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Endovascular treatment for spontaneous supraceliac isolated abdominal aortic dissection is a fabulous option. (Case report)

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ABSTRACT

Aortic dissection originates from isolated tear in the abdominal aorta is rare but potentially life or limb-threatening condition particularly if misdiagnosed. It may have a number of clinical presentations with potentially serious adverse effects and should be considered in the differential diagnosis of any patient with an acute onset of abdominal pain radiating to the back and the buttocks together with presence or absence of a pulsatile abdominal mass, signs of limb ischemia, or discernible risk factors.

Surgical and endovascular treatments are two valid options for these cases according to their clinical and anatomical considerations with acceptable results. We present a quite unusual case of a spontaneous supraceliac isolated abdominal aortic dissection with contained peri-aortic hematoma and manifesting as acute persistent abdominal pain. Better illustration of the natural history of this ill-defined pathology is needed to understand and improve patient care.

1. Presentation of the case

Seventy-seven years old lady known as hypertensive with End Stage Renal Disease (ESRD) on regular hemodialysis for more than thirteen years. She was bedridden and presented to our vascular unit through the emergency with severe abdominal pain radiating to the back, apart from the previous medical problem, no significant drug, family, genetic or social history. She was normotensive, afebrile, and in sinus rhythm. Clinical examination revealed tender epigastrium with abdominal rigidity, rectal examination was normal and stool culture was negative for occult blood. Hematocrit was 29.3%, hemoglobin was 9.5gm/dl, and white cells count was 12000. Apart from serum creatinine of 147.3 U/L and serum potassium 4.1 mmol/l, glucose, liver enzymes, lipase and cardiac enzymes were normal. An electrocardiogram, chest radiograph and abdomen plain films were also normal. Pelvi-abdominal ultrasound showed minimal free fluid in the pelvis which was suggested to be correlated with renal failure.

After proper nephrological preparation, she was underwent an abdominal computed tomography (CT) with arterial and venous phases contrast that showed isolated abdominal aortic ulcer with extravasation of contrast just proximal to celiac artery figure [1].

Regarding, her general condition and clinical comorbidities we lean toward endovascular intervention approach. After appropriate preparation and proper counseling, the proper consent was taken. She was transferred to angiography unit and underwent conventional angiography that showed retroperitoneal leaking aortic ulcer about half inch proximal to celiac artery (Figs. 1 and 2).

Through right femoral arteriotomy and left femoral percutaneous access sheath, **Gore® TAG® Thoracic Endoprosthesis** size ($21 \times 21 \times 10$ cm) Was deployed uneventfully with completion angiography showed sealed aortic leak with patent all visceral branches and satisfactory results figure [2]. The procedure was done by a consultant vascular and endovascular surgery.

She was observed at Intensive Care unit for twenty-four hours then transferred to the general word for another forty eight hours, her vital Sign was normal and she was discharged home in excellent general condition and anticoagulation was prescribed for the patient. CT angiography follow up was done 6 months later which showed normal contrast flow with no signs of leak. The patient on annual regular follows with vascular clinic.

2. Discussion

Spontaneous isolated abdominal aortic dissection (IAAD), without concomitant thoracic aortic dissection, is regarded as a clinically rare disease. Published reports on IAAD are mostly limited to individual case reports and small case series aorta [1,2]. IAADs are usually categorized as suprarenal and infrarenal IAAD. With

