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Pediatric Splenic Abscess: A Tertiary Care Centre Study

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Abstract

Splenic abscess is rare in children. Multiple splenic abscesses are much rarer in children. It is a fatal condition. Splenic abscess is more common in adults. Splenic abscess results from contiguous focus of infection, splenic infarction, diabetes, trauma & associated parasitic infection of spleen. It is having a high mortality rate reaching around 50% which is much reduced due to modern diagnosis with CT, USG & prompt treatment. CT, USG & sometimes MRI

not only promptly diagnose but also help in guided Percutaneous aspiration. Our case a 9-year-old boy who presented with pain in left upper quadrant and epigastrium and fever, was diagnosed promptly by CT abdomen on 2nd day of admission to hospital. Ultrasonography of abdomen is also informative. Our case was having enteric fever with widal 1:160. Small wedge-shaped infarction of Right kidney also detected by CT.

Keywords: Splenomegaly, Pediatric Splenic Abscess, CT Abdomen, USG Abdomen, USG Guided Aspiration

Introduction

Incidence of splenic abscess is low. Splenic abscesses are relatively uncommon. Abscess of spleen usually results from bacteremia especially in the setting of abdominalities caused by trauma and hemoglobinopathy. Immuno compromised states from immunodeficiency, virus infection are also some risk factors. Pancreatic abscesses and diverticulitis are sometimes extend and involve spleen. Splenic abscesses are more common in adults than in children ^[1].

Mortality is high in immuno-compromised. Autopsy series have estimated the incidence of splenic abscess between 0.2% to 0.7%. Splenic abscess has a bimodal age distribution with peaks in 3rd and 6th decades of life. In children it is rare.

We report a case of multiple splenic abscess in a child and summarize the clinical characteristics and diagnosis.

Frequently isolated pathogens in splenic abscess include streptococcus, staphylococcus, mycobacterium, fungi, parasites, burckholderia etc.

The diagnosis of splenic abscess is a clinical challenge ^[2, 3].

Case Report

We report a 9 year old boy presented with pain in left upper quadrant and epigastrium for 15 days, with fever and guarding and also chest pain. Patient provide the history of jaundice and high colored urine 1 month back and non bilious vomiting.

The physical examination revealed tenderness in left upper quadrant (LUQ) with muscle guarding in LUQ, costovertebral tenderness, splenomegaly and dullness at left lung base and no special condition in other important organs and systems.

Extraspenic differential diagnosis include pneumonia, empyema, pneumothorax, splenic infarct, pulmonary embolism etc.

Laboratory tests: Leukocytosis present. Blood cultures done thrice found negative repeatedly. CRP was high initially, reduced after 10 days. Widal was 1:160 (positive).

S. typhi IgM-reactive. No evidence of TB.

Procalcitonin-0.05.

The triad of pain LUQ, fever and leukocytosis in splenic abscess is seen in one third of cases.

Imaging: Digital plain X-ray of chest and abdomen which may exclude other diagnosis has less informative in modern era where CT and USG abdomen can point the diagnosis.

CT Abdomen: Is the gold standard. Abdominal contrast enhanced computed tomography done on next day of admission to hospital of the child revealed multiple low density lesions of spleen (fig 1-6)with peripheral enhancement. The lesion are irregular, oval. The low density lesions noted at upper and lower poles, and close to hilum of spleen. Largest lesion being 5.2 X 3.3 X 3.8cm located in subcapsular location. With CT scan, the lesion is quickly diagnosed.



Fig 1:



Fig 2:



Fig 3:



Fig 4:

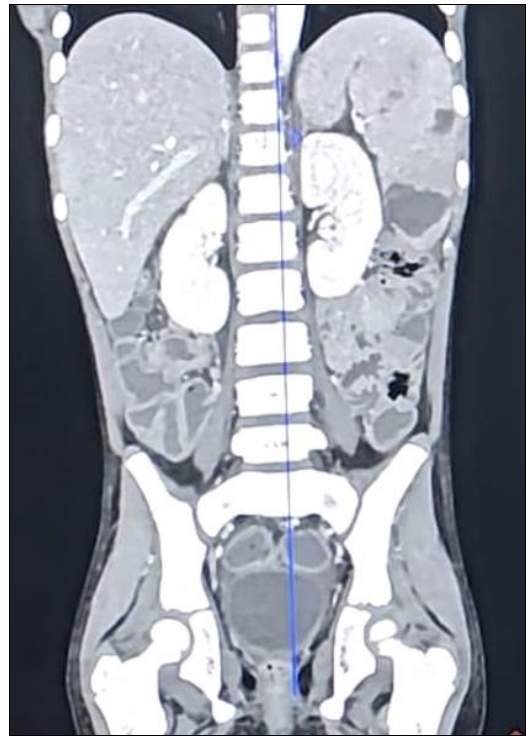


Fig 5:

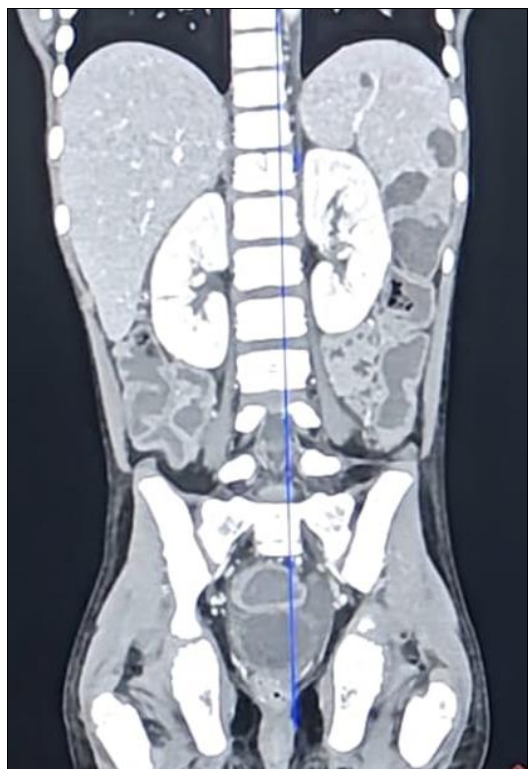


Fig 6:

Figure 1 to 3: Axial section of CT Scan of abdomen showing multiple splenic abscess.

