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Case report

Abdominal Angina Caused by Kinking of the Superior Mesenteric Artery

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A B S T R A C T

Abdominal angina followed by an active vascular intervention constitutes an infrequent sequence of events. The limited experience in the active management of this, potentially lethal, condition prompted us to present the case of a 54 year old man with an exceedingly rare etiology of mesenteric ischemia. The underlying cause was kinking of the superior mesenteric artery in combination with ostial stenosis of the celiac trunk. The initial management strategy included an interventional radiological procedure because patient initially declined the surgical treatment. The second intervention was a surgical revascularization of the diseased segment of the abdominal vasculature. The surgical treatment led to complete resolution of his symptoms.

***Key words**: kinking, superior mesenteric artery, chronic visceral ischemia, visceral revascularization*

Introduction

Abdominal angina is an infrequent manifestation of atherosclerotic disease. Atherosclerotic occlusive disease of the visceral arteries is a relatively common finding in the general population, as opposed to mesenteric ischemia which occurs less frequently. The correct diagnosis is often made late[1,2]. The gold standard in defining the pathology remains invasive angiography[1], which may be complemented by an interventional procedure such as a percutaneous balloon angioplasty with or without stenting the lesion. There are also some new promising imaging modalities[3]. The surgical venue of management includes a direct revascularization procedure. The contemporary management strategy includes a multidisciplinary approach for patients suffering from either acute[4] or chronic subtype of mesenteric ischemia.

Case Report

We present a 54 year old patient who presented with postprandial abdominal discomfort accompanied by a recent weight loss of 13 kilograms. An extensive spectrum of gastroenterological studies which included blood test analysis, ultrasound, gastroscopy, colonoscopy and computed tomography did not reveal any pathology. He was referred to an abdominal surgeon who made a hypothetical diagnosis of chronic mesenteric ischemia. A color Doppler study of his abdominal vascular structures at an outside hospital was indicative of superior mesenteric artery (SMA) stenosis. The repeat study at our institution revealed a clear stenosis of the celiac trunk and an accelerated flow velocity in the SMA. This was further corroborated by angiography which confirmed the celiac trunk stenosis and showed a kinking of the SMA. The patient was offered a surgical intervention which he declined at that point. An interventional radiological procedure was undertaken and two stents were placed in the celiac trunk. This was performed while acknowledging the fact that our patient was not an ideal candidate for this procedure (category 3 lesion – ostial lesion of the superior mesenteric and/or celiac arteries). The initial postprocedural course was satisfactory. The patient gained 2 kilograms over the next two months. Unfortunately, the symptoms recurred after that time and the patient was studied angiographically in order to determine the etiology of his relapse. Migration of one of the stents distally was found with a 60% residual celiac trunk stenosis. The patient was again offered surgery, which he then accepted. The surgical revascularization included a bypass

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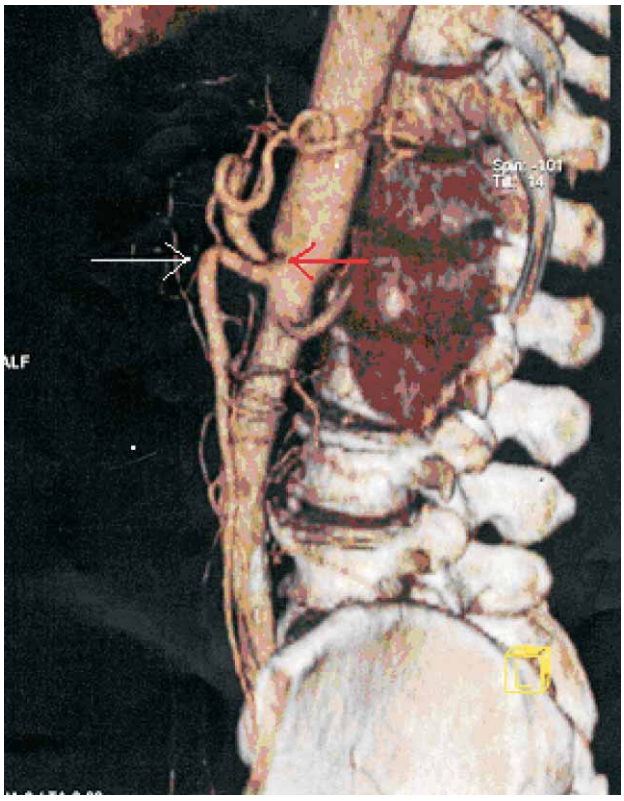

Fig. 1. Obstruction of celiac artery and kinkig superior mesenteric artery: white arrow – SMA kinking; red arrow – ostial celiac trunk stenosis.

from the distal abdominal aorta to the SMA (termino-lateral anastomosis) and common hepatic (termino-lateral anastomosis) artery with a bifurcation prosthesis (Collagen coated knitted vascular prosthesis, 12/6, CE 0088, US Federal Law restricts, Manufacture by Intervascular Z.I. Athelia 1, 13705 La Ciotat, Cedex, France). The postoperative course was unremarkable. A follow up angiographic study demonstrated a patent graft anastomosed to the SMA, and thrombosis of the graft directed at the celiac trunk vascular bed. A repeat angiography a year later showed the same result. The patient has gained 10 kilograms of body weight, and is currently asymptomatic.

