

Some Thinking in Diagnosing the Wandering Spleen: a Case Report

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Abstract: Wandering spleen refers to the spleen moving away from its normal anatomical position and shifting to other parts of the abdominal or the pelvic cavity. The number of females suffered from the wandering spleen is 3-13 times more than that of males, especially middle-aged reproductive females. Spleen is an important lymphoid organ, located at the upper left of abdominal cavity. It is oblate oval, dark red, soft and brittle. When it is hit by violence, it is easy to rupture and bleed. The spleen is located between the stomach fundus and diaphragm in the left costal region, which is just opposite to the 9th-11th rib, and its long axis is consistent with the 10th rib. Its anatomical position is held by a suspensory structure which called the splenic suspensory ligament. The wandering spleen can be seen as a round-shaped and obvious mass on the computed tomography scan image. Owing to its rarity and various features in clinical classification, it's a treatment and diagnostic challenge to most emergency surgery doctors. We present a case of a 46-year-old female who had the chief complaint of the epigastric pain and nausea. Computed Tomography showed a wandering spleen in pelvic cavity with the splenic cord torsion. A complete spleen removal was performed successfully. We presented a wandering spleen patient and our objective is to provide some thinking in diagnosing the wandering spleen.

1. Introduction

Wandering spleen is a rare entity which is really difficult to diagnose. Although the wandering spleen has many kinds of complications, however, few of them are specific. Most of the complications are asymptomatic and easy to be confused with other diseases. In this report, we presented a case whose chief complaint is epigastric pain and nausea. The CT scan showed the spleen of the patient was shifted to the pelvic region and a splenectomy was performed.

2. Case Presentation

2.1 Chief Complaints

Persisting upper gastric pain and nausea.

2.2 History of Present Illness

A 46-year-old female was presented to the emergency room of Qinghai University Affiliated Hospital with chief complaints of persisting upper gastric pain and nausea. His medical history was notable for epigastric pain, the pain was colic and radiated to the dorsal part of the body. Fever, cough, headache and dizziness were negative. She sought treatment from the Xiangride Buddhist temple Charity Hospital and obtained the abdomen doppler ultrasonography (DUSG) scan which showed the pelvic disposition of spleen, splenomegaly and mid-volume of pelvic effusion. The digital radiography showed no abnormal finding. Then, she received the anti-inflammatory, analgesia and other supportive treatments. The treating outcome was negative and the pain was aggravated. Then, she came to Qinghai University Affiliated Hospital for treatment. This patient

was adopted by emergency surgery ward with diagnosis of abdomen pain need to be investigated and wandering spleen. Since the onset of the disease, the patient lived with poor sleep, poor spirit, no appetite, normal urine and defecation, no significant change in weight.

2.3 Physical Examination

On general physical examination, the body temperature was 37.3 with painful face. The abdomen was distended and a giant, well-defined, painful, easy to move, round shaped solid mass was palpated in the infra-umbilical region. The size of the mass is rough 8cm on the diagonal and the Murphy sign was negative.

2.4 Imaging Examinations

The abdominal computed tomography in Qinghai University Affiliated Hospital showed that the spleen cannot be found in its anatomical position (Figure 4). The torsion spleen was shifted to the right lower abdomen. (Figure 3) The blood vessel density of splenic hilus was increased. Embolism was considered.

2.5 History of Past Illness

4 years ago, the patient we presented received a routine physical examination in the Qinghai Red Cross hospital and found a well-defined mass in the left adnexal region. No uncomfortable feeling was manifested. Then, she underwent a transvaginal uterus ultrasonography examination and found a 50mm by 35mm mass in the left adnexal region. Finally, the laparotomy was performed and found a 60mm by 50mm myoma on the broad ligament.

3. Final Diagnosis

Wandering spleen and Spleen Volvulus.

3.1 Treatment

In Qinghai University Affiliated Hospital, the patient was performed a splenectomy, during the surgery, the spleen was found in pelvic cavity and was measured 25 by 18 by 15 cm and weighed 1500g. (Figure 1) The spleen was totally shifted from its anatomical position to the pelvic cavity. The splenic suspensory ligament was absent. Owing to the torsion of the spleen, some necrosis spots can be found on the spleen (Figure 2). Histopathological analysis during surgery showed no sign of cancer.

The operative was performed successfully and the treatment outcome is satisfied. Antibiotics were given to fight against the potential risk of infection and the medical following-up is on the schedule.



