

Spontaneous rupture of an aneurysm of the renal artery

Rafik Ghrissi, Mohamed Amine Elghali

ABSTRACT

Introduction: Spontaneous rupture of aneurysm of the renal artery (ARA) is rare and can be serious. **Case Report:** We report a case of a female aged 65 years consulting for syncope and acute pain in the right flank. She had an extreme pallor, cold extremities, mottling, tachycardia and low systolic blood pressure. She is, so, in circulatory shock state. Abdominal examination had objectified a huge right lumbar arch covered by extensive bruising plates. There is a severe anemia in the biology exam. After rapid and intensive resuscitation, an abdominal computed tomography (CT) scan revealed a large retroperitoneal hematoma without indicating the source of bleeding. She had a surgical intervention discovering a ruptured ARA associated with ischemic lesions of the kidney. We had performed, therefore, a right nephrectomy. **Conclusion:** Aneurysm of the renal artery is rare. The diagnosis is based on scanner and angiography. The treatment can be surgical or endovascular.

Keywords: Diagnosis, Renal artery aneurysm, Rupture, Treatment

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INTRODUCTION

Spontaneous rupture of the renal artery is rare but can be potentially fatal. The symptoms may be abdominal and lumbar pain, circulatory shock, anemia and hematuria. Diagnosis is based on computed tomography scan. Treatment should be conservative when possible. It could be surgical or endovascular. We report a rare case of an aneurysm of renal artery complicated by spontaneous rupture, in an elderly female who had consulted for acute abdominal pain with circulatory shock.

CASE REPORT

A patient aged 65 years with no particular medical history had consulted for syncope and acute pain in the right flank. Physical examination revealed an extreme pallor, cold extremities, mottling and tachycardia at 120 bpm. Systolic blood pressure was low; it was at 80 mmHg. Indeed, the patient was in circulatory shock state. Abdominal examination had objectified a huge right lumbar arch with extensive bruising plates of the right lumbar and sub umbilical regions. A severe anemia at 2.7 g/dl was revealed in the biological examination.

A rapid and intensive medical resuscitation was launched immediately. It had allowed to do, quickly,

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an abdominal computed tomography (CT) scan, but, unfortunately, not a perfect angiography. Indeed, the patient was in a critical condition which had required stopping this imaging examination and her rapid transporting to operating room. However, the rapid analyze of the CT images had concluded to a large retroperitoneal hematoma (measuring 13 cm in long axis) and active bleeding. It had a heterogeneous appearance with a spontaneously hemorrhagic hyperdense component. After contrast injection, we have noticed a very intense enhancement during the arterial phase due to an extravasation of contrast product into retroperitoneum. The origin of this bleeding was not clear (probably from right kidney) given the imperfect angiography (Figure 1A–B). So the retained diagnosis was retroperitoneal hematoma. As etiology, we had thought to a rupture of renal artery aneurysm.

The patient was operated on. There was a large perirenal hematoma in connection with active bleeding from a ruptured aneurysm of the renal artery. We had intended to preserve the kidney and performing a vascular repair, but, we had noticed ischemic lesions of the kidney. In addition the hemodynamic status was unstable; therefore, it was necessary to perform a right nephrectomy (Figure 2). The postoperative course was simple.

DISCUSSION

The aneurysm of the renal artery (ARA) is a very rare clinical entity with an incidence ranging from 0.01% to 1% and accounts for 1% of all aneurysms [1]. The ARA is generally an incidental finding, although the incidence may increase as more people undergo imaging studies. The peak incidence is between 40 and 60 years [2]. And it would be equal between the sexes. Over 90% of renal artery aneurysms are extra-parenchymal; less than 10% are intra-parenchymal. Aneurysms are bilateral in 10% of cases. They can be saccular (in 70% of cases), fusiform (20%) or dissecting (10%) [2]. Arterial fibrodysplasia is often a direct contributor to the development of the aneurysm.

