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Case Report

Renal Artery Thrombosis: A Post COVID-19 Sequel

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A B S T R A C T

Since the outbreak of the COVID-19 pandemic, increasing evidence suggests that infected patients present a high incidence of thrombotic complications. Besides affecting respiratory tract it also causes systemic inflammation which also leads to coagulopathy affecting major blood vessels in the body. This report describes a case of aortic, renal artery thrombosis in a patient admitted for evaluation of abdominal pain and detected to have high titer of SARS COV-2 IgG antibodies with no prior history suggestive of typical COVID-19 infection (COVID-19 RTPCR and antigen tested negative).

Keywords: COVID-19, IgG SARS CoV-2, Renal Artery Thrombosis

Introduction

COVID-19 infection has spread all over the globe and has infected more than 3 crores of peoples. Various researches have given increasing evidence of high incidence of thrombotic complications such as deep vein thrombosis,[1] pulmonary embolism,[2] or micro vascular thrombosis in infected patients.[3] Recent studies[4,5] have found out hypercoaguable state in the COVID patients supposedly consequences of inflammatory storm during the infection. There is evidence of raised inflammatory markers like IL-6 along with coagulation markers like D-dimer. This hypercoagulability induced by COVID-19 seems to be responsible for venous thromboembolic events but can also cause arterial complications.[6] We report a case of patient presenting with arterial thrombosis as a sequel of COVID-19 infection. In absence of typical COVID-19 symptoms we must have a high index of suspicion for early recognition of vascular complications in the patients.

Case

A 55 year old female had pain in abdomen since 3 days. This was associated with intermittent episodes of vomiting. She was hemodynamically stabilized and was further investigated with routine blood investigations and radiological imaging.

Table 1.laboratory investigation

Investigations	Reports	Reference
Total Leukocyte count (/uL)	19600	4 - 10
Neutrophil (%)	88	40 - 80
Lymphocytes (%)	5	20 - 40
Platelet (/uL)	220000	150 - 410
Hemoglobin g/dL	15.2	11 - 15
Prothrombin time (s)	14.3	11 - 16
Activated Partial thromboplastin time (aPTT) (s)	34	30 - 40
D-dimer (microgram/ml)	5.19	0 - 0.5
Cardiac troponin I (pg/ml)	398	0 - 17.9
Protein C (IU/dL)	74	65 - 135
Protein S (%)	62	70 - 140%
Anti-thrombin III (%)	85	80 - 130%
e-GFR (ml/min/1.73 m2)	24	
Procalcitonin (ng/ml)	5.43	0 - 0.5
Amylase (U/L)	38.7	0 - 90
Lipase (U/L)	14	0 - 67
SARS Cov 2 antibody	Positive	
COVID-19 antigen	Negative	
COVID-19 RT PCR	Negative	

She was diagnosed to have inflamed appendix on plain CT scan of abdomen which was confirmed by histopathology after appendectomy. Despite surgery she had persistent pain in abdomen which was not relieved by analgesic medications. Therefore a contrast enhanced CT scan of abdomen and pelvis was done.The scan reported an extensive thrombus from abdominal aorta involving both renal arteries. She eventually developed multi organ dysfunction and sepsis.

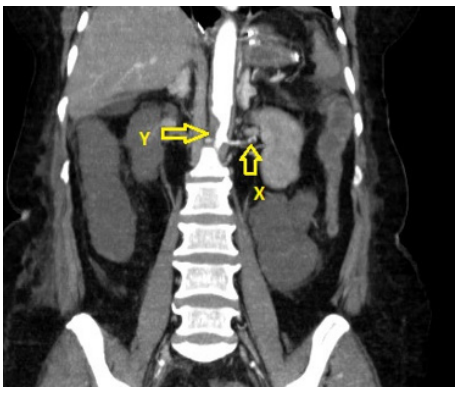

Image 1.CECT Abdomen Coronal section showing X-Partial thrombosis of left renal artery, Y-Partial Aortic thrombus and thrombosis of right renal artery

