

Endovascular Therapy for Splenic Artery Aneurysm: A Case Report

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Abstract

Introduction: Splenic artery aneurysms are the most common visceral arterial aneurysm formations, as well as the 3rd frequent abdominal aneurysm. Most of them are asymptomatic until rupture and are ascertained unintentionally, usually after an imaging study. Open surgery is the elective therapy for splenic artery aneurysm, but has the disadvantages of severe surgical injuries including high rates of mortality and high risk complications.

Case Presentation: In this case report, we present a 44-year-old woman with right upper quadrant abdominal pain diagnosed as Splenic artery aneurysms. This pain was first vague and gradually caused more discomfort and, occasionally, caused a sharp pain with radiation to the back that had no relation with food or position aneurysms.

Conclusions: Selection of a suitable super-stiff guide wire during the procedure to provide sufficient support and decrease the difficulties related to stent graft delivery and release seems to be necessary. Nowadays endovascular modality for the treatment of splenic artery aneurysm is recognized and in selected patients can be done with fewer complications and good results.

Keywords: Splenic Artery, Aneurysm, Endovascular

1. Introduction

One of the most common visceral artery aneurysm origins is Splenic artery and the atypical origin of splenic artery from the superior mesenteric artery is uncommon (1). The natural history of any intra-abdominal aneurysm is rupture. Therefore, in patients who are otherwise well, treatment should be undertaken as soon as the diagnosis is made (2). Management of SAAs depends on various factors including age, gender, aneurysm dimension, origin, and the severity of the clinical findings and their complications (3, 4). Elective treatment for those lesions that are located in the proximal or middle portion of the splenic artery includes proximal and distal ligation or aneurysmectomy or both. Laparoscopic excision of aneurysms or endovascular intervention of aneurysms at these parts of the artery are new options that are introduced (2, 5, 6). For most distal lesions, splenectomy has been the most commonly performed operation and occasionally distal pancreatectomy may be warranted. Endovascular exclusion of splenic artery aneurysm has been used recently with great achievement. Treatment options include coil embolization for both proximal and distal lesions and stent grafting particularly for saccular lesions of the mid splenic artery (2). The aim of this study is to present a 44-year-old woman with right upper quadrant abdominal pain diagnosed as splenic artery aneurysm. An informed consent was obtained from the patient before the surgery.

2. Case Presentation

A 44-year-old woman referring to Shahid Modarres educational hospital (the only governmental facility in north-western Tehran, Iran) in December 2015 with right upper quadrant abdominal pain that started about 1 month before she referred. This pain first was vague and gradually caused more discomfort and occasionally was a sharp pain with radiation to back that had no relation with food or position. There was not any nausea or vomiting and appetite was normal. Imaging studies were done for the patient. At first sonography showed a splenic artery aneurysm in the middle portion of the artery; subsequently, CT (computed tomography) angiography showed an aneurysm splenic artery with a 4 centimeter diameter that originated abnormally from the superior mesenteric artery and the distance between the origin of the splenic artery and the aneurysm was 7 mm (Figure 1). We considered endovascular surgery as the treatment plan. During the investigation, any abnormalities regarding the clinical and laboratory findings such as hypertension, hyperlipidemia, and glucose intolerance were not observed.

Using conscious sedation and local anesthesia, left brachial artery was punctured and a 60 cm 8 Fr sheath was placed into the abdominal aorta. Furthermore, a pig-tail catheter was inserted from right femoral artery and located above the superior mesenteric artery (SMA) in aorta to enable angiography if needed. After the navigation of

