Iranian Red Crescent Medical Journal

CASE REPORT

Torsion of Wandering Spleen and Resulting Rupture of Splenic Hilum with Whorled Sign in CT: A Case Report

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Abstract

Torsion of a wandering spleen is an atypical cause of an acute abdomen. Herein we report a case of a wandering spleen in a 24 year-old female patient who presented with vague clinical findings of acute abdomen, a laparotomy was performed and the infracted spleen was removed. In such cases, prompt intervention to prevent complications is mandatory.

Keywords: Wandering spleen; Whorled sign; Computed tomography scan; Ultrasonography; Acute abdomen

Introduction

Wandering spleen is defined as a single spleen on a long pedicle, in an abdominal position rather than its normal site (left upper quadrant). Rotation of spleen along this long pedicle results in torsion of wandering spleen which is a prompt medical emergency. Different studies showed diverse etiologies and low incidences.[1-5] To our knowledge, it is the first case of wandering spleen resulting in rupture of the hilum of the spleen and also, we did not find any reported case of wandering spleen in our country. We present the ultrasonographic and computed tomography (CT) findings of a patient with torsion of a wandering spleen resulted in laparotomy.

Case Report

A 24 year-old female presented acutely with sudden onset left upper quadrant pain during sleep 6 days prior to admission, deteriorating gradually. She had positive history of one episode of diarrhea associated with nausea, vomiting and anorexia. On arrival, the patient was febrile (38.2ºC), with normal blood pressure (110/70 mmHg) and had generalized abdominal tenderness, especially in left upper quadrant and rebound palpable tender mass in left upper quadrant area extending to midline. She did not report any past history of trauma and she was virgin. Laboratory investigations demonstrated leukocytosis of 10,000/mm^3 and mild anemia (patient's hemoglobin was 10.2 mg/dL). Other laboratory findings were normal. Patient was hospitalized with an initial diagnosis of acute abdomen and was observed in surgery ward. Ultrasonography was performed on the night of admission which revealed splenomegaly (125x130 mm) with decreased paranchimal echogenecity, heterogeneously. A large amount of free fluid was seen in pelvic cavity, right and left paracolic spaces and Morison's pouch. Then contrast enhanced computed tomography (CECT) showed an inhomogeneous, unenhanced mass that was diagnosed as a torsioned wandering spleen. The hilar vessels of the spleen were also unenhanced with a characteristic whorled appearance of splenic vessels (Figure 1).

At surgery, the spleen was located in lower position to normal one. The spleen was larger than normal size and the omentum had adhered to it tightly. The spleen was completely mobile, without any ligamentous attachments to abdominal cavity. It was infracted and had necrosis due to 360 degree twist on its long pedicle (Figure 2).

Splenectomy was performed, because of infarction, necrosis and rupture of the splenic hilum. Omentum around the spleen was resected due to thrombosis.

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Received: November 10, 2009 Accepted: April 12, 2010

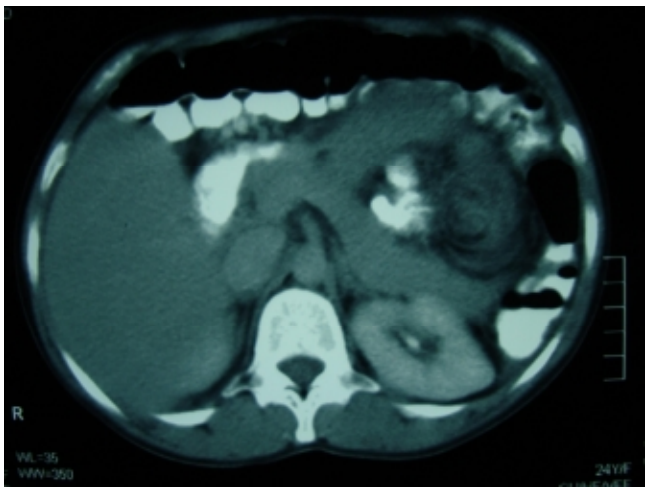

Fig. 1: Contrast enhanced computer tomography of abdomen demonstrating torsion of the wandering spleen with a characteristic whorled appearance.

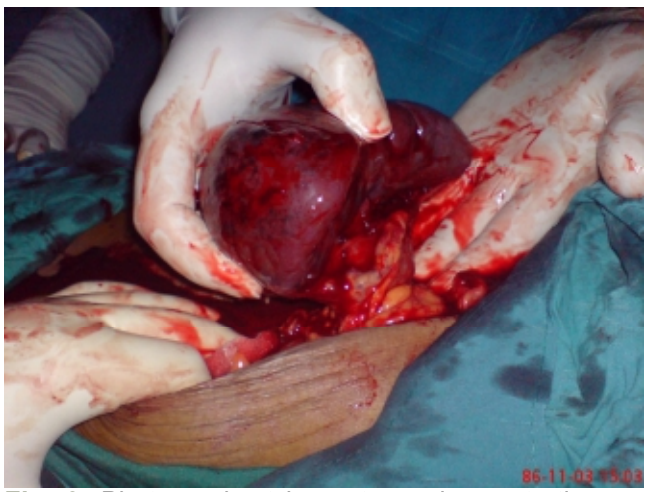

Fig. 2: Photograph at laparotomy demonstrating an infarcted wandering spleen secondary to torsion of a long splenic pedicle

Pathological examination confirmed infarction and necrosis in the spleen. Polyvalent pneumococcal vaccine and daily doses of penicillin were administered postoperatively. The patient recovered uneventfully and discharged from hospital.

