

The Compound of Ruptured Splenic Abscess and Severe Anemia: The Potential Life-Threatening Twins Requiring Specialized Care in Limited Resourced Rural Areas in Kilombero, Morogoro Tanzania

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ABSTRACT

The ruptured splenic abscess is usually uncommon but associated with significant life-threatening. Concurrence of ruptured splenic abscess and severe anemia may lead to death if not treated effectively, especially in limited health care. We present the 43-year-old who presented with generalized peritonitis due to a ruptured spleen. Also, she had severe anemia with hb of 4.3 g/dl. The cause of anemia was not immediately identified. However, tests for bacterial sensitivity revealed *Klebsiella pneumoniae* which was resistant to Ceftriaxone, Amoxiclav, Ceftizine and Cotrimoxazole but sensitive to Meropenem, Ciprofloxacin and Vancomycin. After the result, the treatment shifted to Meropenem 1 Gm tds for 5/7. After seven days in the ward, the patient fully recovered and she was discharged in good condition.

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1. INTRODUCTION

Splenic abscesses are among the rare intra-abdomen abscesses with an incidence of 0.14-0.7% worldwide and most of them reported are autopsy studies [1–3]. Its frequency has been reentry increased due to modern diagnostic technologies [4] and most of them occur in immunocompromised patients such as HIV and cancer patients [5–7]. The increased number of immunocompromised and cancer patients has led to the increased reported frequency of splenic abscesses [7,8]. The management of splenic abscess is antibiotics and splenectomy or ultrasound guided percutaneous drainage [5,6,9]. Whenever there is generalized peritonitis due to a ruptured splenic abscess, the explorative laparotomy is only optional management [2]. Splenic rupture is usually misdiagnosed despite that it is associated with significant septic complications such as septic shock and multiorgan failure if no meticulous antiseptic precautions are made in all stages, prior, intra and post-operative phases [3,10]. Herein, we report the successful management of a ruptured splenic abscess presenting with peritonitis in an adult woman who was suspected to have typhoid fever. Post operative diagnosis was found to have ruptured splenic abscess due to *Klebsiella pneumoniae*. The aim of presenting this case is to increase the clinician awareness especially in the limited conversational diagnostic imaging (CT scan and MRI) such as Tanzania.

2. CASE REPORT

A 43-year female presented with left upper quadrant abdominal pain at anterolateral. The pain started a few days after she sustained mild abdominal trauma following the hit of bucket at the left sided upper abdomen whereby, she went to nearby health center and was given paracetamol tablets and discharged home. She got relief for about a week then pain reoccurred of which this time there was moderate pain such that the patient was able to perform her normal routine domestic activities. However, the pain intensity was increasing with time to the extent that she was a bedridden patient. Within this period, she was attending a peripheral health center and she was given antibiotics and anti-pain, but there was insignificant improvement.

One month later she noticed progressive body weight loss but also, she started to experience episodes of low-grade fever, generalized body weakness, loss of appetite and relative constipation. There was no history of vomiting. However, the patient also noticed the abdominal distension and tenderness on touch generalized in nature. Because of this illness, she came to our facility as a self-referral from home. On arrival the patient was febrile with a temperature of 39.1 °C ill looking, week, dehydrated with dry mucous, dyspneic, and tachycardia with a pulse rate 120 P/min, however, she had normal blood pressure 130/77mmHg, severely pale, delayed capillary refill and bilateral moderate pitting pedal edema. On abdomen examination, she had a symmetrical distended abdomen, tense and muscle guarding, generalized tenderness and rebound tenderness were present. The provisional diagnosis was peritonitis secondary to viscera perforation secondary

to typhoid enteritis. Another diagnosis was septic shock and severe anemia in failure (due to bilateral lower limb edema).

She was kept on IV paracetamol and broad-spectrum Ceftriaxone 2Gm bid and IV metronidazole tds as preliminary management. Since she was dehydrated, hence, she was given two liters of lingers lactate. She was also catheterized and a nasal gastric tube was inserted for abdominal decompression. Emergence abdominal ultrasound revealed disseminated peritoneal free fluid more marked in bilateral subphrenic region and Morrison pouch, but also it showed that there was enlarged spleen with splenic localized echogenic fluid 5 cm in diameter. The plain abdominal X-ray was done which revealed generalized homogenous opacification, as it is shown in Fig. 1. ECHO was also done to exclude heart failure, of which revealed LVE 60% (which is a normal finding) but also there was no pericardial effusion. Full blood count revealed HB 4.3g/dl, raised WBC 23.6×10^9 , with prominent neutrophil 19.8×10^9 , MCV (79.3%), MCH (23.0%), MCHC (30.1%) and MPV (7.2%). They altogether indicate that the patient had anemia. A renal function test was also done and revealed normal findings (55.2 $\mu\text{mol/L}$; reference 44.0-88.0 $\mu\text{mol/L}$). Three units of fresh blood were ordered to be given simultaneously with Intravenous frusemide 20mg prior to explorative laparotomy. At the 36 hours the hemoglobin level had risen to 6.9.g/dl/ but also the fever had stopped and the rehydration status was turned to normal. The urine output was raised to a normal 30mil/hour. At this moment had planned for laparotomy but there were an additional 2 units of blood intraoperatively and post-operative transfusion respectively.

