

Retroperitoneal hematoma following abdominal aortic aneurysm repair anti-coagulant induced case study and review

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Abstract

Retroperitoneal hematoma formation following elective open abdominal aortic aneurysm (AAA) repair may be occult. Evacuation of the hematoma rapidly restores venous return and hemodynamics. But This report describes a case of retroperitoneal hematoma formation anti coagulation induced and highlights challenges associated with diagnosing bleeding in this case.

Case Presentation

A 23 years old female patient who came to ER on 4/02/2024 around 6:50 am. Presented with complaints of bilateral flank pain since last night which has aggravated since today morning.

History of patient having undergone haemodialysis on 3/2/2024 with heparin around 11pm following which patient noted to have pain after reaching home

No H/O sweating / palpitation / chest pain / vomiting / giddiness /loc / abdomen discomfort noted

No c/o altered bowel and bladder habits

No H/O fall or trauma

No drug/food allergies

Known co - morbidities: CKD on HD (3/7) HBsAg positive/HT

Past history

- Covid pneumonia - 2022
- History of Left radiocephalic AV fistula –functioned for 15 days and thrombosed
- History of Irregular menstruation (LMP - November 2023)
- History of Tonsillectomy in childhood
- History of Tuberculosis - Completed ATT

- Recent hospitalisation done for Infrarenal Aortic and bilateral common Iliac multiple aneurysm-s/p Aorto Bi Iliac Bypass (25/1/2024)

General examination

On arrival patient was conscious, oriented,afebrile with GCS E4V5M6

Hydration-fair ,

PICKLE (Icterus, Cyanosis, Clubbing, Koilonychia) - negative

Pain score 5/10

Vitals on arrival

Temp - 98.8°F

BP - 130/80 mm/hg

HR - 97b/min

SpO2 - 98% on RA

CBG - 112mg/dl

Systemic examination

CVS - S1S2 +, no murmur, JVP – normal

RS - B/L AE +. NVBS, no added sounds

PA - soft, non-tender, no organomegaly, BS +

CNS - moving all 4 limbs

Local examination

P/A : right flank tenderness(+), no warmth,no discolouration over skin

Left gluteal region: tenderness (+), No warmth, No discoloration over skin

Dressing (+) over abdomen region, no soakage .

Peripheral pulses felt equally on both upper limbs and feeble on both lower limbs

Permcath insitu Right IJV site

P/R done was normal, No bleeding /melena seen

Treatment given at ER

- Patient in propped up position
- SpO2 maintined $\geq 94\%$
- Iv line secured
- Inj.Pantaprazole 40mg iv stat
- Inj.Emeset 8mg IV stat
- Inj.Tramadol 1amp iv stat with 100ml NS
- And patient was maintained in NPO till further orders

Investigation done

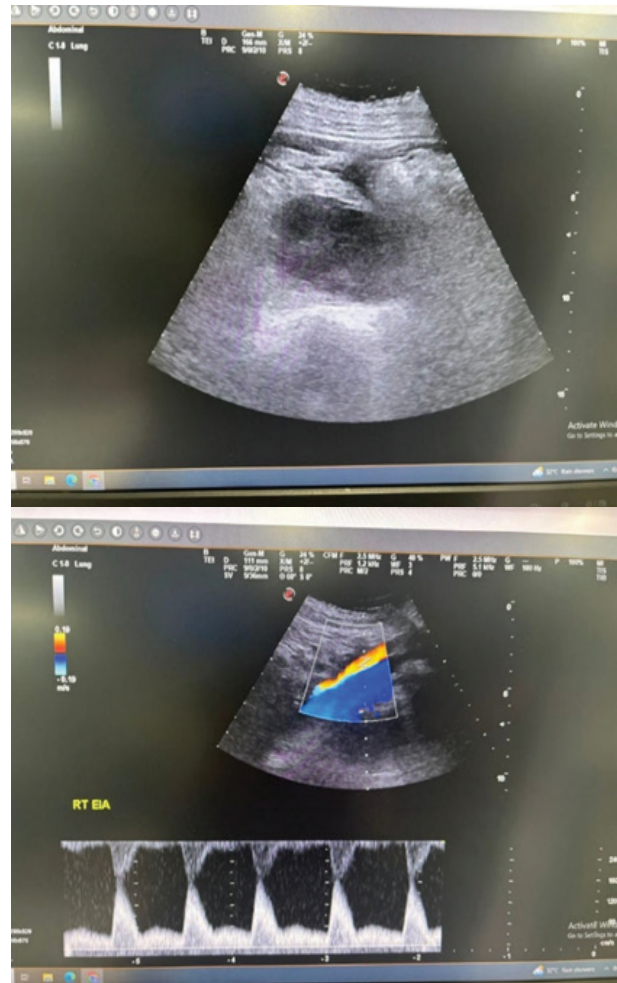
- X ray abdomen erect and supine: normal study
- CBC/LFT/Electrolyte/Creatinine/CRP

