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Bilateral Renal Infarction in a Teenage Patient: A Case of "Transient" Antiphospholipid Syndrome?

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Authors' contributions

This work was carried out in collaboration between all authors. Authors SH and DB equally contributed to the first draft of the manuscript and performed literature searches. Authors ERS and RS revised, edited and performed further literature searches. All authors read and approved the final manuscript.

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Case Study

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ABSTRACT

We present a case of abdominal pain in an 18-year-old-female which was ultimately diagnosed to be due to bilateral renal infarction. The etiology of this finding was determined to be a transient antiphospholipid syndrome, a rare but known cause of renal infarction in the pediatric age group, with seropositivity for lupus anticoagulant waning after three months in this patient. We review, in addition, the literature on antiphospholipid syndrome-induced renal infarction and its varied serological presentations.

Keywords: Antiphospholipid syndrome; renal infarction; abdominal pain; pediatric.

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1. INTRODUCTION

In adults, especially the elderly, renal infarcts are most commonly associated with atrial fibrillation, with vasculitides and connective tissue diseases such as systemic lupus erythematosus (SLE), antiphospholipid syndrome (APS), polyarteritis nodosa, mixed connective disease, and Behcet's disease, contributing some of this disease burden as well. Other entities such as endocarditis with septic emboli, marijuana and cocaine abuse, and abdominal trauma have been documented as causes of this entity in adults as well. However, the few cases of renal infarction described in the pediatric literature are associated primarily with SLE and APS, and bilateral infarctions are particularly rare [1-2].

The incidence of renal infarction in the emergency room setting has been documented as 0.2 cases/1000 patients, and autopsy findings in one study documented acute renal infarct in 14/1000 of cases [3]. However, many cases of renal infarction are likely missed due to its non-specific presentation: abdominal or flank pain sometimes accompanied by nausea, vomiting and/or fever. Laboratory findings most commonly found with this entity are elevated lactate dehydrogenase level and leukocytosis. Some patients may also present with an elevated creatinine, mildly elevated transaminases, hematuria, and/or proteinuria. Computed tomography has become the gold standard for radiologic confirmation of renal infarction and has a sensitivity of approximately 80% [3].

We present below a unique case of a teenager with bilateral renal infarcts who tested positive for lupus anticoagulant and an elevated Factor VIII with no evidence of SLE.

2. CASE

An 18-year-old female with no significant medical history was admitted to the pediatric unit with a three-day history of lower abdominal pain and a one-day history of nausea and vomiting. She had no fevers or urinary symptoms and review of systems was otherwise non-contributory. She had started an oral contraceptive pill the evening prior to the onset of pain and smoked cigarettes occasionally.

Pelvic ultrasound with Doppler ruled out ovarian torsion, and Doppler interrogation of the renal vasculature showed no renal artery stenosis. Computed tomography of the abdomen was notable for bilateral wedge-shaped hypodensities of the kidneys consistent with renal infarcts (Figs. 1 and 2).

