Functional medicine

The rupture of an abdominal aortic aneurysm at the level of horseshoe kidney: A case report

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ABSTRACT

Kidney anomalies are always a challenge even for the most experienced vascular and urologic surgeons in the reconstruction of the abdominal aortic segment. In the literature, the most common anomalies of the kidney are the horseshoe kidney.

The case: A 77-year-old male headed to the emergency department with complaints of acute abdominal pain and sudden onset of fatigue. The enhanced CT-scan performed and the horseshoe kidney with the ruptured aortic aneurysm seen. The cardiovascular and transplantation surgery team decided to perform explorative surgery.

Introduction

Horseshoe kidney malformation is one of the most common fusion anomalies of the kidney with a prevalence of 1 in 400–800 of the healthy population. During embryogenesis, the lower poles of the kidney fused. Therefore, rotation and ascent could be prevented. The ureters are displaced laterally and superiorly on the renal pelvis as a result of malformation.

Most interestingly, the patients with horseshoe kidney are most likely to have acquired diseases. Especially; with advancing years, the likelihood of these situations increases.

Abdominal aortic aneurysm (AAA) is a disease that involves the progressive dilation of the abdominal aorta. It can be seen with horseshoe kidney malformation. However, this is a rare situation. Although the mortality rate of patients with AAA rupture is high, no effective treatments are available for inhibiting aneurysmal growth.

Since the blood supply to a horseshoe kidney is frequently anomalous and may arise of the multiple sites on the abdominal aorta. The combination of horseshoe kidney with abdominal aortic aneurysm poses a severe problem in the preservation of renal function with operative treatment of the aneurysm. We report here our case with this rare combination and the acute surgical treatment modality with it.

The case

A 77-year-old male patient presented with complaints of acute abdominal pain and sudden onset fatigue. The general condition of the patient rapidly deteriorating. Emergent abdominal ultrasound (USG) performed. Retroperitoneal, septal and heterogeneous areas seen in the USG in favor of organized hematoma. Afterward, the enhanced CT-scan performed and the horseshoe kidney with the ruptured aortic aneurysm veiled (Fig. 1).

The cardiovascular and the transplantation surgery team decided to perform an emergent explorative surgery.

Median laparotomy performed. Team rapidly reached to the retroperitoneal area and clamped aorta proximally. The horseshoe kidney liberated from surrounding tissues. Both renal arteries, veins and ureters released and separated. The ruptured aneurysm was hardly seen below the renal arteries. Although isthmus excision planned preoperatively, the plan changed intraoperatively. Because it’s seen that, kidneys are entirely independent of the aneurysm. Then, the horseshoe kidney mobilized and elevated caudally. Behind the kidney, the ruptured aortic aneurysm is seen clearly. An aortic bifemoral bypass performed with a dacron graft. Lumbar arteries at aneurysm level were sutured. After the hemostasis, drains correctly placed, and the operation was terminated.

Abbreviations: AAA, Abdominal aortic aneurysm; CT, Computerized tomography; USG, Ultrasound.

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patients due to renal artery originating from the aneurysm. Renal complications reported for this group for seven patients (17%) and six patients (14%) died. In our case, as seen in preoperative enhanced CT, AAA observed in the inferior of renal artery origins and aortic clamping performed from the lower level of renal arteries. Therefore, bilateral kidneys were not subjected to warm ischemia during the operation and no postoperative renal dysfunction observed in our patient.

In a recent study, a case of a bilateral pelvic kidney with fusion anomaly associated with retroperitoneal ruptured AAA was reported. They were preferred endovascular aneurysm repair method because the patient was 90 years old and had severe obesity. With CT angiography, they have detected that the right kidney had two arteries in this report. One originates from the right common iliac artery, and the other one arises from the right hypogastric artery. Left kidney had one artery, and it originates from the left common iliac artery. In the case right aorto-uni-iliac endograft was performed by occluding the upper pole of the right kidney, and left common arterial occlusion was performed above the left renal artery. After a femorofemoral cross bypass, the operation completed. In the postoperative period, the patient had acute renal failure. He did not need dialysis and at the postoperative 1st-month renal function was reported to be in the direction of improvement. This case shows the importance of preserving renal arteries in aortic aneurysm repair.

Conclusion

The coexistence of abdominal aortic aneurysms and horseshoe kidney is a compelling condition for surgeons and interventional radiologists. However, inexperienced hands the aortic aneurysm has effective and feasible treatment options. Preservation of renal functions that play an essential role in the morbidity and mortality of patients is one of the most critical conditions in these surgeries.

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Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.eucr.2019.101110.

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