Figure 1: The congested spleen was removed from the patient's abdominal cavity. The surface of the congested spleen is not smooth. The color of the congested spleen is dark red and the pedicle was elongated and congested. (White Arrow)



Figure 2: The congested spleen was removed from the patient's abdominal cavity. The volvulus spleen pedicle is obvious (White Arrow) Owing to the pedicle volvulus, there're some necrosis spot on the surface of the spleen. (Yellow Arrow)



Figure 4: Guts can be found in the anatomical position of spleen. The spleen is absent. (White Arrow)

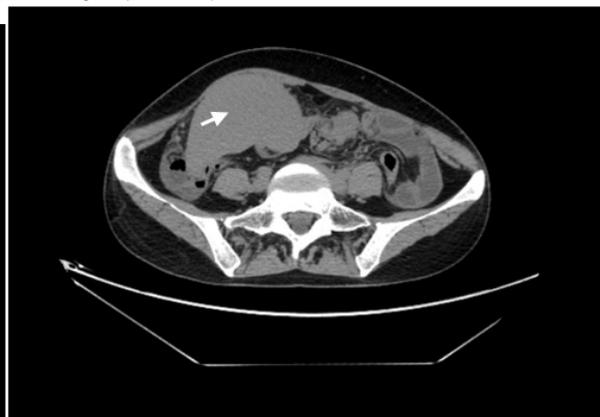


Figure 3: Ectopic spleen in the right lower abdomen (White Arrow)

4. Discussion

Wandering spleen is a rare condition in which the spleen shifts into the lower part of the abdomen or even the pelvic cavity. The first wandering spleen was reported by an Polish physician Jozef Dietl in the year of 1854¹. Spleen is an intraperitoneal organ, suspended by the splenic ligament, the anatomical position of spleen is the left upper quadrant. However, in some conditions,

spleen can be shifted to other areas, for example, the pelvic cavity². Congenitally, the undeveloped splenic suspensory ligament is the major contributor to this syndrome. The absence of the gastrosplenic ligament and the splenorenal ligament is the most common cause which contributes to the wandering spleen. The splenic suspensory ligament is derived from the mesoderm back to the embryonic life³. The acquired conditions mainly include some traumas caused by delivery and some iatrogenic causes.

In this article, we present a case suffered from the wandering spleen and the volvulus of spleen pedicle occurred simultaneously. The patient we presented underwent a Laparotomic hysteromyomectomy. In some conditions, the wandering spleen can occur with the wandering kidney because of the absence of splenorenal ligament.

The morbidity of wandering spleen is less than 0.2%⁴, It's common in women in the age of between 20-40 years of age. Richman et al² suggested that the laxity of splenic ligaments can be attributed to the production of female hormone. In the pediatric group, this disease is mainly associated with some congenital issues⁵ while in the adult group, this disease is mainly associated with trauma, surgery, ligament laxity and pregnancy. The rare point of this case we reported is the contributors of onset of this disease were not the trauma, surgery and pregnancy. She had delivered her children many years ago. If we attributed the cause of the wandering spleen to the surgery, the manifestation should be presented spontaneously and should not had a long-time gap. At the time that the patient was performed the hysteromyomectomy, the patient did not have any uncomfortable feeling. Considering to this, we hypothesize that the main contributor of the wandering spleen in this patient is something combined the congenital issues with the acquired issues. The presentation of this patient was also complexed, most of the patients who suffered from the wandering spleen with the splenic cord torsion presented the acute abdominal pain other than the persisting upper gastric pain and nausea. The clinical manifestation of this patient is closer to what can be seen in gastric ulcer or the chronic atrophic gastritis. This is why we deemed that the diagnosis of the patient is so challenging especially in emergency room. The main role causing the wandering in this patient can be attributed into several points. For instance, ligaments laxity or absence: usually, the spleen was fixed in the abdominal cavity by several suspensory ligaments.⁶ However, in some conditions like the trauma, surgery and delivery, the ligaments which fix the spleen can be slacked. In addition to the acquired causes, the congenital causes cannot be neglected. The laxity of spleen suspensory ligaments can be derived from embryo-life, when it was generated from the dorsal mesogastrium. The gastrosplenic ligament, splenorenal ligament and the splenophrenic are three major splenic suspensory ligament which tie the spleen at the orthotopic position, anatomical structures the left upper quadrant (LUC) Some diseases can affect the generation of these anatomical structures in the very early stage of the embryonic life.

