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Case Report

Atrial fibrillation and flank pain: Think renal infarction: A case report ☆,☆☆

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ABSTRACT

Renal infarction is a rare pathology, threatening the functional prognosis of the kidney. Given the lack of clinical features specific to this pathology, the practitioner may wrongly diagnose pyelonephritis or other causes of abdominal pain. Renal infarction frequently occurs in patients with thromboembolic risk factors, most often secondary to atrial fibrillation. We report the case of a 49-year-old patient, with no previous history, who presented to the emergency room with palpitations and pain in the right flank with an atrial fibrillation rhythm on the ECG, in whom abdominal CT angiography showed signs of a focal renal infarction of the right kidney. Later, the progression was towards non-traumatic macroscopic hematuria with preservation of normal renal function, which resolved spontaneously after a few days. AF was accepted in the face of significant dilatation of the left atrium, in consultation with the patient, and he was put on a beta-blocker to control the rate. Renal infarction must be considered despite its rarity to initiate adequate treatment and increase the chances of renal rescue.

Introduction

Renal infarction is a rare condition with an atypical presentation. However, the diagnosis should be made in the presence of lumbar or flank pain, after ruling out other etiologies and always considering the patient's previous history. A few case reports involve the possibility that a cardiac embolism can cause acute renal infarction. Herein we present a patient with segmental renal infarction secondary to left ventricular thrombus who presented symptoms of renal calculus with a brief review of the literature.

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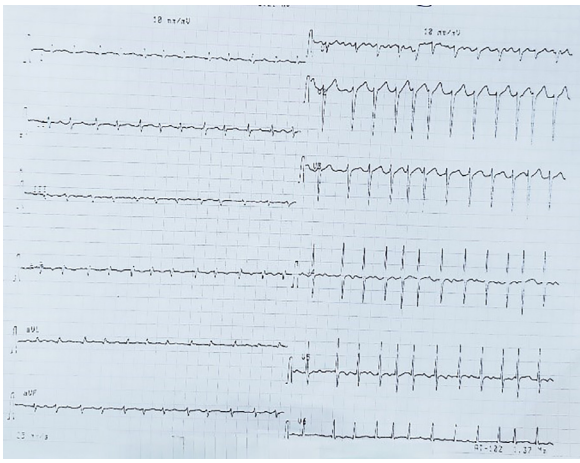

Fig. 1 – ECG showing rapid AF rhythm.

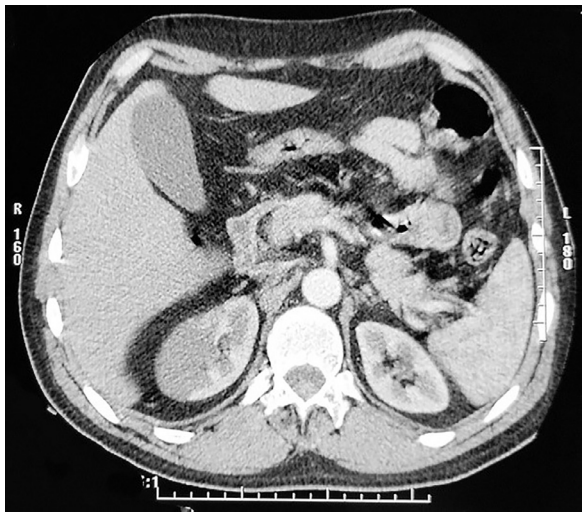

Fig. 2 – Abdominal CT angiogram showing foci of right renal infarction.

Case presentation

We present the case of 47-year-old man, whose cardiovascular risk factors included chronic smoking and chronic alcoholism weaned 12 and 3 years ago respectively, with no pathological previous history.

He presented to our emergency department with rest dyspnea, sudden onset and cessation of palpitations, and right flank pain that had begun 8 days earlier.

He was subsequently transferred to the Cardiac Intensive Care Unit (CICU) for the management of inaugural left-sided heart failure decompensated by rapid rate AF. On admission, vital signs were normal, except heart rate at 140 beats per minute. On cardiovascular and pulmonary examination, heart sounds were irregular, with bilateral crepitating rales in the lower third, and abdominal examination revealed pain on right flank palpation. The ECG showed a rapid rate AF (Fig. 1).

Biological findings included a predominantly neutrophilic hyperleukocytosis of 24,500 e/mm^3 *(the reference range is between: 4000 to 10,000 e/mm^3)*, a positive CRP of 225 mg/L *(<6 mg/L)*, and a slightly elevated lactate dehydrogenase (LDH) of 285 U/L *(120-245 U/L)*. The urine cytobacteriological test revealed leukocyturia with bacteriuria, for which he was started on antibiotics (Ceftriaxone 2g/24 h). He presented with hepatic cytolysis: ASAT 115 U/L *(< 40 U/L)*, ALAT 210 U/L *(< 35 U/L)*, normal renal function: creatinine 10 mg/l *(7-14 mg/l)*, and GFR 100 mL/min/m^2, and his blood cell count and thyroid function were normal.

Abdominal and pelvic CT scans without contrast injection performed on the day of admission were without abnormality. As right-sided pain persisted and became increasingly incapacitating, despite antibiotic therapy, the appearance of haematuria with a sterile urine cytobacteriological test and several episodes of vomiting, an abdominal-pelvic pain angio CT scan was performed, which revealed acute right renal infarctions without signs of mesenteric ischaemia (Fig. 2). He was then put on intravenous anticoagulant (Unfractionated Heparin) combined with diuretic therapy for the left-sided heart failure flare-up, with good clinical progression.

