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### RESEARCH ARTICLE

#### "UNCOVERING HIDDEN INSIGHTS: WHEN ABDOMINAL PAIN LEADS TO THE DISCOVERY OF RENAL INFARCTION »

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#### Abstract

Renal infarction is a rare event that is often overlooked in emergency departments. Despite the contribution of imaging, diagnosis remains a delicate matter due to the variety of clinical presentations. We describe a case of right flank pain revealing this entity.

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#### Introduction:-

Abdominal pain constitutes a common reason for emergency room visits, encompassing a broad spectrum of potential differential diagnoses. Among the less familiar and infrequent causes is renal infarction, whose occurrence is presumed to be relatively low.

Accurate epidemiological data on renal infarction remains limited due to its rarity and potential misdiagnosis. However, available data suggest that it tends to be more prevalent in individuals with underlying cardiovascular risk factors, such as atrial fibrillation, valvular heart disease, or thromboembolic disorders [1]. Additionally, the diagnosis of renal infarction is often delayed and challenging due to the varied and elusive nature of its symptoms [2-3]. As presented in this case, abdominal pain served as the primary indicator that ultimately led to the diagnosis of renal infarction.

#### Case Report:

A 40-year-old patient presented to the emergency department with right flank pain that had been present since the previous day. The pain was associated with vomiting and apyrexia. The patient reported no radiation or other symptoms. He had a medical history of previous ST+ acute coronary syndrome, which had been revascularized by primary angioplasty with active stenting of the proximal IVA. During the examination, the patient appeared very ill, was apyretic, and had a normal respiratory rate. His blood pressure was 15/90, and he exhibited tachycardia with a heart rate of around 139. There were no signs of heart failure, but tenderness was noted in the right flank, with a soft abdomen and no palpable mass.

An electrocardiogram showed atrial fibrillation with a ventricular rate of around 130, which was previously unrecognized.

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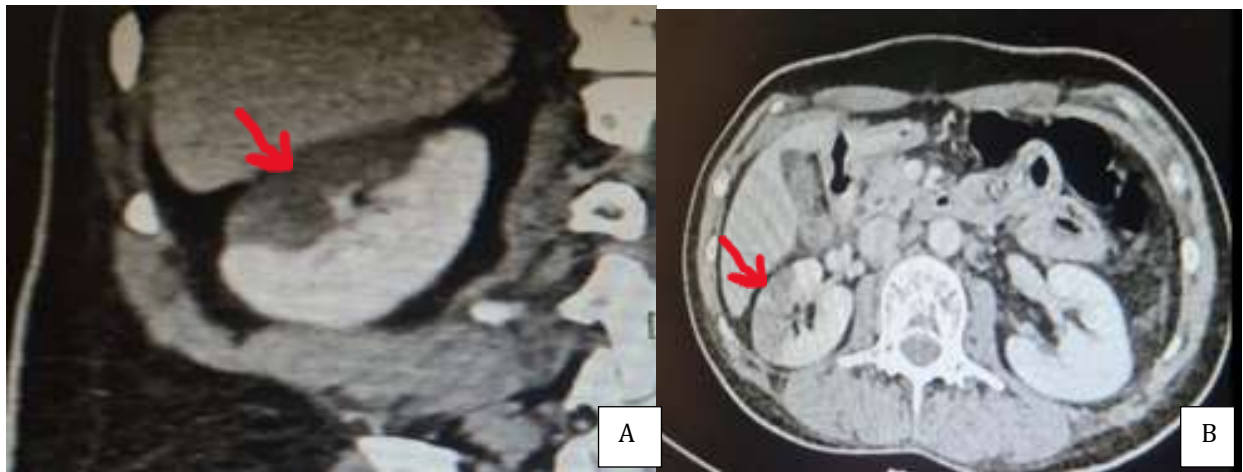
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The blood count was normal, except for a discrete hyperleukocytosis, and the CRP level was 13. Renal function was normal, and the urine cytobacteriological examination was negative. The rest of the workup showed no remarkable findings.

Given this clinical picture and resistance to the usual analgesics, an abdominopelvic CT scan with contrast injection was performed to rule out a surgical emergency. The scan revealed hypodense lesions on the upper pole of the right kidney. (Fig1)

Cardiac ultrasound revealed an ejection fraction of 45% and a left ventricle with anteroseptal akinesia, as well as sludge at the apex. The left atrium was dilated to 27 cm<sup>2</sup>.

The final diagnosis was right renal infarction secondary to a thromboembolic origin during the transition to atrial fibrillation (AF). Consequently, the patient was transferred to the cardiology department. Treatment initially involved the use of low-molecular-weight heparin, which was later switched to an oral anticoagulant upon discharge. Renal function was closely monitored during the follow-up.



**Fig 1:-** Abdomen CT scan with contrast, showed hypodense lesions of the upper pole of the right kidney.

### **Discussion:-**

Renal infarction is a condition characterized by complete or partial necrosis of the renal parenchyma that arises due to total or partial blockage of the main trunk of the renal artery, one of its branching arteries, or the renal vein. This obstruction hampers blood flow to the kidney, leading to tissue damage. The consequences of renal infarction can have significant implications for the long-term functional prognosis of the affected kidney.

The primary predisposing factor for renal infarction is the heart, which can lead to systemic arterial embolisms. Among the various underlying etiologies, atrial fibrillation is the most frequent and commonly reported cause [4]. In addition to atrial fibrillation, other cardiac conditions that can contribute to the formation of emboli and subsequently cause renal infarction include valvular heart disease, infectious endocarditis, and cardiomyopathy.

In the most reported cases, the clinical presentation commonly observed often mimics renal colic. In Bourgault's study, which included a series of 94 patients diagnosed between 1989 and 2011, a variety of clinical signs were reported. The most prevalent symptoms included flank pain, nausea, vomiting, and occasionally fever [5]. The similarity in symptoms between renal infarction and renal colic can lead to diagnostic challenges, potentially delaying the correct diagnosis and appropriate management.

Imaging is essential in the early therapy of renal infarction due to its frequently misleading clinical presentation. The use of an abdominopelvic CT scan with contrast material increases diagnostic sensitivity and is particularly beneficial. In fact, post-contrast injection, the infarcted zone manifests as a hypodense, triangular lesion with distinct boundaries and a vascular topography. Acute pyelonephritis may also be

suggested by this lesion; however, peripheral cortical corticis opacification is a key diagnostic indicator for renal infarction.

A lack of corticomedullary contrast in the T1 sequence and early hypersignal inside the infarcted region can be seen in both the T1 and T2 sequences of abdominal magnetic resonance imaging (MRI). Although MRI provides an alternative imaging method, using it as the primary method in the emergency room presents certain challenges [6].

The therapeutic management of renal infarction primarily revolves around anticoagulation, although it may also depend on the underlying etiology and the timing of the diagnosis. In certain cases, interventional treatments may be considered [7]. Currently, there is limited knowledge regarding the prognosis, and additional studies may be required to gain further insights into this aspect.

### **Conclusion:-**

Renal infarction is a rare condition that can easily be missed due to its atypical symptomatology. However, when encountered in a specific cardiovascular context, such as atrial fibrillation, it becomes crucial for healthcare professionals to maintain a high level of suspicion. Timely diagnosis and appropriate imaging are essential for the accurate identification and management of renal infarction. Heightened awareness of this condition can potentially lead to improved patient outcomes and prevent complications.

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