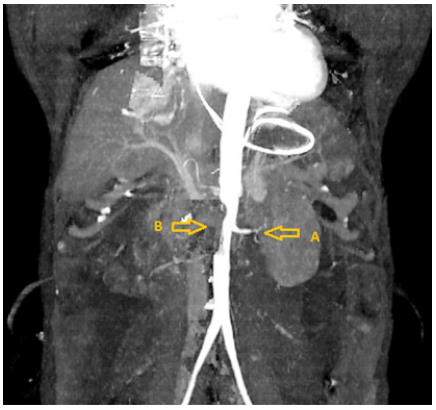

Image 2.CECT abdomen Reconstructed image showing A - Partial thrombosis of left renal artery, B- Partial Aortic thrombus and thrombosis of right renal artery

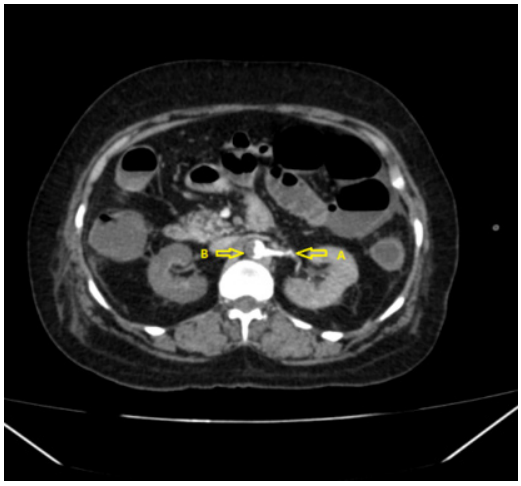

Image 3.CECT abdomen axial section showing A: Partial thrombosis of left renal artery, B: Partial Aortic thrombus

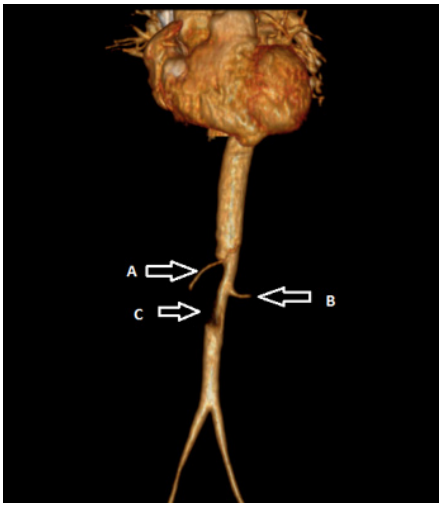

Image 4.CECT Abdomen 3D reconstructed image showing A – superior mesenteric artery, B- : Partial thrombosis of left renal artery, C- Partial Aortic thrombus and non visualization of right renal artery due to thrombosis

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Discussion

As we continue to learn more about the COVID-19 virus and study clinical outcomes of infected patients, our knowledge of its complications and preparedness for their onset will subsequently improve. Many authors have recently demonstrated a strong link between COVID-19 infection and thromboembolism. In our case we observed that patient had no any clinical symptoms suggestive of typical COVID-19 infection[7] and primary event went unnoticed. On evaluation her SARSCov-2 antibody-positive and COVID-19 antigen and RTPCR were negative. She was initially diagnosed with appendicitis and underwent appendectomy but persistent post operative abdominal pain necessitated further evaluation. An extensive thrombus from abdominal aorta involving both renal arteries was found on repeat contrast CT scan of abdomen. On further evaluated for hypercoagulable state (protein C and S, anti-thrombin, factor -V Leiden) no serological abnormalities were detected. A recent study by Bikdeli B et al. attributes post COVID-19 infection sequele to excessive inflammation, platelet activation, endothelial dysfunction and stasis.[8] Spiezia L et al have suggested that formation and polymerization of fibrin are responsible for this hypercoagulability.[9] Many recent recommendations have therefore insisted on prophylactic measures to prevent thromboembolism (10-12). A recent study by Varga Z et al. observed evidence of the presence of virus in endothelial cells.[13] This could be possible due to wide expression of angiotensin-converting enzyme-2 receptor (virus uses this receptor to infect cells) in endothelial cells eventually leading to endothelitis, venous and arterial thrombosis. In present scenario, patient presenting with extensive thrombosis, need evaluation for COVID-19 status even in absence of primary symptoms.

Conclusion

COVID-19 infection can lead to vascular thrombosis in symptomatic as well as asymptomatic patients. This case report adds to the knowledge about consequences of COVID-19 infection.

Conflict of Interest: None

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