

Case Report

Spontaneous isolated dissection at renal upper abdominal aortic: a rare case report

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Abstract: Arterial dissection is defined as a cleavage of the arterial wall caused by intramural hematoma. Isolated extra-aortic arterial dissection has been reported in renal and carotid arteries in few literatures but suprarenal aorta dissection associated with retrograde formation of a giant descending thoracic aneurysm is considered very rare. We present a quite unusual case of suprarenal aorta dissection associated with retrograde formation of a giant descending thoracic aneurysm sparing both renal and mesenteric vessels, without any branch vessel involvement or visceral damage. Because of the patient's persistent epigastric pain, endovascular celiac artery stent implantation was performed with 3 multiple overlapping uncovered stents. Twelve months after the procedure, computed tomographic angiography (CTA) of the abdomen showed patency of both celiac stents with thrombus formation in the retrograde dissection sac, and the patient remained asymptomatic. This case and others in the medical literature suggest that endovascular treatment can be feasible in symptomatic patients with spontaneous isolated dissection at renal upper abdominal aortic.

Keywords: Isolated suprarenal aorta dissection, aneurysm, multiple overlapping uncovered stents

Case report

A 43-year-old man was admitted to our hospital because of suddenly persistent, dull pain in the upper left quadrant of the abdomen six days ago. The pain started after the patient ate, and it gradually worsened. He had not suffered any chronic disease except hypertension for three years and without reasonable and effective therapy. He reported no fever, nausea, vomiting, rectal bleeding, melena, or dysuria, and no history of iatrogenic injury from instrumentation or trauma.

At presentation, his blood pressure was 158/85 mmHg at both arms. The physical examination was normal. Initial blood tests including cardiac enzymes, complete blood count, renal function tests, liver enzymes, amylase, lipase, and d-dimer were in normal ranges. Serial ECG's were all normal sinus rhythm. The computer tomography angiography (CTA) scan showed an aorta dissection associated with retrograde formation of a giant descend-

ing thoracic aneurysm arising in suprarenal locations, and sparing both renal and mesenteric vessels, without any branch vessel involvement or visceral damage (**Figure 1**). Digital subtraction angiography demonstrating a very clear view of isolated suprarenal aorta dissection, without abnormal of other artery branch and infrarenal abdominal aorta, and the ostia of tear is adjacent the celiac trunk (**Figure 2**). Hepatic and renal arteries blood flow as normal. Liver, spleen, bowel, and kidney perfusions were also normal. Conservative treatment including control heart rate and antihypertensive had been chosen for one week, but no relief for the abdominal pain of the patient.

Because of the patient's persistent epigastric pain, surgery or aortic repair deserves consideration. However, to keeping the other arteries branch flow and reducing the high-risk, open surgery was less appropriate than endovascular aortic repair. So the patient was taken to the hybrid operating room for endovascular aortic repair. The true lumen of the celiac artery was



Figure 1. Sagittal plane of a 16-slice computer tomography angiography (CTA) scan showed an aorta dissection associated with retrograde formation of a giant descending thoracic aneurysm arising in suprarenal locations, and sparing both renal and mesenteric vessels, without any branch vessel involvement or visceral damage.

entered with a 0.014-in HI-TORQUE® WHISPERS® hydrophilic guidewire (Abbott Vascular, part of Abbott Laboratories; Santa Clara, Calif) inside an 8F internal mammary artery guiding catheter after heparin was given as an anticoagulant. Selective angiography of the abdominal aorta and celiac artery was performed (**Figure 2**). Three multiple overlapping uncovered stents (Sinus XL Stent, Optimed®, Ettlingen, Germany; length 80 mm, diameter 26 mm, 24 mm, 22 mm, respectively) were placed between the renal artery and arch artery (**Figure 3**). Postdeployment aortography revealed a good placement of the device, no extravasation in false lumen, and complete exclusion of the injured aorta, contrast media circulating in the blood stream do not enter to the false lumen and normal patency of visceral vessels (**Figure 4**). Ten months later he was asymptomatic with good blood pressure control. Because he remained asymptomatic, he denied a radiological follow up.



Figure 2. Digital subtraction angiography demonstrating a very clear view of isolated suprarenal aorta dissection, without abnormal of other artery branch and infrarenal abdominal aorta, and the ostia of tear is adjacent the celiac trunk.

Discussion

Isolated extra-aortic arterial dissection has been reported in renal and carotid arteries on few literatures but suprarenal aorta dissection associated with retrograde formation of a giant descending thoracic aneurysm is considered very rare [1]. In the early cases, the diagnosis was made by postmortem examination [2]. For the diagnosis in nowadays, conventional angiography, doppler ultrasonography, CT, and magnetic resonance imaging can be used. As in our case, CTA is the advised technique because of its convenience, quickness, low invasiveness, and reliability [3]. CTA scan can provide high quality images of dissection site and also gives knowledge about the extension of the lesion, aneurysm formation, and intramural hematomas.

