Section: Robotic and Minimal Invasive Bariatric Surgery and Gastro Intestinal Surgery

Case Report

A RARE CASE OF MULTIPLE KLEBSIELLA PNEUMONIAE SPLENIC ABSCESSES IN AN IMMUNOCOMPETENT INDIVIDUAL

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ABSTRACT

Background: Splenic abscesses are uncommon, with multiple abscesses being particularly rare in immunocompetent individuals. Predisposing factors typically include trauma, immunodeficiency, or systemic infections. Klebsiella pneumoniae is an emerging causative agent, especially in the Asia-Pacific region.

Case Report: We report a case of a 30-year-old immunocompetent male who presented with left hypochondriac pain and intermittent fever. Contrast-enhanced computed tomography (CECT) and FDG-PET imaging revealed multiple hypodense and hypermetabolic splenic lesions suggestive of abscesses. The patient underwent laparoscopic splenectomy, which revealed marked splenomegaly and multiple pus-filled cavities. Histopathological analysis confirmed an infective etiology, and culture grew Klebsiella pneumoniae. Postoperative recovery was uneventful with targeted antibiotic therapy.

Conclusion: This case highlights the importance of considering splenic abscesses in patients without traditional risk factors. FDG-PET can complement CECT in diagnosis. Laparoscopic splenectomy is a feasible treatment option for multiple abscesses, even in immunocompetent individuals, with favorable outcomes when guided by appropriate antimicrobial therapy.

Keywords: Immunocompetent; Splenic Abscess; Laparoscopy; Immunocompetent; Klebsiella pneumonia.

INTRODUCTION

Splenic abscesses are rare clinical entities, with an incidence of approximately 0.2 – 0.07%.[1] They exhibit a male predominance and a bimodal age distribution. Predisposing factors include trauma, immunocompromised states, diabetes mellitus, infective endocarditis, and systemic infections.[2] The most commonly implicated pathogens are Staphylococcus, Streptococcus, Salmonella, Escherichia coli, and Enterococcus.[3] Diagnosis relies on clinical evaluation and imaging modalities-ultrasonography and contrast-enhanced computed tomography (CECT), with CECT being the gold standard due to its superior sensitivity.[4] Management strategies vary based on disease

severity, ranging from antibiotic therapy and percutaneous drainage to splenectomy in rare, complicated cases.[5] We report a case of a 30-year-old immunocompetent male with complains of fever and left hypochondriac pain and was subsequently diagnosed with the rare occurrence of multiple splenic abscesses.

CASE REPORT

A 30-year-old previously healthy male presented with complain of left hypochondrial pain radiating to the left shoulder and intermittent fever with chills for two months. The patient denied any history of vomiting, bowel disturbances, or jaundice. His past medical history was unremarkable, with no known comorbidities, history of trauma, or prior surgical interventions. On physical examination, vital signs were within normal limits, with no evidence of pallor, icterus, cyanosis, clubbing, or lymphadenopathy. Abdominal examination revealed a soft, non-tender, non-distended abdomen with palpable splenomegaly.

A complete blood count and comprehensive metabolic panel was unremarkable. CECT of the abdomen demonstrated splenomegaly, with a maximum dimension of 16 cm, and multiple parenchymal hypodense lesions consistent with splenic abscesses. The largest lesion measured 4.5 x 2.2 cm. A subsequent fluorodeoxyglucose positron emission tomography (FDG-PET) scan revealed multiple hypermetabolic, non-enhancing, irregular hypodense splenic lesions suggestive of an infective etiology (see Figure 1).