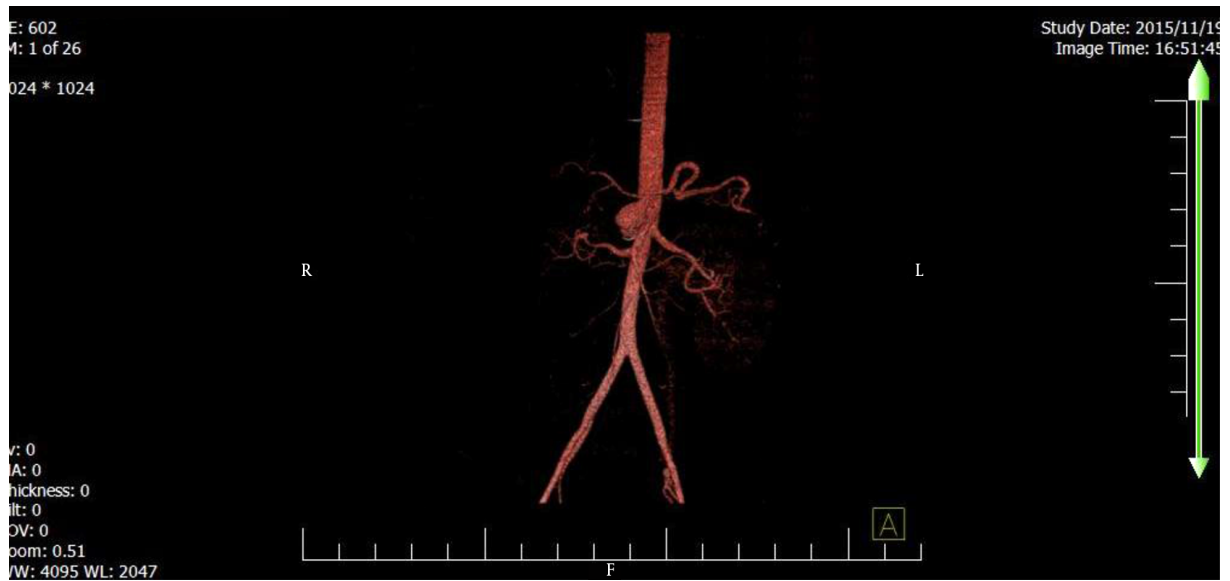


Figure 1. CT Angiography Image Obtained from 44-Years Old Women with a Splenic Artery Aneurysm

0.35 hydrophilic wires with multipurpose catheter supporting to the splenic artery that originated from SMA at first, we coiled artery distal to the aneurysm and then the aneurysm itself (diameters ranging from 4 mm to 7 mm).

At the second stage, catheter was withdrawn into SMA and replaced for a stiff lunderquist wire. An 8 mm × 37 mm V12 stent graft was navigated over the wire whose proximal end was deployed at the origin of the SMA and distal end at the origin of the first jejunal branch to forbid retrograde filling of splenic artery. The patient was discharged from the hospital after 2 days without any problem and a follow-up CT scan after one and 6 months showed patent SMA and complete thrombosis of aneurysm (Figure 2).

3. Discussion

Splenic artery aneurysm (SAA) accounted for as many as 60% of all reported splanchnic aneurysms. Unlike the usual atherosclerotic or degenerative aneurysmal disease, SAA are found much more frequently in women than men in an approximate ratio of 4 to 1. Usually SAAs are saccular and less than 2 cm in diameter and located in mid or distal splenic artery (7). The most common clinical risk factors are female gender, multiple pregnancy, and portal hypertension, and less common conditions including systemic lupus erythematosus, polyarteritis nodosa, and anomalous origin of splenic artery (7, 8). Currently, most SAAs are found incidentally during abdominal imaging performed for other unrelated symptoms. Rare large aneurysms may

produce vague abdominal pain or symptoms related to the compression of adjacent structures. But, most patients with significant pain experiencing rupture of acute expansion SAAs that have ruptured or are symptomatic require urgent treatment (9). The risk of rupture is about 2 to 10% for small and 28% for giant aneurysms in low risk individuals during their lives (10). Immediate definite therapy is crucial for symptomatic and bigger than 2 cm aneurysms once the diagnosis is made (11). Clinical status of the patients, the aneurysm shapes and arrangement of parts, and the accessibility of the resources are the most important factors that affect the preference of surgeons for the type of treatments. Endovascular techniques are a suitable alternative choice for the surgical management with the success rate of 80 to 92%, especially for patients with a poor surgical prognosis (12, 13).

Aneurysms in pregnant females or those who are at a child bearing age, also, absolutely necessitates treatment. Less strict indications include aneurysms that are mentioned to be enlarged or those bigger than 2 cm in diameter, but these size criteria are not exclusive criteria (7, 9). A celiac trunk with normal branching into splenic, hepatic and left gastric artery are reported in about 85% of people. A replaced splenic artery from SMA is very unusual and is expected to happen in less than 1% of individuals (14). Splenic artery aneurysm is more frequently found in patients with cirrhosis and portal hypertension disorders, the underlying etiologies include atherosclerosis, pregnancy, hypertension, arteritis, and trauma (7, 14).