Investigation reports -04/02/2024

Investigations	Results
CBC	
HB	5.5
HCT	16.1
TC	3900
Platelet	2,10,000
RFT:	
UREA	47.5
Creatinine	6.36
NA+	140.8
K+	3.59
HCO3-	21.5
CRP	80.99
LFT	Within normal limits
APTT	40.8
INR	1.69
Albumin	2.73

Ultrasound Abdomen

- Diffuse illdefined hematoma in the periaortic region tracking along the common iliac artery, right psoas and retroperitoneum
- Mild to moderate free fluid
- Bilateral chronic kidney disease



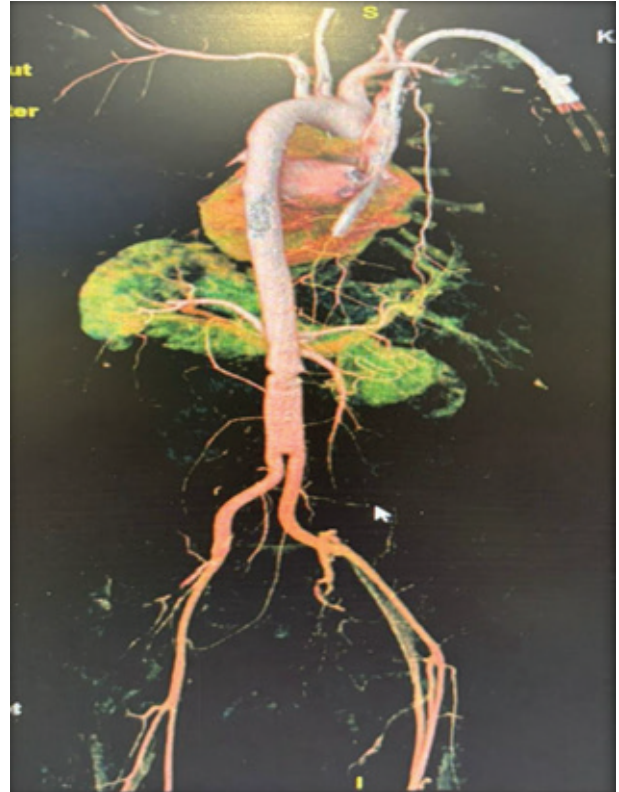
CECT-CT Abdomen

- Diffuse hyperdense hematoma seen around aortic lumen extending to bilateral common iliac arteries
- There is evidence of hyperdense collection along the right psoas muscle, right common, external iliac arteries and retro peritoneum measuring 14x11.5x8cm displacing the right kidney anteriorly.
- Opacification of gall bladder –likely due to vicarious contrast excretion



MDCT-Aortogram

- Intaluminal flow within the graft intact.
- Focal extravasation of contrast level of aortic bifurcation and just below the right
- common iliac bifurcation
- Diffuse hyperdense hematoma seen around at aortic lumen extending to bilateral common iliac arteries
- infra renal aorta measures 4.2cm (transverse)
- Luminal diameter (1.8cm)
- There is evidence of hyperdense collection along the right psoas muscle, right external iliac artery measuring 12.5x5.2x7.5 cm (maximum dimensions) displacing the right kidney anteriorly
- Mild to moderate free fluid in perihepatic, perisplenic area tracking along the paracolic gutters and pelvis.
- Bilateral contracted kidneys. Mild to moderate dilatation of right pelvi calyceal system and proximal ureter. Bilateral enlarged ovaries with peripherally arranged follicles. Rest of the pelvic organs grossly appear normal.



Diagnosis

Retroperitoneal Hematom Anticoagulation Induced

Treatment and course in hospital

- Blood investigations revealed deranged coagulation profile, low Hb levels (4.9g/dl).
- MDCT Aortogram done showed Post aorto iliac bypass, normal flow within the graft, and retroperitoneal hematoma with no active leak from anastomosis site.
- Patient was planned for conservative management.
- In view of low Hb level - 3 units of PRBC was transfused; serial monitoring of HB & aPTT was done .
- Consultant Nephrologist opinion was obtained for CKD and 2 sessions of hemodialysis done during this admission.
- She was treated with Inj. Vit K (3 doses), IV fluids, IV antibiotics, antipyretics & other supportive medications.