For rhythm and rate control, the patient was put on a beta-blocker and Cordarone loading dose followed by an intravenous maintenance dose, with a slowing of the rate without restoration of sinus rhythm. The patient was proposed for electrical cardioversion but given the dilation of the left atrium with a surface area of 35 cm^2, the risk of failure and/or recurrence of AF was high, and it was decided after consultation with the patient to accept AF. Intravenous anticoagulation was replaced by direct oral anticoagulants when the patient was discharged. He was taken off oral anticoagulants and beta-blockers.

Discussion

Renal infarction is a rare pathology, the diagnosis of which is difficult in the absence of specific symptoms [1]. A clinicobiological triad has been proposed to facilitate diagnostic orientation, including flank or dorsal and/or lumbar pain, hematuria and elevated LDH [2].

Most patients present with symptoms mimicking renal colic, sometimes with diffuse abdominal pain associated or not with nausea, vomiting and/or fever [3,4].

Serum lactate dehydrogenase (LDH) is a marker of cellular injury, and its elevation has been described in cases of renal infarction [5]. Leukocytosis, elevated CRP and proteinuria may also be present. Microscopic hematuria is sometimes found, but its absence does not rule out the diagnosis [6].

In emergency situations where renal infarction is suspected, abdominal CT with intravenous contrast injection is the imaging of choice [7]. It visualizes the renal vessels and detects the perfusion defects characteristic of renal infarction. It highlights areas of the renal parenchyma that are not properly vascularized. These non-perfused areas appear as wedge-shaped defects on the images, reflecting the triangular shape of the territory affected by the infarct. Perfusion defects may also affect both kidneys in around 20% of cases [8].

Treatment of renal infarction is first and foremost that of the cause, to prevent recurrence. Given the rare incidence of renal infarction, there is no consensus on its investigation or treatment. Management of patients with acute renal infarction nevertheless includes thrombolysis, anticoagulation and sometimes surgery, depending on the duration of symptoms. In several studies, anticoagulation with unfractionated heparin, low-molecular-weight heparin and warfarin has shown rather favorable results. For patients with atrial fibrillation, the treatment is clear: conventional anticoagulation with a favorable prognosis [9]. In the case of thrombosis due to trauma to the renal artery, surgical treatment is highly effective. Other treatment options include endovascular thrombolysis, with limited data in the literature [10]. Renal function monitoring is performed for most patients to detect a decline in renal function as early as possible.

Conclusion

Renal infarction is a rare pathology, whose non-specific clinical manifestations complicate the diagnosis. It should be considered in any patient presenting with acute back pain associated with thromboembolic risks. A complementary LDH assay may help to orient the diagnosis. Diagnosis is confirmed by angioscan. Treatment of patients with acute renal infarction includes thrombolysis, anticoagulation and sometimes surgery, depending on the etiology.

Availability of data and materials

Data sharing is not applicable to this article as no datasets were generated or analyzed during the current study.

Ethical approval

N/a.

Research registration

N/a.

Provenance and peer review

Not commissioned, externally peer-reviewed.

Patient 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.

REFERENCES

[1] Domanovits H, Paulis M, Nikfardjam M, Meron G, Kürkciyan I, Bankier AA, et al. Acute renal infarction, Clinical characteristics of 17 patients. Medicine (Baltimore) 1999;78:386–94.
[2] F Harrat F, Kortobi L, Tazi Moukha H. Infarctus rénal: aspects cliniques et thérapeutiques (à propos de 6 cas: expérience du centre hospitalier Sud Francilien à Corbeil-Essonnes). Néphrologie et Thérapeutique 2018;14(8):337.
[3] Barbey F, Matthieu C, Nseir G, Burnier M, Teta D. A young man with a renal colic. J Intern Med 2003;254:605–8.
[4] Bourgault M, Grimbert P, Verret C, Pourrat J, Herody M, Halimi JM, et al. Acute renal infarction: a case series. Clin J Am Soc Nephrol 2013;8(3):392–8.
[5] Jichlinski P, Vaucher L, Leisinger H-J. L'infarctus rénal: une pathologie rare. Rev Med Suisse 2004;10(2507):2424–6.
[6] Bove P, Kaplan D, Dalrymple N, Rosenfield AT, Verga M. Anderson Ket al. Reexamining the value of hematuria testing in patients with acute flank pain. J Urol 1999;162:685–7.
[7] Mazhar HR, Aeddula NR. Renal Vein Thrombosis. [Updated 2023 Jun 12]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2024.
[8] Taourel P, Thuret R, Hoquet MD, Doyon FC, Merigeaud S, Delabrousse E. La tomodensitométrie dans les causes rénales non traumatiques des douleurs aiguës du flanc. Semin échographie CT MR. 2008; 29(5):341–52
[9] Markabawi D, Harvir S-G. Acute renal infarction: A diagnostic challenge. Am J Emerg Med 2018;36(7):1325.e1–1325.e2. doi:10.1016/j.ajem.2018.04.018.
[10] GY Kim, MA. Corriere. Maladie rénovasculaire: événements occlusifs et ischémiques aigus. Chirurgie vasculaire et thérapie endovasculaire de Rutherford, ensemble de 2 volumes, chapitre 130, 1714–1723