Discussion

The scarce data on the optimal diagnostic and treatment strategies make it difficult to unequivocally define the best way to manage chronic mesenteric ischemia. There has been an increasing trend in percutaneous interventions, which have now been advocated as the first line therapy for mesenteric ischemia by some authors[5–8]. The patency rate after percutaneous interventions at 3, 6 and 12 months is 83%, 79% and 70%[6,] respectively. Many patients treated with percutaneous interventions require reinterventions. Surgical revascularization is still, however, considered the gold standard. The typical surgical options include bypass grafts as well as transaortic or local endarterectomies and visceral artery reimplantations[9–15]. The early and late results are good. The choice of conduits may include autologous tissue. The superficial femoral vein has shown superior results to the greater saphenous vein[16]. The distal thoracic aorta may be used as the inflow[17]. Alternatively, a celiac to SMA bypass may be constructed[18]. A non-atherosclerotic etiology of abdominal angina is very rare, and may include spontaneous celiac trunk dissection[19], among other causes. In the present case, the pathology leading to mesenteric ischemia was SMA kinking and celiac trunk stenosis. Even though celiac trunk stenosis is typically considered a surgical indication, our patient had initially declined the surgical treatment. He, hence, underwent a percutaneous intervention supplemented with the placement of two stents. It was not until his symptoms recurred that he consented to be operated on. The surgical treatment led to complete resolution of his symptoms. It is our opinion that kinking of the superior mesenteric artery in the setting of celiac trunk stenosis constitutes a clear indication for surgical management.

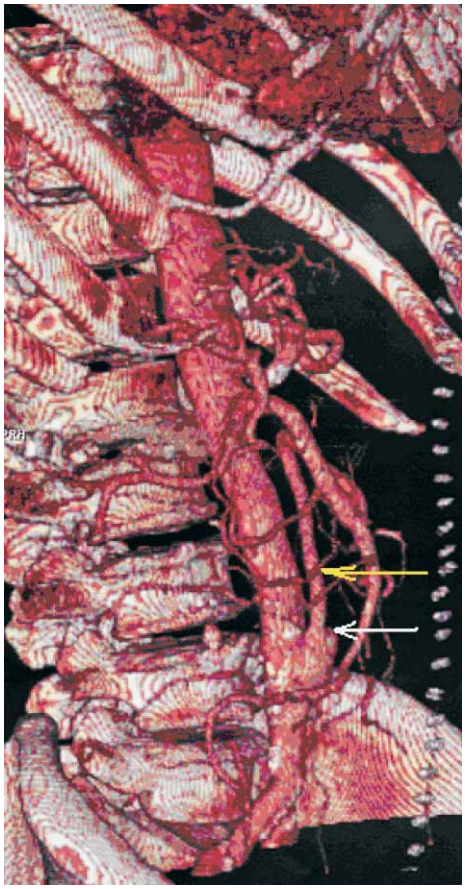

Fig. 2. Postoperative CT angiography: yellow arrow – bypass from the distal abdominal aorta to the SMA (termino-lateral anastomosis); white arrow – thrombosed graft directed at the celiac trunk vascular bed.

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ABDOMINALNA ANGINA UZROKOVANA KINKINGOM GORNJE MEZENTERIČNE ARTERIJE

SAŽETAK

Dokumentirana abdominalna angina i posljedična vaskularna intervencija na splanhničnim krvnim žilama je, zapravo, rijetka procedura. Gotovo da nema centra u svijetu koji bi mogao reći da su revaskularizacijske operacije tog područja rutinski zahvati. Prikazat ćemo slučaj pedesetčetverogodišnjeg muškarca s do sada neopisanom kombinacijom morfoloških lezija, naime s »kinkingom« gornje mezenterične arterije i ishodišnom stenozom celijačnog trunkusa. Bolesnik je u prvom aktu liječen radiološkom intervencijom jer je odbio predoženu operaraciju, a nakon toga kirurškom revaskularizacijom sliva celijačnog trunkusa i gornje mezenterične arterije što je dovelo do kompletnog oporavka bolesnika.