5. Why the Emergency Physicians Should Be Aware of the Wandering Spleen with the Spleen Cord Torsion?

The spleen wandering with the splenic cord torsion is relatively rare in life, if a patient was admitted into emergency room with the chief complaint of abdominal pain, we should take the splenic cord torsion into consideration other than consider the common abdominal diseases or the ectopic pregnancy merely. However, not all patients which have spleen wandering presented the abdominal pain. The diagnosis should be established before the onset of some critical, life-threatening conditions for example the thrombotic angiopathy, spleen infarction etc. Once the spleen wandering with the splenic cord torsion was identified, the emergency surgery should be performed. The volvulus of the splenic cord is a fatal complication of the wandering spleen. In most cases, the wandering spleen is asymptomatic, patient will not present any uncomfortable feeling unless the splenic cord was twisted. Once the splenic cord volvulus occurred, the blood supply of the spleen shut down immediately, and then, the spleen infarction occurred. The spleen infarction is a life-threatening condition which need to be settled immediately. Although there are many conservative methods which were reported to deal with the spleen infarction, the emergency surgery is the safest option to relieve the symptoms. The wandering spleen can induce several complications,

many of them are asymptomatic, however, sometimes these asymptomatic complications can develop into life-threatening stage, for example, the splenic vessel pedicle can be elongated in wandering spleen patients, the possibility of pedicle volvulus can be improved dramatically. Once the pedicle volvulus established, the blood supply of spleen decreased, then, spleen infarction occurred^{7,8}. The emergency department is a special place in a hospital where clinicians must evaluate the conditions of the patient in very short period of time and clinicians must take several differential diagnoses into consideration while evaluate a patient. The wandering spleen itself has no obvious symptom, and most of its complications are asymptomatic. That is why the diagnosis of wandering spleen is so challenging in emergency department. In emergency room, we should increase the awareness of the wandering spleen. Emergency room is a critical place in hospital. The exact diagnosis should be established precisely and timely. Once we received a patient with chief complaint of abdominal pain, nausea, abdominal distension. The abdominal CT scan and the abdominal ultrasonography should be performed immediately. And we cannot use any pain-killer drug at this moment in case of the concealment of disease. Once the wandering spleen volvulus is discovered, the emergency surgery should be performed. The emergency diagnosing flow chart in emergency room is depicted as follows. (Figure 5)

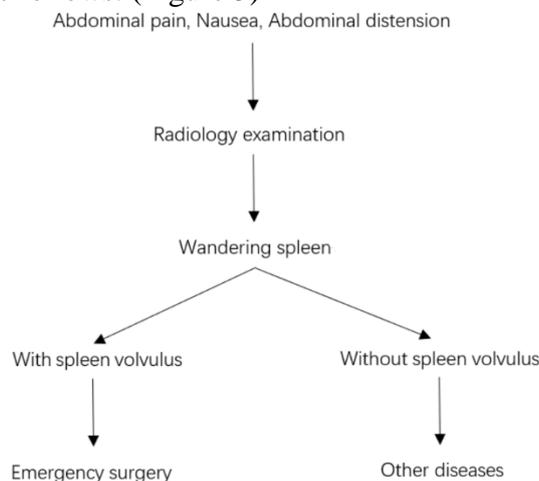


Figure 5: Diagnosing flow chart of wandering spleen in emergency room

6. Why the Diagnosis of the Wandering is So Challenging?

The wandering spleen is a symptom which has no obvious manifestation. Most of the complications of wandering spleen are cloaking. Thus, the diagnosis of the wandering spleen cannot be isolated from the radiology examination. The abdominal computed tomography is essential to the diagnosis of wandering spleen. Usually, the wandering spleen has no obvious symptom and patients won't have any presentation about wandering spleen itself. However, there are some complications related to the wandering spleen and some of them are life-threatening, for example, the splenic volvulus. The splenic volvulus is a life-threatening complication caused by the elongation of the splenic pedicle. In normal condition, spleen was fixed in its anatomical position in the left upper quadrant of abdomen. In CT image, the position of spleen is easy to be identified. The wandering spleen has no specific features in light of laboratory testing. Therefore, the computed tomography is of vital importance in diagnosing the wandering spleen. In most cases the wandering spleen has no obvious symptom, and in those case, which has the obvious symptom, most manifested as the acute abdomen. The acute abdomen is not a specific symptom and is very easy to be confused with other diseases, for example, the acute pancreatitis⁹. In addition to the CT scan, we have no other tools which can help us to diagnose the wandering spleen and that is why the diagnosis, especially the diagnosis before the emerge of the complications of the wandering spleen, is so difficult and so easy to be misdiagnosed¹⁰.

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