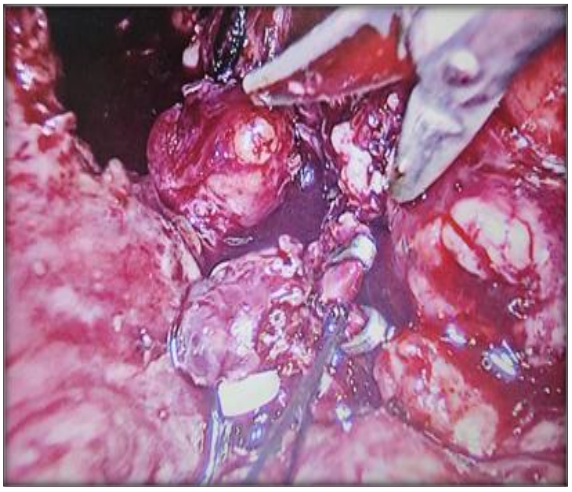

Figure 1: Figure displaying intraoperative findings of laparoscopic splenectomy

Following detailed informed consent, the patient underwent a planned laparoscopic splenectomy. Intraoperatively, marked splenomegaly with dense omento-splenic adhesions and thick curdy-white intraparenchymal pus was observed. After careful adhesiolysis, the splenic artery and vein were identified, dissected, and ligated. The spleen was mobilized by dividing the gastrosplenic, splenorenal, and splenocolic ligaments. A 16 French drain was placed in the splenic bed and exteriorized through the left lateral port (see Figure 2). The resected specimen was retrieved via the umbilical port and sent for histopathological examination (HPE). All trocar sites were closed with appropriate sutures. The postoperative course was uneventful.

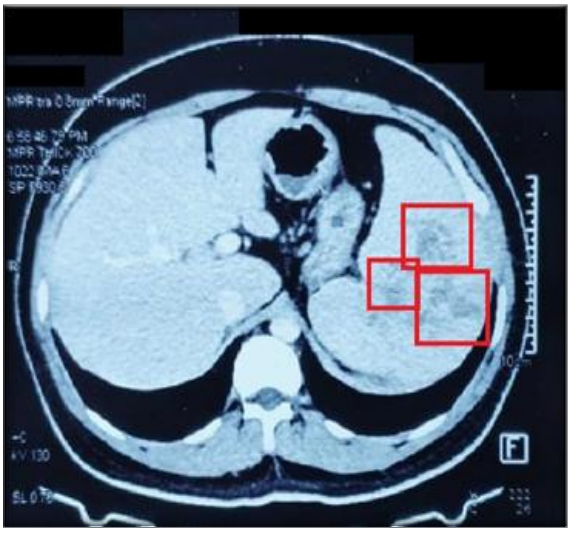

Figure 2: Figure displaying Computed Tomography (CT) scan findings of intrasplenic abscesses (red boxes)

Gross examination of the resected specimen revealed a grey-white to grey-brown appearance. HPE demonstrated dense aggregates of neutrophils admixed with areas necrosis, lymphocytes, plasma cells and histocytes. Foci of necrosis were bordered by palisading histiocytes, consistent with an infective etiology and bacterial culture grew Klebsiella pneumonia, susceptible to multiple broad-spectrum antibiotics. The patient was prescribed ciprofloxacin along with analgesics for symptomatic relief. At follow-up, the patient reported significant improvement with no residual complaints.

