



Massive renal infarction due to spontaneous renal artery thrombosis-a rare case report

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ABSTRACT

Spontaneous renal artery thrombosis is a rare medical emergency. The signs and symptoms of the disease are variable and non specific making it difficult to diagnose on time and easily missed for other more common pathologies. Proper evaluation and timely intervention can prevent the loss of renal function. We present a case of 45 year old male with no comorbidity who presented with complaints of right flank pain, fever and vomiting for one day. With physical examination within normal limits, evaluation revealed right renal artery thrombosis.

1. Introduction

Acute renal artery thrombosis is a rare medical emergency that leads to severe morbidity and organ loss. The most common cause of renal infarction is an embolus that has dislodged from a distant source.¹ The diagnosis of this rare surgical emergency is often delayed because of nonspecific presenting signs and symptoms leading to delay in treatment and organ loss.² We present a rare case of spontaneous renal artery thrombosis in an adult male with no risk factors leading to loss of one renal unit.

2. Case report

A 45 year old male presented to the emergency department our hospital with complaints of right flank pain, fever and vomiting for one day. The patient didn't have a history of any chronic disease or any intervention in the past. There was no significant drug history or drug abuse. Patient did not have any Covid-19 symptoms or related vaccination in recent past. On examination, patient was hemodynamically stable with regular pulse and there was mild tenderness in the right renal angle. Rest of the physical examination was within normal limits.

Ultrasound examination of the abdomen with renal Doppler showed minimal fluid around right kidney with absent arterial flow. ECG showed a normal sinus rhythm with no evidence of arrhythmias. Echo cardiography didn't reveal any abnormal wall motion or any vegetation

within cardiac chambers. Metabolic workup of the patient was done and is shown in [Table 1](#). A CT renal angiography was done that showed right renal infarction with few patchy areas of perfusion as shown in [Fig. 1](#). There was a thrombus in the right renal artery extending from renal ostium into the main renal artery. A reconstructed image ([Image 2](#)) demonstrated complete cutoff from the level of right renal ostium. The case was discussed with the intervention radiologist for the possibility of endovascular thrombectomy with stenting. But because of the delayed presentation, revascularization was not attempted. Pain was relieved with oral analgesics that were discontinued after five days. Anti-coagulation was started with full dose of low-molecular-weight heparin (enoxaparin 1mg/kg 12 hourly) continued for 5 days. Warfarin was started on day 1 and overlapped with enoxaparin for 5 days to achieve the target INR of 2–3. Extensive metabolic workup including ANA, Protein S, protein C, ATIII, factor V Leiden, prothrombin 20210A mutation, antiphospholipid antibodies and homocysteine levels were measured but did not reveal any risk factor or hypercoagulable state. Patient was evaluated for COVID-19 disease and tested negative by RT-PCR. Patient was discharged 5 days later on oral anticoagulants. Patient was followed weekly with kidney function test and monitoring of blood pressure. Patient had normal renal function and there was no new onset hypertension. A follow up Tc⁹⁹ DTPA scan after 4 weeks revealed non functional right kidney.

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Table-1
Laboratory parameters of the patient.

| Laboratory Parameters | Results |
|-----------------------|-----------------------|
| Hb | 12.5gdl |
| TLC | 17000/mm ³ |
| ESR | 23mm/hr |
| Serum creatinine | 1.45mg/dl |
| Urine microscopy | 20-30 RBC/HPF |
| LDH | 1500 U/L |
| Blood sugar | 89mg/dl |



Image-1. Axial cut showing non enhancing right kidney.

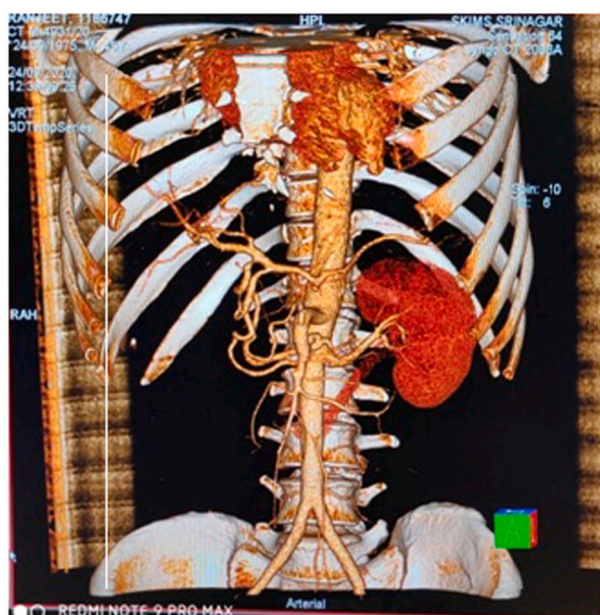


Image-2. Reconstructed renal vascular angiography showing right renal artery thrombosis.

3. Discussion

Renal artery thrombosis is a rare medical emergency and is usually reported in third to fifth decade of life. It has a non specific presentation with most of patients presenting with sudden flank pain. The pain may be associated with fever, vomiting and leukocytosis.² Our patient had presented with flank pain, fever and vomiting. These symptoms can be easily missed for more common pathologies like ureteric colic or pyelonephritis. Unfortunately diagnosis was initially missed in our case when he was treated symptomatically at another hospital before being referred to our center. Most of the cases of renal artery thrombosis have a demonstrable cause like trauma, atherosclerosis, hypertension, arrhythmias, cardiac abnormalities, malignancies, previous intervention, drug abuse etc.¹ Our case didn't have any risk factor for renal artery thrombosis. The first click to the diagnosis was renal Doppler that revealed non perfused right renal unit. The CT scan is the investigation of choice for evaluation of acute flank pain. The CT renal angiography is the ideal non invasive investigation used to confirm the diagnosis.³ In our case, CT renal angiography revealed a thrombus extending from renal ostium into the main right renal artery. Modern CT scanners provide the detailed anatomy of renal vasculature with three dimensional reconstructions aiding in diagnosis. A high serum LDH level corresponds to the renal infarction but this parameter is not very specific for renal infarction.⁴

The timely intervention with endovascular thrombectomy and stenting can salvage the renal function.⁵ Delayed presentation in our case led to renal infarction and was not amenable to endovascular revascularization. Studies have reported little benefit of revascularization after several hours with no benefit after 4–5 hours. We treated our patient with anticoagulants to prevent the extension of thrombus and prevent the new thrombus formation at other location because the patient might be having the undiscovered risk factors for thrombosis. Poorly perfused kidney can be a source of chronic hypertension because of activation of rennin angiotensin system. There was no new onset hypertension in our patient.

The purpose of this case report is to highlight the importance of complete history taking, proper evaluation and timely intervention to prevent the catastrophic events. Symptoms of the patients should only be treated when the cause of symptoms had been established.

4. Conclusion

Renal artery thrombosis is a rare medical emergency and difficult to diagnose because of non specific presentation. Proper evaluation and timely intervention can prevent the loss of renal function.

Declaration of competing interest

None.

Acknowledgement

Nil.

Abbreviations

| | |
|--------|---|
| ANA | Anti nuclear antibodies |
| CT | computed tomography |
| DTPA | diethylenetriamine pentaacetic acid |
| ECG | electrocardiogram |
| INR | international normalized ratio |
| LDH | lactate dehydrogenase |
| RT-PCR | reverse transcription polymerase chain reaction |

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