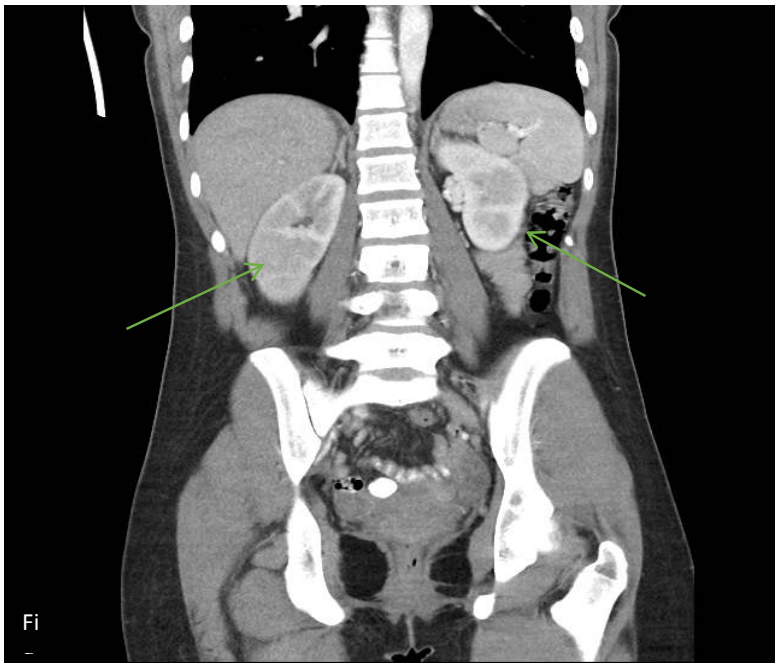

Fig. 1. Computed Tomogram of the Abdomen, Coronal view, showing bilateral wedge-shaped renal parenchymal defects consistent with renal infarction

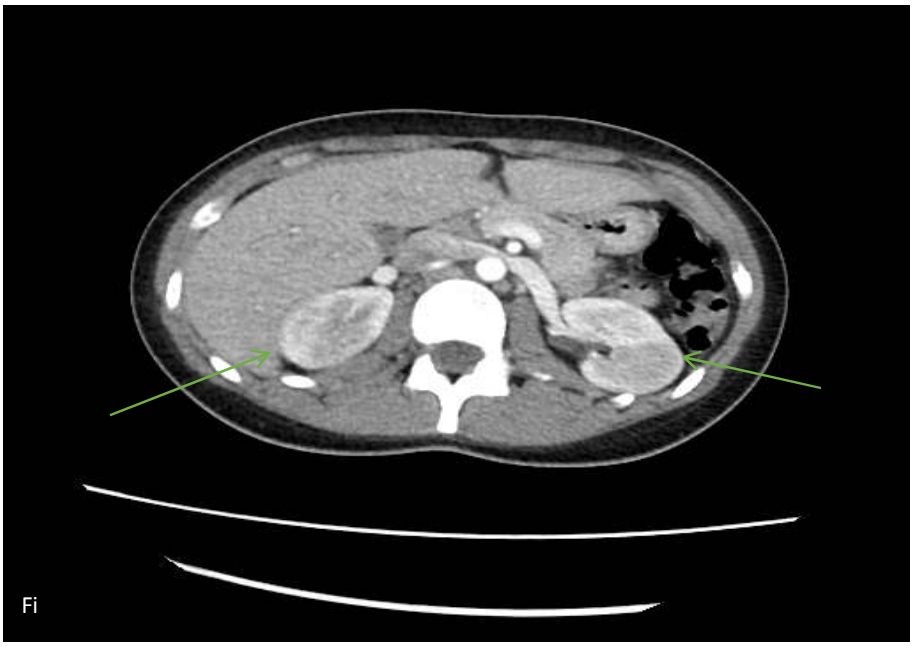

Fig. 2. Computed Tomography of the Abdomen, Transverse view, showing extensive bilateral renal parenchymal infarction

Urinalysis was significant for microscopic hematuria and a urine culture was negative. Creatinine was elevated for age at 1.07 mg/dL and a serum c-reactive protein was also elevated just above the reference range at 0.70 mg/dL. The remainder of the comprehensive metabolic panel, complete blood count, erythrocyte sedimentation rate and lactate dehydrogenase were all within normal limits. Further laboratory assessment for thrombophilia and vasculitis was notable for a positive lupus anticoagulant (Dilute Russell Viper Venom Time ratio >2, reference 0.9-1.05), an elevated D-Dimer (833 ng/mL; reference range 0-230 ng/mL), and an elevated factor VIII (133%; reference range: 50-125%). Anti cardiolipin antibodies, beta-2 glycoprotein, anti-nuclear antibodies, double-stranded DNA antibodies, anti-Smith antibodies, SSA/B antibodies were all negative. Genetic studies for Factor V Leiden and prothrombin gene mutations were unrevealing, and the remainder of thrombophilia laboratory assessment was negative.