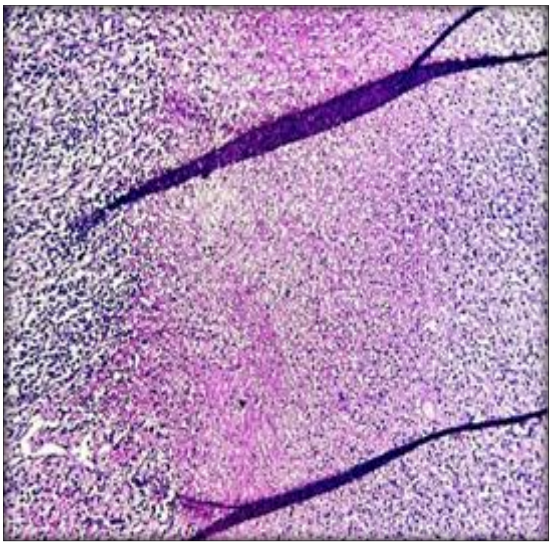

Figure 3: Histopatholgy Image of Splenic Access

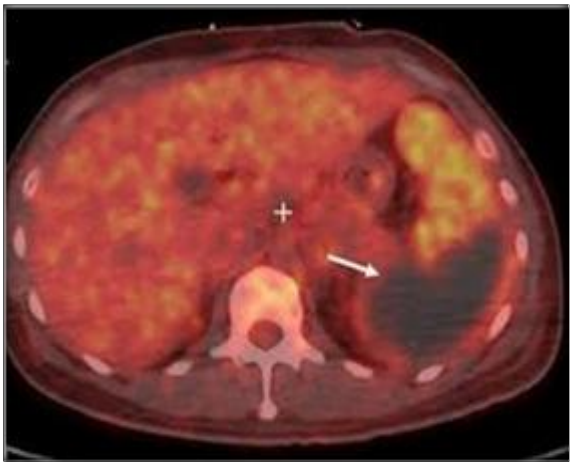

Figure 4: PET CT Image OF Splenic Abscess

DISCUSSION

We present a case of an immunocompetent patient with left hypochondriac pain diagnosed with multiple Klebsiella pneumoniae splenic abscesses. Isolated splenic abscesses are rare in contemporary clinical practice and the occurrence of multiple splenic abscesses is even more uncommon.[2,6] The primary pathophysiological mechanism of splenic abscess formation includes hematogenous dissemination (most common postulated route for multiple splenic abscesses), contagious spread from adjacent viscera, secondary infection of splenic infarcts, and splenic trauma.[2,6] Although Staphylococcus, Streptococcus, and Salmonella are the predominant pathogens in splenic abscesses, several studies have identified Klebsiella as an emerging causative agent, particularly in the Asia-Pacific region, reflecting geographic variability in pathogen prevalence.[7,8] These observations highlight the critical importance of microbiological evaluation of splenic abscesses to guide pathogen-specific importance of microbiological evaluation of splenic abscesses to guide pathogen-specific antibiotic therapy for optimal patient management.

In approximately one-third of cases, splenic abscesses present with the classic triad of left upper quadrant pain, fever, and leucocytosis.[9] However, in our case, the patient presented solely with left hypochondriac pain with fever, without leukocytosis, broadening the differential diagnosis to include underlying malignancy or splenic infarcts. This clinical ambiguity underscores the critical role of radiological investigations, such as CECT and FDG-PET scans, in establishing a prompt and accurate diagnosis.[10] Recent evidence by Wang et al. has highlighted the added value of FDG-PET in confirming the diagnosis by assessing the metabolic activity within the abscess walls, despite CT being the gold standard imaging diagnosis.[11,12] In our case, the FDG-PET scan confirmed the presence of multiple infective splenic abscesses, demonstrating the utility of this advanced imaging modality as a complementary diagnostic tool, particularly in rare and complex presentations.

Percutaneous drainage with antibiotic therapy is the preferred treatment for splenic abscesses due to its minimally invasive nature and favorable patient outcomes, it is typically reserved for patients with isolated unilocular abscesses.[1,13] In contrast, splenectomy is indicated in cases of multiple splenic abscesses, recurrent abscesses, or when PCD is not feasible or has failed despite the associated risks of postoperative infections and overwhelming post-splenectomy sepsis. Although an open splenectomy is standard of care for multiple splenic abscesses, we opted for a laparoscopic splenectomy for our patient, highlighting the feasibility of this procedure in select patients.[14] Furthermore, existing literature suggests a poorer prognosis in patients with multiple splenic abscesses, particularly in context of immunodeficiency. However, the immunocompetent status of our patient likely contributed to a more favorable post-splenectomy outcome.[1]

Previous studies have predominantly reported splenic abscesses in immunocompromised individuals or those with underlying comorbidities, such as diabetes mellitus, malignancy, or HIV infection--findings that contrast the case presented here, in which the patient was immunocompetent.[15,16] We believe this case contributes to the limited body of literature documenting the occurrence of multiple splenic abscesses in an immunocompetent individual, with Klebsiella pneumoniae identified as a causative pathogen. This case underscores the need for heightened clinical awareness of splenic abscesses even in the absence of traditional risk factors and may assist clinicians and surgeons in refining diagnostic and management strategies for similar presentations.

CONCLUSION

This case highlights the importance of considering splenic abscesses in patients without traditional risk factors. FDG-PET can complement CECT in diagnosis. Laparoscopic splenectomy is a feasible treatment option for multiple abscesses, even in immunocompetent individuals, with favorable outcomes when guided by appropriate antimicrobial therapy.

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