

## Spontaneous rupture of Spleen secondary to falciparum malaria

Belal Yousef Lafi, Fares Rayzah, Hannan Albishi, Saleem Abdul Sattar Khan

### Abstract:

Malaria is a common health problem in tropical region, commonly involved countries are Pakistan, India, Bangladesh, Nepal, Srilanka and adjacent countries. Few cases has been reported from, Saudi Arabia, Turkey and many other countries of the world. The human variant is caused by the protozoon, parasite plasmodium which has four species known as falciparum, malariae, vivax. It is transmitted by anopheles mosquito. The clinical features of malarial infestation are fever with rigors, severe headache, muscular ache, generalized convulsion, renal failure, splenomegaly, if not treated it may cause circulatory collapse, coma and death. Plasmodium falciparum is endemic in certain regions of Saudi Arabia including Jazan and adjacent areas. Spontaneously rupture of spleen is a dreadful complication and occurs in an estimated of 2% of cases.

### Case Report:

A 18-Year-old, single Saudi male, patient was presented to Emergency department 10<sup>th</sup> October 2018 complaining of high grade intermittent fever for 4-days associated with rigors, was also complaining of severe generalized abdominal pain mainly in the lower abdomen sharp in nature associated with nausea anorexia and repeated vomiting, he has mild abdominal distention and hematuria. No recent history of traveling or trauma, no past history of similar condition or hospitalization. On examination patient looks ill, conscious, oriented, pale and tachypnic, not jaundiced or cyanosed, his vitals were temp: 39.4, RR:28, PR: 140 bpm, BP:118/55, abdomen was mildly distended, generalized tenderness, rebound tenderness and guarding. C.T. Scan abdomen with IV contrast revealed that there is significant amount of free intraperitoneal fluid of high attenuation. The spleen is borderline in size and bulky with suspected irregular surfaces and suspected ill-defined hypo dense areas within and perisplenic high attenuation fluid, strongly suspicious of splenic rupture. Liver is mildly enlarged, no significant hepatic focal lesion or intrahepatic biliary radical dilatation could be seen. Pancreas, kidneys and adrenals show no significant focal lesions. Patient underwent exploratory laparotomy and splenectomy, intra-operative. Findings were hemorrhagic free fluid around 1500 ml, along with ruptured spleen. Splenectomy done and patient shifted to ICU, Intubated, mechanically ventilated, packed red cells and platelets and FFP were transfused. Patient was extubated and shifted to ward on second post-operative day allowed to go home on 8th post-operative day.

**Keywords:** Malaria, splenomegaly, plasmodium falciparum, P malariae, P vivax, P ovale, anopheles mosquito, spontaneous rupture of spleen, Hemoperitoneum, splenectomy

### Introduction:

Malaria is a common health problem in tropical region, commonly involved countries are Pakistan, India, Bangladesh, Nepal, Srilanka and

adjacent countries. Few cases has been reported from, Saudi Arabia, Turkey and many other countries of the world.

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Figure 1: Specimen of spontaneous rupture of spleen

The human variant is caused by the protozoon, parasite plasmodium which has four species known as falciparum, malariae, vivax and ovale. It is transmitted by anopheles mosquito. The clinical features of malarial infestation are fever with rigors, severe headache, muscular ache, generalized convulsion, renal failure, splenomegaly, if not treated it may cause circulatory collapse, coma and death.

Plasmodium falciparum is endemic in certain regions of Saudi Arabia including Jazan and adjacent area. Splenic reaction to malaria infection includes splenomegaly, hematoma formation, splenic infarction, abscess formation and rarely splenic rupture.

Spontaneous rupture of spleen is a rare complication of malaria. The exact mechanism of splenic rupture is unknown, the different mechanisms are cellular hyperplasia and venous sinusoidal engorgement leading to increased vascularity.

Spontaneously rupture of spleen is a dreadful complication and occurs in an estimated of 2% of cases

#### Case Report:

We present a case of 18-Years-old, Saudi male, patient was presented to Emergency depart-

ment complaining of high grade intermittent fever for 4-days associated with rigors, was also complaining of severe generalized abdominal pain mainly in the lower abdomen sharp in nature associated with nausea anorexia and repeated vomiting, he has mild abdominal distention and hematuria. No recent history of traveling or trauma, no past history of similar condition or hospitalization.