Due to concern for APS-related infarction, the patient was started on rivaroxaban to minimize risk of further thrombosis. Upon re-evaluation one week later, the D-Dimer level normalized, the microscopic hematuria resolved, and the abdominal pain had subsided. The rivaroxaban was discontinued after three months, and repeat factor VIII and lupus anticoagulant levels taken at that time were normal.

3. DISCUSSION

The most common manifestation of the APS in the adult population is venous thrombosis of the legs. APS uncommonly causes arterial thrombosis with associated ischemia or infarction: primary APS presenting initially as renal disease (glomerular, renal vein or renal artery thrombosis and renal infarction) occurs 2.7% of the time and can manifest as hematuria, new-onset hypertension, proteinuria, or sudden frank end-stage renal disease.

The sole laboratory abnormality in a patient with primary APS may be the existence of antiphospholipid antibodies (anticardiolipin antibodies, beta-2 glycoprotein antibodies, and/or lupus anticoagulant). Additionally, transient increases in antiphospholipid antibodies/lupus anticoagulant causing thrombosis in children/teenagers has been documented previously in the medical literature [4].

Overall, antiphospholipid antibodies are found in up to five percent of healthy individuals, and the prevalence is thought to increase with age and with other autoimmune conditions such as SLE [5]. Of note, anticardiolipin antibodies have been

found in up to 28% of healthy children/teenagers, which may be present in response to infections or vaccinations [6]. Additionally, the concentration of beta-2 glycoprotein antibodies has also been noted to be elevated among healthy young children/teenagers [7]. Hence, the presence of antiphospholipid antibodies alone does not equal a diagnosis of APS, as clinical criteria must also be met.

Infection and smoking have both been implicated in the transient production of antiphospholipid antibodies [6]. False-negative lupus anticoagulant results can occur in anticoagulated patients as well. Among pediatric patients with SLE, the presence of a lupus anticoagulant (as compared to the other APS antibodies) is the strongest predictor of thrombosis risk. A strong association between the presence of LA and thrombosis remains even when only transiently measured [8].

Our patient presented 12 hours after initiating oral contraceptive pills (OCP) which are known to cause complex shifts in pro- and anti-coagulant protein levels, including increases in factor VIII levels. The highest risk for thrombosis in this context is generally in the first three months after initiation of OCP's [9]. In isolation, much larger increases in factor VIII levels are known to induce a hypercoagulable state causing thrombosis in various parts of the body (over 200 iU/dL or 150% or control) [10]. Our patient's increase in factor VIII was minimal, however. Theoretically, it is still possible that our patient harbored an unmeasured (or as of yet unknown) factor induced by or that acted synergistically with OCP administration and her increase in LA to cause her thrombosis.

4. CONCLUSION

Abdominal pain and flank pain are common complaints encountered in the emergency department and the differential diagnoses in these cases are extensive. However, physicians should also consider unusual potential diagnoses such as renal infarction when evaluating these common complaints, especially if a family history of thrombophilia exists. Once renal infarction is diagnosed in a patient, a high index of suspicion exists for a possible vasculitis with or without antiphospholipid antibodies or other predisposition to thrombosis. With such serious potential consequences regarding future kidney function, both aggressive anticoagulation and vigilant monitoring for evolution into classic lupus is indicated.

CONSENT

As per international standard or university standard written patient consent has been collected and preserved by the authors.

ETHICAL APPROVAL

It is not applicable.

DISCLAIMER

An earlier version of this manuscript was previously presented as an abstract at the Society of Hospital Medicine Meeting on March 6-9, 2016 in San Diego, California, USA.
Available:http://www.shmabstracts.com/abstract/apediatric-patient-presenting-with-bilateral-renal-infarcts-found-to-have-antiphospholipid-syndrome/

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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