Figure 4: Axial section of CT Scan abdomen showing small infarction of Right Kidney.

Figure 5 & 6: Coronal section of CT Scan abdomen showing multiple Splenic Abscess.

USG Abdomen- Done which revealed splenomegaly with multiple dark fluid filled areas. The lesions are irregular. USG abdomen done few days after USG guided needle

aspiration of the abscess. Gradual monitoring of the abscess size suggestive of decreasing trend. Needle aspiration of splenic abscess done where 40ml of hemorrhagic pus aspirated.

Percutaneous aspiration may be less invasive option in patients at high risk of surgery or a temporary solution used as a bridge to surgery. It is a successful approach when the abscess collection is uni or bilocular with a thick wall and no internal septations. If there are multiple collections or associated coagulopathy either laparoscopic or open surgical treatment is preferred.

USG abdomen done 5-6 days and 10-11 days after USG guided needle aspiration revealed residual small abscesses whose wall merging with parenchyma of spleen of size 2.6 X 1.9cm (largest abscess) close to hilum with minimal liquification. Patient was having intermittent low grade fever (100-101° F) and completely stable at 12 days of treatment.

Open drainage is sometimes required when Percutaneous drainage fails. In our case patient responded well after USG guided needle aspiration.

CT is gold standard and helps physician to plan treatment by delineating the details of the abscess and topography of surrounding structures.

It is further planned to follow up with USG abdomen after 15 days to 3 months follow up.

Discussion

The most common causes of splenic abscess in children include secondary infection transmitted through blood, hematological abnormalities, typhoid fever and TB among others. Common causes of secondary infection are infective endocarditis, otitis media and appendicitis. Most common causative hematological abnormalities are leukemia, aplastic anemia and others^[5, 6].

Due to physiological function of spleen against infection, splenic abscess are usually associated with other diseases such as splenic trauma, diabetes, malignant tumors or systemic infection. Immuno deficiency is also the main pathological factor of splenic abscess^[7].

With increasing incidence of malignant tumors, organ transplantation and immuno suppressive therapy etc risk of splenic abscess is also gradually increasing^[8].

Splenic abscesses have not specific clinical manifestations. Most patients attend with pain abdomen (LUQ), fever, with their hematological changes^[5, 6, 9, 10]. It has been reported that 24% to 80% of splenic abscess test positive on blood culture and multiple abscesses are likely to be result of blood borne transmission while other routes of transmission mostly cause independent abscess^[9].

Splenic abscess in children are very rare^[17].

Due to low specificity of laboratory markers, imaging plays a crucial role in diagnostic examination^[11]. Digital x-ray imaging of chest can help in diagnosis^[12] but as these findings lack specificity, and much better imaging tools (USG, CT, MRI) help in diagnosis and guiding management.

USG abdomen sensitivity is around 75%-93%^[11, 13]. Splenomegaly with irregular, oval and round abscesses with irregular walls and with little or no internal echos and mild to moderate acoustic enhancement, which are considered almost specific^[8].

CT scan reveals splenomegaly with low density lesion with peripheral enhancement^[8]. Spleen shows uneven enhancement after I.V contrast injection and then it

gradually becomes evenly enhanced^[11]. In our case diagnosis was made by contrast CT Scan examination on the 2nd day of admission of the patient as splenic abscess.

MRI is extremely sensitive in the early diagnosis of splenic infection and can be considered suitable^[11, 14]. Splenic micro-abscess can be better displayed by MRI^[15].

It has been suggested in the literature that the etiology of splenic abscess is unknown in approximately one third of cases^[9]. Davido *et al* proposed that, any splenic abscess found must be examined by 2D echocardiography to exclude possibility of endocarditis^[16] in adults.

Optimal treatment of pediatric splenic abscess is broad spectrum intravenous antibiotics and Percutaneous drainage which responded well to treatment and do not require splenectomy^[5]. Splenectomy success rate reported to be 86% to 94% but it carries the risk of surgical drainage, post splenectomy sepsis and does not preserve splenic tissue. Therefore, experts believe Percutaneous drainage should be the preferred treatment for splenic abscess^[8].

In our patient, with I.V antibiotics treatment and Percutaneous needle aspiration, there was signs of much relief to the patient. With timely intervention and treatment, the chance of abscess rupture, leading to aggravation of disease and even death has been escaped. Our patient is now under follow up.

Conclusion

Splenic abscess in children is rare. Its clinical manifestations and laboratory tests are not very specific, Imaging studies are specific to a great extent.

The possibility of splenic abscess is considered with CT Scan which is the gold standard. Ultrasonography of abdomen is also very useful as can be done at bedside, and is non-invasive, easily available and radiation free and helps in serial monitoring and follow up also. MRI is extremely sensitive in early diagnosis of splenic infection and in diagnosing splenic micro abscesses.

Percutaneous drainage is considered one of the management mode and an effective way to treat splenic abscess. If surgery required, then a laparoscopic approach is preferred over an open approach.

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