On examination patient looks ill, conscious, oriented, pale and tachypnic, not jaundiced or cyanosed, his vitals were temp: 39.4, RR:28, PR: 140 bpm, BP:118/55, abdomen was mildly distended with generalized tenderness, rebound tenderness and guarding all over abdomen. C.T. Scan abdomen with IV contrast revealed that there is significant amount of free intraperitoneal fluid of high attenuation. The spleen is borderline in size and bulky with suspected irregular surfaces and suspected ill-defined hypo-dense areas within and peri-splenic high attenuation fluid, strongly suspicious of splenic rupture. Liver is mildly enlarged, no significant hepatic focal lesion or intrahepatic biliary radical dilatation could be seen. Pancreas, kidneys and adrenals show no significant focal lesions.

Patient underwent exploratory laparotomy and splenectomy, intra-operative. Findings were hemorrhagic free fluid around 1500 ml, along with ruptured spleen. Splenectomy done and patient shifted to ICU, Intubated, mechanically ventilated, packed red cells and platelets and FFP were transfused.

Patients was extubated and shifted to ward on second post-operative day. Peripheral blood smear report showed red cells are infected with malaria parasite (plasmodium falciparum) in ring form. There was mild neutrophilia.

Histopathology showed focal lacerations and cut section shows extensively hemorrhagic and friable tissue as shown in figure 1. Patients has smooth recovery and allowed to go home on 8th post-operative day.

**Discussion:**

Malaria is a health problem still in tropical and sub-tropical region of the world. It is still common in countries like Pakistan, India, Bangladesh and adjacent countries also cases has been reported from Turkey, Saudi Arabia and many other countries of the world.

The human variant is caused by the parasite plasmodium of which four species are known falciparum malaria, oval and vivax transmitted by anopheles mosquito.<sup>1</sup> The clinical features of malarial infestation are fever with rigors, severe headache, muscular ache, generalized convulsion, renal failure, splenomegaly, if not treated circulatory collapse, come and death.<sup>2</sup>

Plasmodium falciparum is endemic in certain region of Saudi Arabia including Jazan area.<sup>1,3</sup>

Plasmodium vivax is the predominant disease in south east Anatolia region of Turkey where it involve almost 99.9% of cases.<sup>4</sup>

Splenic reaction to malaria infection include splenomegaly, hematoma formation,<sup>6</sup> splenic infarction,<sup>7</sup> and rarely abscess,<sup>8</sup> formation. Spontaneous rupture of spleen is a rare complication of malaria. The exact mechanism of splenic rupture is unknown, the different mechanisms are cellular hyperplasia and venous sinusoidal engorgement leading to increased. Tension in the spleen, secondly reticuloendothelial hyperplasia leading to thrombosis and infection.

The increased intra-abdominal pressure by exertional activity such as sneezing, coughing and defecation further compress the tense organ. Acting together, they cause sub-capsular hemorrhage and eventually the capsular tear of spleen will lead to free intra-peritoneal hemorrhage.<sup>9</sup>

The infection with plasmodium vivax appear to be important is predisposing spontaneous splenic rupture.<sup>5</sup> Spontaneous rupture of the spleen is an important life threatening complication and occurs in up to an estimated 2% of cases. The spontaneous splenic rupture due to plasmodium falciparum is rare.

Travelling to malarial endemic area mandates anti-malarial prophylaxis. Despite use the prophylactic medication does not totally alleviate the possibility of contacting the disease.<sup>1,2</sup>

The ideal management of spontaneous rupture of spleen is laparotomy and splenectomy, however non-operative management of splenic rupture was reviewed.<sup>10,11</sup> However, this demands repeated transfusion ready access to serial radiological assessment diligent follow up in intensive care unit and preparedness to operate if the condition deteriorate compared to normal individual, living in malaria endemic area are prone to have parasite infestation and show delayed clearance of the parasite after treatment.<sup>12,13</sup>

**Conclusion:**

We conclude that one should have high index of suspicious in patient who travelled to endemic area and presents of spontaneous rupture of spleen with abdominal pain. Early laparotomy and splenectomy will be the treatment of choice in such cases.

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**Role and contribution of authors:**

Dr Belal Yousef Lafi, collected the data, references and did the write up.

Dr Fares Rayzah, went through the article critically and made useful changes.

Dr Hannan Albishi, collected the references, and helped in introduction and discussion writing.

Dr Saleem Abdul Sattar Khan, critically review the article and made the final changes.

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