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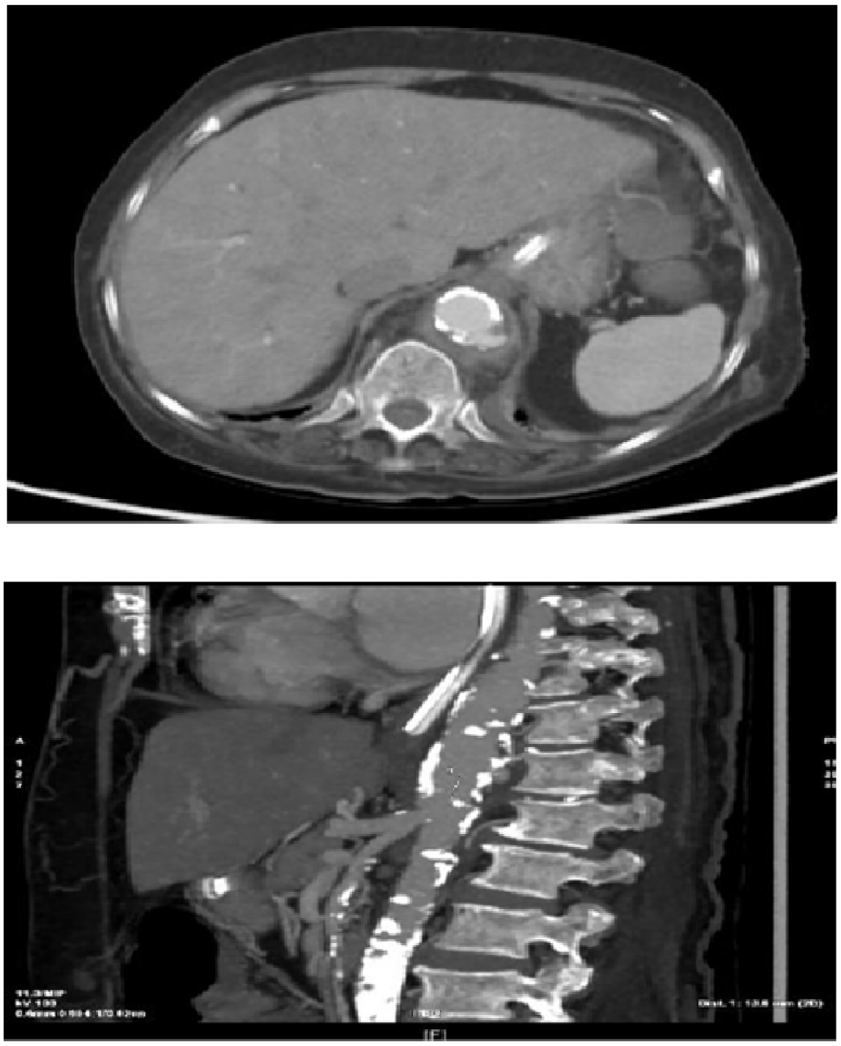

Fig. 1. CT of the abdomen and pelvis with contrast at the time of presentation: Abdominal aortic ulceration with extravasation of contrast half inch from the level of the coeliac axis with proximal eccentric aortic thrombus noted.

most studies focusing on infrarenal IAAD, little is known about suprarenal IAAD [3]. In the International Registry of Acute Aortic Dissection (The largest group of patients treated for acute aortic dissections), only about 1.3% of the enrolled patients were identified as having isolated dissections of the abdominal aorta [4]. The cause of IAAD has been considered to be spontaneous, traumatic, or iatrogenic. It usually occurs after the age of 60 years, affects men predominately, and is associated with hypertension, atherosclerosis, and pre-existing AAA. Asymptomatic patients with normal diameter of the aorta are usually treated conservatively [5].

The choice of treatment was decided according to the patients' symptoms, signs, and the morphologic characteristics from the CT findings. Patients with following characteristics were indicated for endovascular treatment: (1) signs of aortic rupture, (2) visceral, renal, or limb ischemia, (3) persistent abdominal pain not relieved by observation treatment, (4) aortic diameter >3 cm,8 and (5) a suprarenal IAAD [6].

This decision is greatly influenced by anatomical conditions, the patient's comorbidities, and the surgeon's experience. Where the dissection extends to the iliac arteries, aorto-bifemoral/monofemoral grafting is the operation of choice [7].

Repair of supraceliac IAAD is more challenging. Elliott et al. described the first successful repair of a spontaneous suprarenal abdominal aortic dissection by graft insertion with obliteration of the entry tear [8].

Recently, less invasive endovascular approaches have been proposed. This technique mainly included placement of an aortic tube graft and great effort was made to deploy the covered portion of the graft above the celiac artery [9,10].

Poor outcome has been reported for IAADs involving the suprarenal aorta if left untreated [6] and very few studies have reported open surgical repair of suprarenal IAADs [8]. Described complications of percutaneous fenestration include aneurysm formation, transmural perforation during the creation of the fenestration, and manipulation of the intimal flap, which can propagate the dissection or cause occlusion of previously patent vessels. Furthermore, laboratory studies have shown that balloon fenestration tears are typically along a transverse orientation relative to the longitudinal axis of the aorta [11]. As such, in some cases, the transverse tear could circumferentially transect an aortic septum (when a septal tube is present) and result in intimo-intimal intussusceptions with resultant occlusion of distal vessels [12].

The paper was following the SCARE 2018 guide lines [13].