The natural evolution of aneurysm is not known with certainty, but it has potential complications including

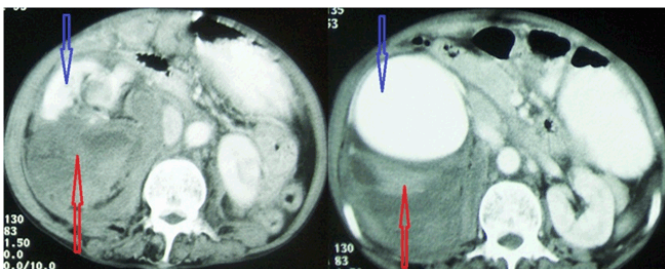


Figure 1: Computed tomography scan of the abdomen (after contrast injection) showing a large retroperitoneal hematoma (red arrows) and active bleeding: intense enhancement (blue arrows)



Figure 2: Operative specimen of the right kidney showing aneurysmal sac containing hematoma.

thrombosis and rupture. The rupture of the aneurysm is the most serious complication. Fortunately, this is a rare complication (less than 3% of the ARA), but its lethal risk may reach 80% [3]. It is favored by some factors such as pregnancy, high blood pressure, intra-parenchymal aneurysm, a size greater than 1.5 cm, and the nature partially calcified or not calcified of the aneurysmal wall [2]. Other rarer factors may be involved such as Behçet's disease, systemic lupus, and Marfan's syndrome [4]. For our patient, the only retained predisposing factor was the large size of the aneurysm. The rupture of ARA may be done in urinary tract (responsible for hematuria) [2], but also in the retro-peritoneum resulting in a retro-hemoperitoneum (in the case of our patient).

Clinically, ARA is often asymptomatic and are discovered incidentally on imaging. However, they may manifest as back and flank pain, hypertension or hematuria [5]. The presence of a bruising with lumbar arch facing is exceptional.

Doppler ultrasound has a considerable contribution to diagnosis. It allows objectifying the aneurysmal sac as an anechogenic image which has a vascular nature. Furthermore, it allows to analyze the trunk of the renal artery and to suspect rupture by seeking a retroperitoneal hematoma. The scanner gives more specific information. Indeed, the cuts without contrast injection are used to search calcifications on the aneurysmal wall and fresh hematomas (spontaneously hyperdense images). The arterial phase in contrast injection provides greater precision in determining the size of the aneurysm and its neck. Besides, it allows determining the presence or absence of renal lesions [6].

The treatment is most appropriate in symptomatic cases before the occurrence of rupture.

The indications for treatment are: symptomatic ARA, a size greater than 2.5 cm, the thrombosed and ruptured ones, pregnant women and those in childbearing age [2]. The treatment is even more important in rare instances of solitary kidneys with ARA [7]. The natural history of ARA in pregnancy involves progressive weakening of the arterial wall, as a result of the effect of increased circulating estrogens, and hyperdynamic circulation with increased cardiac output leading to further weakening and eventual rupture [8]. In this situation, the mortality rate for the mother and the fetus can be as high as 50% and 80%, respectively [8].

For the ruptured aneurysm, surgical treatment is the rule. It aimed, whenever possible, at preserving the kidney by performing an arterial repair. It can be ex-situ or in-situ (aneurysmectomy and aortorenal bypass) [2]. The indication for nephrectomy is reserved for cases of renal infarction, severe renal ischemic lesions and retroperitoneal rupture with precarious hemodynamic status which was the case of our patient [5].

Radiologic intervention (endovascular treatment) is an alternative to surgery. It corresponds to embolization of the aneurysm using a temporary or permanent occlusive agent (metal coils or biological glue) [9].

CONCLUSION

The rupture of renal artery aneurysm is rare and severe. Its diagnosis must be rapid. It is established by Doppler ultrasound and computed tomography scan. Treatment (surgical or endovascular) should be made, at best, before rupture or thrombosis. It should, whenever possible, preserve the kidney.

Author Contributions

Rafik Ghrissi – Substantial contributions to conception and design, Acquisition of data, Analysis and interpretation of data, Drafting the article, Revising it critically for important intellectual content, Final approval of the version to be published

Mohamed Amine Elghali – Analysis and interpretation of data, Drafting the article, Revising it critically for important intellectual content, Group: Final approval of the version to be published

Guarantor

The corresponding author is the guarantor of submission.

Conflict of Interest

Authors declare no conflict of interest.

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