malaria splenic rupture occur during acute infection, and usually during the primary attack. Chronically enlarged spleens are less vulnerable to rupture because the progressive enlargement and fibrosis including a thicker capsule [10].

Information about risk factors for malaria splenic rupture is missing and lack of previous immunity to the parasite appears to be the only recognized one, explaining occurrence and death rates significantly higher among travellers and expatriates, despite the much higher number of native people exposed to malaria [1,11].

Conclusion

Pathological rupture of the spleen is a rare but life-threatening complication in malaria. It involves more expatriates and travellers to endemic arias because of the lack of prior immunity against Plasmodium parasites. Clinicians in non-endemic arias should have a high index of suspicion to detect malaria and its complications early. A thourouh medical history taking, a good clinical examination and the abdominal CTscan are pillars of the diagnosis. The cooperative multidisciplinary work is the guaranty of reasonable decisions especially the non-operative management to avoid the splenectomy and its postoperative morbidity. In fact the spleen conserving measures should be the standard whenever possible in selected and closely monitored patients.

Riassunto

La malaria continua a rappresentare un problema maggiore per la salute in molte parto del mondo, specialmente nei paesi ad endemia malarica. Però per la diffusione dei viaggi internazionali e la numerosità dei viaggiatori ogni medico in ogni parte del mondo dovrebbe conoscere questa parassitosi e le sue complicazioni, come la rottura della milza, che anche se rara può creare pericoli per la vita.

Riferiamo il caso di un Tunisino espatriato in Togo per motivi di lavoro, che ha chiesto assistenza medica in Tunisia per l'insorgenza di un dolore addominale acuto. Lo studio di questo paziente ho portato alla diagnosi di una rottura della milza quale rara complicazione della malaria.

Il trattamento da noi adottato è stato quello conservativo, con monitoraggio ed attesa sorvegliata. L'esito è stato favorevole, con significativa riduzione dell'ematoma splenico a cinque mesi di distanza dalla dimissione dall'ospedale

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