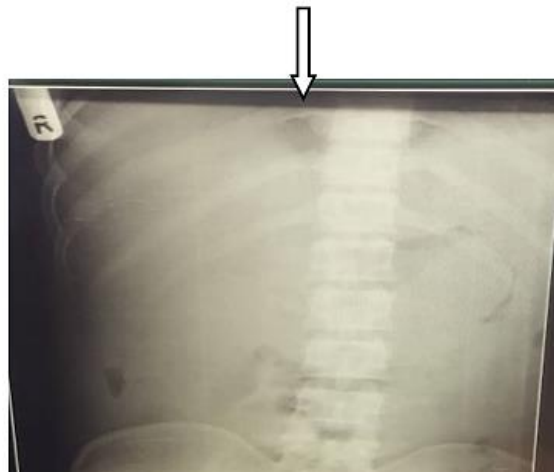


Fig. 1. Plain abdominal X-ray showing minute bowel loops and generalized homogenous opacifications: indicator of presence of free fluid (white arrow)

Extended midline incision was performed in order to have the wide view. Intraoperative there was disseminated pus throughout upper quadrant potential areas involving bilateral sub phrenic spaces, posterior to the stomach and beneath the liver. But also, there was encapsulated splenic abscess originating from the center of the spleen. With the use of 10 cc syringe the pus was collected for culture and sensitivity from both peritoneal puss and within the spleen. The peritoneal pus was sucked with a suction tube connected to the suction machine, and irrigation with 5 liters of normal saline was done to reduce the contaminants. After cleaning the cavity, the splenectomy was done successfully. Then peritoneal re-irrigation was done by the use of 4 lts of Normal saline. Finally, the abdomen was closed into layers using Vicky 2 and nylon 2 for fascia and skin respectively. Then the patient was admitted to the Intensive Care Unit (ICU) where she was discharged from ICU after two days in stable condition. On day two the results for culture were out and revealed *Klebsiella pneumoniae* resistant to Ceftriaxone, Amoxiclav, Cefizime and Cotrimoxazole; but sensitive to, Meropenem, Ciprofloxacin and Vancomycin. After the result, the treatment shifted to Meropenem 1gm tds for 5/7. After seven days in the ward, the patient fully recovered and she was discharged in good condition.

3. DISCUSSION

Splenic abscess is a rare threatening condition with an incidence of 0.14% to 0.7% [5,7,10]. The most risk factors include immuno-incompetency, trauma, malignancy, hematogenous spread from others eg endocarditis and coronary angioplasty [1,7]. The common infectious agent for splenic abscess include *typhoid*, *Klebsiella spp*, *E. coli* and *paratyphoid* [3–5,10]. The causes of splenic abscesses may be grouped into five categories: contiguous infection, metastatic infection (embolic infectious), embolic noninfectious events, trauma, and immunodeficiency [7].

In our patient, there is a history of mild blunt trauma which might have precipitated into splenic infection. This becomes similar to what has been reported in the literature [1,6,9]. In our case, there were nonspecific symptoms and hence there was misdiagnosis and delayed proper management. In most cases, Splenic is based on suspicion of index. The rarity of the condition may be a contributing factor of missed diagnosis. Ultrasound remains the imaging of importance especially in limited resources like Ifakara which is a rural setting. A plain abdominal X-ray usually shows opacifications indicating the probability of free fluid. Another imaging of importance is Computed tomography (CT) [1,8,10]. This conversion Imaging was not done in this patient because the patient was unable to pay for it. The *K. pneumoniae* was found to be resistant to the most commonly used antimicrobials (Amoxicillin, Ceftriaxone and Cotrimoxazole). This has been also reported in other works of literature [2,3,7,11].

In this case, the patient had severe anemia of which we could not establish the clear cause. However, the condition may have been attributed to chronic infection (2 months) and inflammation. It is well known that there is a link between infection whereby anemia in chronic suppurative disease, usually resulting from accelerated

hemolysis, caused by bacterial hemolysins [11]. *Klebsiella pneumonia* is among the virulent microbes but also significant with antimicrobial resistance of which the AMR rate to be AMR to 11.8 % to 90.5% in African areas [12]. Taking into consideration that the patient might have taken antimicrobial drugs at primary health centers but also from the drug sellers in local areas commonly known as “maduka ya dawa muhimu” (essential drug sellers).

4. CONCLUSION

There is a need for continuous education to the community on the importance of the use of tertiary hospitals in important and complicated cases like the present one. For the clinicians, remain a caution that in severe suppurative infection, the patient may have other life-threatening complications such as anemia which should be first collected before surgery. Furthermore, mild splenic trauma may result in complicated splenic abscesses which may be life-threatening.

DISCLAIMER (ARTIFICIAL INTELLIGENCE)

Author(s) hereby declare that NO generative AI technologies such as Large Language Models (ChatGPT, COPILOT, etc) and text-to-image generators have been used during writing or editing of manuscripts.

ETHICAL CONSIDERATION

The patient signed informed consent prior to writing this case. But also, ethical clearance was obtained from the internal reviewer board at Saint Francis University college of Health and Allied Sciences.

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COMPETING INTERESTS

Authors have declared that no competing interests exist.

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