Suprarenal aorta dissection associated with retrograde formation of a giant descending thoracic aneurysm sparing both renal and mesenteric vessels, without any branch vessel involvement or visceral damage is more quite unusual.

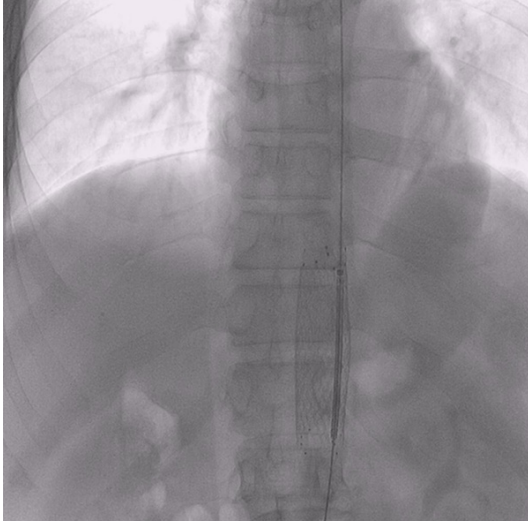


Figure 3. Digital subtraction angiography demonstrating a good placement of the device in abdominal aortic.

Existing literatures regards spontaneous arterial dissection is 5 times more common in men than in women, and the average age of the patients is approximately 55 years [4]. The most common presenting symptom is the sudden onset of severe epigastric or hypochondrial pain. The involvement of branch vessels is generally observed and patients showed various clinical signs and symptoms according to the involved branch vessel, so most patients' physical examinations have yielded normal results except for epigastric tenderness [5]. Our patient demonstrated normal flow at hepatic and renal arteries in CTA scan. Liver, spleen, bowel, and kidney perfusions were also normal. There was no aneurysmatic dilatation of the celiac artery.

The natural progression of spontaneous celiac artery dissection is not fully understood. Severe sequelae include splenic infarction, intestinal ischemia, and intraperitoneal hemorrhage [6].

Traditional open surgery, endovascular surgery, and interventional radiological approach are invasive options of the splanchnic artery dissection treatment. Indications for surgery in isolated extra-aortic arterial dissection include increasing the size of the aneurysm, intraluminal thrombosis, abnormal blood flow through the vessel, and the persistent symptoms despite anti-coagulation [7].

With the development of endovascular operation and special design of stent for the patient,

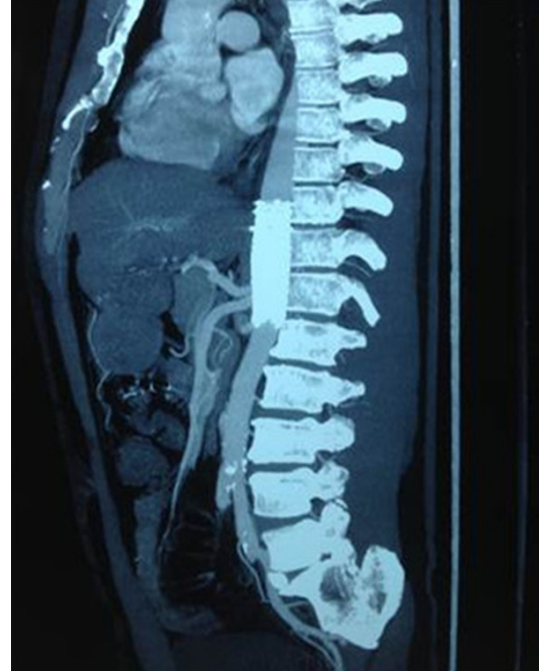


Figure 4. 64-slice computed tomographic angiography scan showed good patency of the visceral vessels with complete isolated suprarenal aorta dissection exclusion.

endovascular used to be the first line choice. However, cases like this, that suprarenal aortic dissection adjacent the significant branches, the endovascular would generate serious complications. The use of endografts for the treatment of aortic aneurysmal disease is limited to patients with suitable anatomy [8]. When the aneurysm is adjacent to or involves a major arterial branch, available options include open repair and fenestrated/branched endografts (multilayer). To decrease the complications of endovascular, 'chimney' and fenestration approach which is very complex, would be chosen at past. Recently, the multilayer stent always be adopted for this condition. Recently, a multiple overlapping uncovered stents technology can alter the flow patent of aneurysm sac and keeping blood through into the branches. In fact, the mechanism of above approach is altering the blood flow pattern, than promoting thrombus formation and aneurysmal occlusion. In 2008s, Henry and his colleagues reported the first case of using this multiple overlapping uncovered stent [9].

In this case, 3 multiple overlapping uncovered stents were placed across the entry, which can

narrow the void, reducing the risk of aorta rupture. 1-year later thrombosis of abdominal aortic aneurysms had been observed, keeping patent the inferior mesenteric artery and some lumbar arteries. This approach is effective for this patient. Whether or not be a new concept for suprarenal aortic aneurysm, much more research should be did.

Disclosure of conflict of interest

None.

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