

Spontaneous Splenic Rupture: Case Report from Yekatit 12 Medical College Hospital, Addis Ababa, Ethiopia

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Abstract: Splenic rupture can be traumatic or non-traumatic (spontaneous). The spleen is the commonest solid organ injured in blunt abdominal injury. Spontaneous splenic rupture is rare and one cause of acute abdomen which can lead to morbidity and mortality. Among patients having spontaneous splenic rupture, majority of them have underlying splenic pathology of different causes such as hematologic, infectious, inflammatory, drugs or mechanical. In endemic area of malaria, spontaneous splenic rupture is one of fatal complication of severe malaria fortunately it is rare complication. In rare cases there may be no splenic pathology identified which is called idiopathic. The treatment of ruptured spleen is mainly splenectomy though there are cases reports of angioembolization as treatment option. Here we present a case report of 20 year old male patient who presented with diffuse abdominal pain of 3 days duration with signs of generalized peritonitis. During exploratory laparotomy, he was having ruptured spleen with blood in the peritoneum. He was managed with splenectomy and cross match transfusion after the bleeding was controlled. The patient was discharged improved after he took pentavalent vaccine. In conclusion, though spontaneous splenic rupture is rare over all there are different case reports of this condition and one has to consider it as differential diagnosis in patient who presented with acute abdomen of unclear causes and especially if the patient has underlying diseases or drugs that can affect the spleen.

Keywords: Spontaneous Splenic Rupture, Laparotomy, Splenectomy, Acute Abdomen

1. Introduction

The spleen is an encapsulated hematopoietic organ that lies within the posterior aspect of the left upper quadrant in the peritoneal cavity. The spleen is most frequently injured abdominal viscera in blunt trauma. [1] Splenic rupture can be traumatic or atraumatic (spontaneous). Spontaneous splenic rupture (SSR) is a rare phenomenon where the spleen ruptures without associated trauma. [2] The first case of SSR was described by Rokitansky and Atkinson. Most common etiologies of SSR are: hematological diseases (30.3%), inflammatory diseases (20%), infectious diseases (27.3%), drugs (9.2%), mechanical disorders (6.8%) and sometimes no cause are found (6.4%). Mortality is relatively low when an underlying etiology is absent but can be as high as 12.2% when caused by an underlying disease. [2, 3]

In endemic area of malaria, SSR can be caused by malaria. Malaria is a critical parasitic disease transmitted to human from infected female anopheles mosquito by bite. Its prevalence is increased since 2015. In 2018, the World Health Organization (WHO) reported 228 million cases of malaria worldwide with 405,000 deaths, in which the Africa region was home to 93% of cases and 94% of Malaria related deaths. The clinical presentation is varying from asymptomatic to severe life threatening condition such as malarial splenic rupture. [4] Another infectious causes of SSR are typhoid fever, infectious mononucleosis, and COVID-19 virus. Typhoid fever is a common public health problem in tropical and subtropical regions. This disease is occurred by salmonella typhi or paratyphi species. Spontaneous splenic rupture is a rare but dangerous complication of systemic salmonella infection. During pandemic COVID-19, there was case report of patient

presented with abdominal pain and confirmed to have the virus was diagnosed to have spontaneous splenic ruptured and managed with splenectomy. [5-8]

Malignancies causes of SSR include chronic lymphocytic leukemia, multiple myeloma, and lymphoma. [2, 9, 10] There is also case report of patient with SSR who was misdiagnosed as having myocardial infarction. [11]

Other case reports showed that sneezing, coughing, pregnancy, and delayed traumatic with later presented as spontaneous splenic rupture are causes. [12-15]