- As patient Hb levels showed improving trend and vitals hemodynamically stable, no further specific complaints, patient was discharged

Discussion

Abdominal aortic aneurysm (AAA) It is a degenerative vascular pathology resulting in significant morbidity and mortality in older adults due to rupture and sudden death. AAAs are usually asymptomatic until they expand or rupture. An expanding AAA causes sudden, severe, and constant low back, flank, abdominal, or groin pain. Syncope may be the chief complaint.

1. Pathophysiology

AAAs are characterized by a failure of the major structural proteins of the aorta (ie, elastin and collagen), resulting in proteolytic degradation of extracellular matrix, apoptosis of vascular smooth muscle cells, and eventual thinning of the aortic tunica media. Resulting from this loss of resistance in the medial aorta, outward centrifugal mass transport of soluble blood components through the wall increases via hydraulic conductance, resulting in inflammation, edema, and lymphoid neogenesis in the adventitia[12] In addition, the adventitia is a highly vascularized and innervated connective tissue whereby this accumulation of inflammatory cells is linked to capillary development and a staging site for macrophage and lymphocyte infiltration into the vascular media. This inflammatory response is associated with the formation of a non occlusive mural thrombus, or intraluminal thrombus, involving the activation of both platelets and proteins within the coagulation cascade. Collectively, these processes lead to the widening of the vessel lumen, loss of structural integrity of the aorta, and an increased susceptibility to rupture and death.

2. Diagnosis

No specific laboratory studies can be used to diagnose AAA. The following imaging studies can be employed diagnostically:

- Ultrasonography - Standard imaging technique for AAA

- Plain radiography

- Computed tomography (CT) and CT angiography (CTA)

- Magnetic resonance imaging - This permits imaging of the aorta comparable to that obtained with CT and ultrasonography, without subjecting the patient to dye load or ionizing radiation

- Angiography - With the fine resolution afforded by CTA, conventional angiography is rarely indicated to define the anatomy

3. Management:

AAAs are treated with surgical repair. When indicated, unruptured aneurysms can be addressed with elective surgery, whereas ruptured AAAs necessitate emergency repair.

The primary methods of AAA repair are as follows:

- Open - This requires direct access to the aorta via a transperitoneal or retroperitoneal approach
- Endovascular - This involves gaining access to the lumen of the abdominal aorta, usually via small incisions over the femoral vessels; an endograft, typically a polyester or Gore-Tex graft with a stent exoskeleton, is placed within the lumen of the AAA, extending distally into the iliac arteries

Table 1: Crawford classification of thoracoabdominal aortic aneurysms.

Type II	May or may not include part if not all of the ascending aorta Contains descending aorta distal to the left subclavian and extends to the infrarenal aorta, possibly to the aortic bifurcation
Type III	Distal half of the descending thoracic aorta (6th intercostal space) into the aortic bifurcation
Type IV	Entire abdominal aorta from the diaphragm to the aortic bifurcation
Type V	Distal half of the descending aorta (6th intercostal space) and extending to the visceral segment but avoiding the renal arteries

Nonspecific complications

Cardiac complication-myocardial infarction,

Ischemia - Intestinal ischemia, Renal ischemia, Pelvic ischemia are the most common complication seen.

Symptoms include buttock claudication and erectile dysfunction in up to 40% of patients

Specific complications

Endoleak - which is defined as the presence of persistent blood flow into the aneurysm sac after graft placement and is one of the most common complications associated with endovascular aneurysm repair.

DVT, Abdominal compartment syndrome, rupture, Internal bleeding and Migration of graft

Conclusion

In conclusion, many complications exist with respect to aortic aneurysm repair and exist among all types of repair and relate to the comorbidities associated with the disease. As AAA is a complex thrombotic and inflammatory disorder. Platelet activation and coagulation play crucial roles in the development of the non occlusive ILT, progression of aneurysm development, and eventual rupture. Though Surgical intervention is the only treatment option, and there is a great need for pharmacological prevention for AAA patients for whom anticoagulants are given and retro peritoneal hematoma-anti coagulant induced should be considered as one of the major post op complication

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