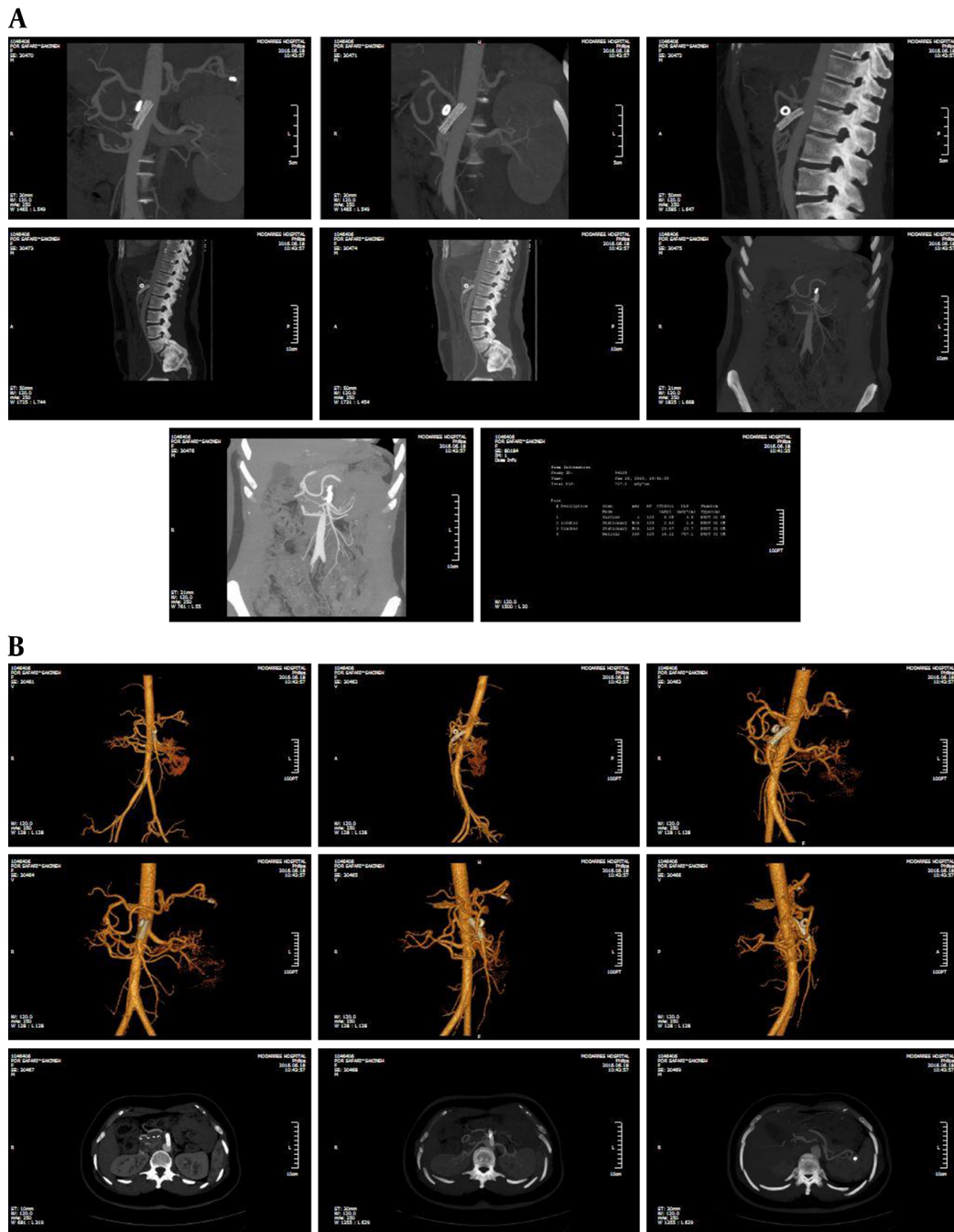


Figure 2. Imaging (A, B) After the Endovascular Repair Using CT Angiography

Generally, visceral aneurysms have a high risk of breaking and mortality in the case of rupture being projected to range from 35% to 100%. In pregnant women, if the size is the more than 2 cm and if the size increases; pregnancy should be considered to be a risk factor for rupture

and, hence, indications for the treatment of splenic artery aneurysm (9, 15). Despite the merit mentioned, the results of this study may be affected by its limitations including surgeon experience, small numbers of patients, and the lack of a control group. Studies with larger sample sizes

and appreciate follow-ups are needed to help to further define the details of therapy in this kind of patients. It is notable that the SAA in the current patient originated abnormally from the superior mesenteric artery with a longest diameter of approximately 4 cm which fully meets the criteria for endovascular covered stent graft exclusion treatment.

In conclusion, selection of a suitable super-stiff guide wire during the procedure to provide sufficient support and decrease the difficulties related to stent graft delivery and release seems to be necessary. Nowadays, endovascular modality for the treatment of splenic artery aneurysm is recognized and, in selected patients, can be done with fewer complications and good results.

Footnotes

Authors' Contribution: Naser Malekpour wrote the manuscript; Nasser Malekpour Alamdari and Hamed Asgarpour participated in the endovascular treatment for the case; Nasser Malekpour Alamdari represented the surgical department and supervised the writing of the manuscript; all authors read and approved of the final manuscript.

Conflict of Interests: All authors declare that they have no competing interests.

Consent for Publication: Written informed consent was obtained from the patient for the publication of this case report and any accompanying images.

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