Discussion

Wandering spleen is a rare clinical entity and its diagnosis is difficult, so imaging modalities play an important role. The spleen is fixed by the lienorenal and gastrosplenic ligaments to the diaphragm, retroperitonum and colon. Absence or laxity of these ligamentous attachments leads to wandering spleen while its etiology is controversial, and congenital and acquired forms have been explained. Some studies reported that factors such as abdominal laxity, hormonal effects of pregnancy, splenomegaly, trauma, gastric distension and multiparity cause laxity of ligaments of the spleen; whereas others declared that error of embryologic development of the ligaments causes absence of some or all of the ligaments of the spleen.[1-4] Although the true incidence of wandering spleen is difficult to estimate (as a result of asymptomatic presentation of wandering spleen in most cases), it is reported less than 1 in 2000 and accounts for 0.2-0.25% of splenectomies in reported series.[5] Although wandering spleen can arise in all age groups, it is usually seen between 20 and 40 years of age and is more prevalent in females of reproductive age, and may be misdiagnosed as an abdominal or adnexal mass.[6,7]

Although wandering spleen may be found incidentally as a mass in the abdomen without causing any complaint, it may cause chronic, subacute or acute abdominal pain secondary to torsion of the splenic pedicle causing vascular inflow and outflow thrombosis,[8] however we should remember that the most common presentation is acute abdominal pain and the most dangerous complication is splenic torsion.[9,10] This may result in infarction of the spleen or resolve spontaneously because of de-torsion of spleen, but it is believed that most of patients with wandering spleen are asymptomatic.[11] In present case, the wandering spleen presented with suspicious clinical findings of acute abdomen. Torsion of pedicle resulted in infarction and necrosis of spleen, and caused rupture of the splenic hilum.

Since the wandering spleen presents with vague symptoms and laboratory values are usually nonspecific, the diagnosis of torsion is difficult.[1] Multiple imaging techniques have been proposed to diagnose torsion of wandering spleen. These include plain radiographs, barium studies, scintigraphy, ultrasound and CT scan.[11-13] Plain radiographs and barium studies are usually nonspecific. Ultrasound scan may demonstrate the ectopic position as well as a variable echo pattern if infarction of spleen exists.[14] Duplex ultrasonography, CT and liver-spleen scans are the most accurate diagnostic tests for wandering spleen.[2] The most specific sonographic finding for wandering spleen is low position of the spleen. However, if the spleen regains its normal or near-normal position, the diagnosis may be missed and the condition may recur, and result in complications.[15] CT scan in cases of torsion of a wandering spleen is of great help in

confirming clinical and ultrasonographic diagnosis and in demonstrating the extent of ischemia of the organ before surgical exploration.[16] Contrast enhanced CT is the preferred study for diagnosing a wandering spleen when torsion is suspected clinically or on imaging studies.[11,14] Whorled sign refers to the presence of a twisted splenic pedicle intermingled with fat, resulting in alternating circular bands of radiodensity and radiolucency and is considered diagnostic of torsion of spleen.[17] In our case, the diagnosis was made by contrast enhanced CT and resulting rupture of spleen diagnosed during surgery.

The definitive treatment of wandering spleen is surgery.[2] However, with increased appreciation of the role of the spleen in the reticuloendothelial system, conservative surgery (splenoplexy) is preferred in cases without vascular impairment, especially in children.[18] Furthermore, splenoplexy can be performed by minimally invasive surgery.[19] Treatment of a wandering spleen is controversial however in cases of splenic torsion with infarction or ischemia, functional asplenia (due to torsion of the splenic pedicle) and splenic vessel thrombosis; partial, subtotal resection or splenectomy is required.[5,20,21] In our case, the rupture of the splenic hilum was associated with splenic infarction and necrosis made the splenectomy obligatory.

Diagnostic medical imaging, especially the timely use of contrast enhanced CT, plays a vital role in making a prompt and accurate diagnosis. This is of principal importance, as delay in diagnosis risks not only splenic infarction but pancreatic necrosis, as the lienorenal ligament which fixes the spleen to the posterior abdominal wall also contains the tail of the pancreas.[12] Although wandering spleen is a rare clinical condition, the possibility of its torsion should be kept in mind in differential diagnosis of acute abdomen.

Conflict of interest: None declared.

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