3. Conclusion

The treatment paradigm for aortic dissection is complex and dependent on acuity of presentation with clinical and anatomical considerations. IAAD is a rare vascular disease. Endovascular treatment of supraceliac IAADs represents a feasible, safe, and minimally

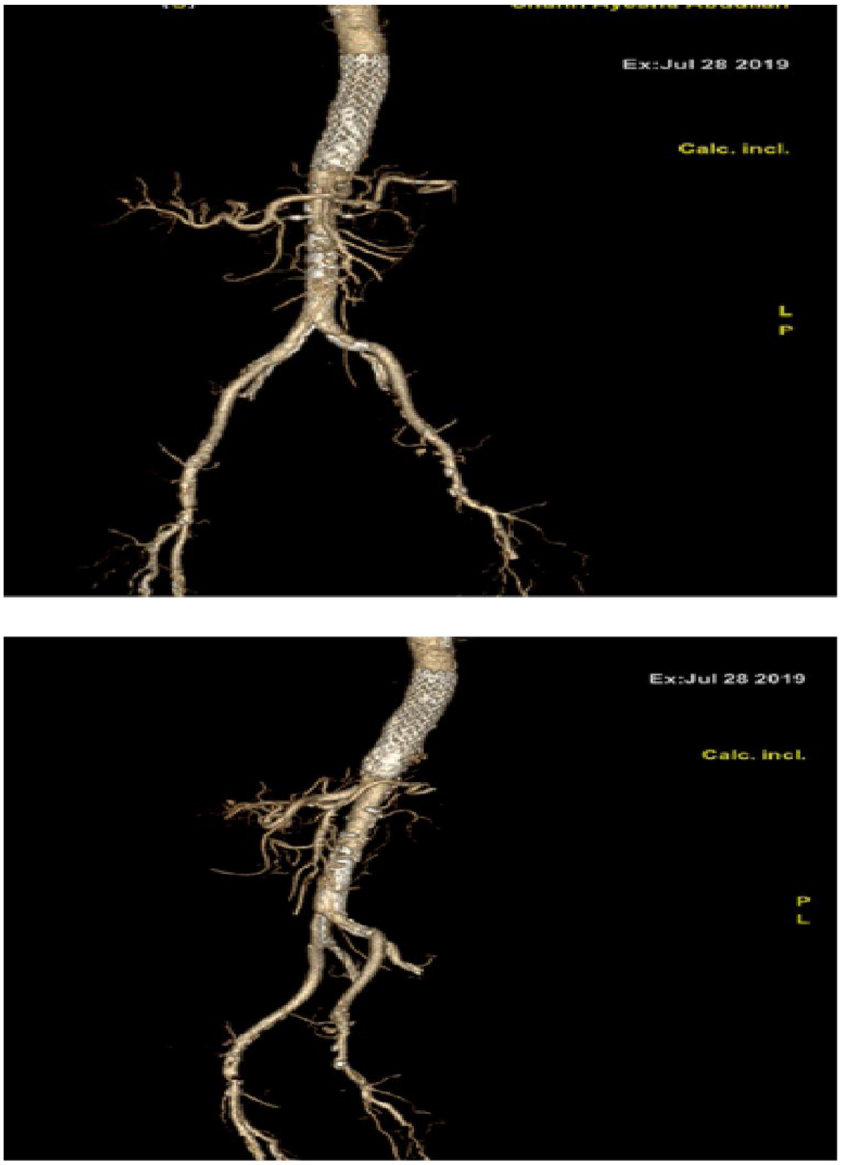

Fig. 2. post-operative 3D aortography showed Gore® TAG® Thoracic Endoprosthesis size (21 × 21 × 10 cm) with sealed aortic leakage with no endoleak and patent all visceral branches and satisfactory results.

invasive approach with a low rate of complications, mortality, and secondary interventions. This therapeutic approach could become the treatment of choice in all cases that are anatomically suitable. Also, the long-term outcome data suggest that endovascular repair is a durable treatment option with high technical success rate and promising aortic remodeling.

Conflicts of interest

We guarantee that there is no conflict of interest.

Funding

No funding required.

Ethical approval

Institutional approval from local ethics committee was obtained for this study, and the patient medical record was reviewed. Patient data were kept strictly confidential.

Consent

Written informed consent was obtained from the patient for publication of this case report and accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal on request.

Author contribution

Abdullah Alhaizaey: supervision, writing- review and editing.
Ehab Khalil: writing-original draft.
Ahmed Azazy: writing-review and editing.
Mohammed Joudat: writing-original draft.
Barrag Alhazmi: writing-original draft.

Registration of research studies

There was no need to register it in a research registry.

Guarantor

Abdullah Alhaizaey.

Provenance and peer review

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