2. Case Summary

A 20 year old male patient presented to Yekatit 12 Medical College Hospital ED with complaints of generalized abdominal pain, diarrhea, HGIF, and loss of appetite of 3 days duration. He has history of repeated malaria treatment. Otherwise has no history of trauma, known chronic illnesses and drug intake. Physical finding at his presentation: Acutely sick looking, tachycardia, febrile and has dry buccal mucosa. Has abdominal guarding and rigidity all over the abdomen with more tenderness over the left upper quadrant area. No other pertinent positive findings. Up on laboratory an investigation was WBC 23,000 with neutrophil count of 93%, hemoglobin 9.5g/dl and platelet of 349,000. Abdominal U/S showed large hyoechoic peritoneal collection with internal echodebris. After the patient was resuscitated with crystalloid and produced about 1ml/kg/hr urine, was taken to OR with the impression of Generalized peritonitis secondary to ?splenic rupture after informed written consent was taken from the patient. The peritoneal cavity entered through midline vertical incision. The intra operative findings during laparotomy were about 3L of clot mixed blood in the peritoneum more around the splenic space and there was visible ruptured spleen with active oozing. After the blood sucked out and the suspensory ligaments of the spleen was mobilized, the splenic hilum ligated and splenectomy done. The peritoneal cavity lavage with warm saline and drain was left at the splenic fossa and after count declared correct the abdomen closed in layers. The patient was transfused with 2 units of PRBC after the bleeding arrested and produced about 0.5ml/kg/hr. He was extubated on the table and transferred to PACU with stable vital signs. On his 1st Post-operative day he started feeding and the drain was removed on his 3rd post day as the output became null. On 5th post-operative day the patient discharged after he took pentavalent vaccine. Till this report is written the patient is on follow up at the referral clinic and has no complications.

3. Discussion

Spontaneous splenic rupture is a rare condition mostly associated with neoplastic, infectious, and inflammatory diseases. Though, it is a rarer cause of SSR drugs such as rivaroxaban, tissue plasminogen activator, and other anticoagulants can cause. Tissue plasminogen activator is exclusively acts on preformed clot by converting

plasminogen to plasmin which degrades formed clots leading to spontaneous bleeding if it acts over therapeutic range. [16-18]

SSR can affect any age of groups as there was case report in neonatal age. [19] The Clinical presentation of SSR is vary from asymptomatic to unstable patients who need urgent laparotomy. Due to the rarity of the condition, it is commonly not considered as differential diagnosis of patient who presented with acute abdomen. So, in patient having any possible underlying spleen pathology or in regions with high prevalence of infectious diseases like malaria and thyroid fever one should consider as differential diagnosis.

In our case report, the treating physicians were consider as top differential diagnosis as the patient has history of malaria treatment, acute abdomen and signs of acute blood loss such as tachycardia, slight pale conjunctiva, and low hemoglobin. Once SSR is considered as likely diagnosis the management options depend on the conditions of the patient at the presentations and available option in the institutions. These options are laparotomy with splenectomy or arterial embolization. [2, 20]

In our setup, as there is no arterial embolization the patient was taken to operative room and explored with finding of ruptured spleen for which splenectomy was done.

Generally, as there are cases reports of SSR, a surgeon should be familiar with this condition in terms of diagnosis and treatment options to save the life of the patients.

4. Conclusion

Spontaneous splenic rupture is a rare condition which can be one cause of acute abdomen. In majority of patients having spontaneous splenic rupture, they will have underlying pathology of the spleen. But in few patients there might be no splenic pathology a condition called idiopathic spontaneous splenic rupture. Early recognition of the condition will help to save patient life. In majority of cases the treatment of ruptured spleen is splenectomy though there are case reports of embolization as treatment option.

Authors' Contributions

Yismaw has involved in pre-operative preparation, operation and assisted in writing this article. Mengistu is the main author of this article and literature reviewer. Wondossen was supervising the surgery.

Consent

A verbal informed consent was obtained for the patient for publication of this case report and image taken during intraoperative time.

Competing Interest

We, the authors, declare there is no competing interest.

Abbreviations

ED: Emergency Department
 WBC: White Blood Count
 HGIF: High Grade Intermittent fever
 ml/kg/hr: Millimeter per kilogram per hour
 g/dl: Gram per deciliter
 U/S: Ultrasound
 PRBC: Packed Red Blood Cell
 SSR: Spontaneous Splenic Rupture

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