Renal Transplant: When the Ultrasound Does the Diagnosis

Carolina Cairrão Padilha*, Lara Delgado

Department of Radiology, Centro Hospitalar de Lisboa Ocidental, Lisbon, Portugal

Section 2 – Answer

Case

A 55-year-old woman, presented in your hospital with renal dysfunction of unknown cause, 2 years after renal graft. A percutaneous renal biopsy was done and protocol 24-h postbiopsy ultrasound (US) with Doppler was performed (see the figures below). What is your interpretation/diagnosis?

INTERPRETATION

In the lower pole of the renal graft, we observe an anechogenic image, which fills with color in the color Doppler [Figure 1].

With the spectral Doppler US [Figure 2], there is a clear increase of velocity of the systolic peak (vs.), turbulent flow, and also a reduction of the resistance index.

These aspects are compatible with an arteriovenous fistula, a complication of the graft biopsy.

DISCUSSION

Percutaneous biopsy is commonly performed in grafts when rejection is suspected. The most common complications are prolonged gross hematuria, perirenal hematoma, intrarenal arteriovenous fistula, and pseudoaneurysm.^[1-3]



Figure 1: Lower pole of the renal graft with color Doppler and grayscale ultrasound

Received: 11-01-2022 Revised: 20-01-2022 Accepted: 27-01-2022 Available Online: 03-05-2022

Access this article online	
Quick Response Code:	Website: https://journals.lww.com/jmut
	DOI: 10.4103/jmu.jmu_5_22

Most of the arteriovenous fistulas are small and self-limiting, with no symptoms, such as in our case. Although in some cases, large or persistent arteriovenous fistulas are may cause hematuria, dysfunction, vascular ischemia, and high output heart failure due to the steal phenomenon.

Arteriovenous fistulas are easily identified in the US. They appear as localized areas of disorganized color that extend outside the confines of the normal vessel due to the vibration in the tissue that surrounds the fistula. Arteriovenous fistulas also appear as abnormal high-velocity turbulent flow isolated to a single segmental or interlobar artery and paired vein that produces aliasing on color Doppler images. In large fistulas, which was not our case, the feeding artery shows a high-velocity low-resistance waveform, and the draining vein demonstrates arterialization.^[2,3]

Most complications after biopsy are treated conservatively.^[1-3]



Figure 2: Lower pole of the renal graft with color Doppler and spectral Doppler

Address for correspondence: Dr. Carolina Cairrão Padilha, Department of Radiology, Centro Hospitalar de Lisboa Ocidental, Estrada Forte Do Alto Duque, 1449-005, Lisbon, Portugal. E-mail: carolinacairraopadilha@gmail.com

This is an open access journal, and articles are distributed under the terms of the Creative Commons Attribution-NonCommercial-ShareAlike 4.0 License, which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.

For reprints contact: WKHLRPMedknow_reprints@wolterskluwer.com

How to cite this article: Padilha CC, Delgado L. Renal transplant: When the ultrasound does the diagnosis. J Med Ultrasound 2023;31:346-7.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient has given her consent for her images and other clinical information to be reported in the journal. The patient understands that her name and initials will not be published and due efforts will be made to conceal her identity, but anonymity cannot be guaranteed.

Financial support and sponsorship Nil.

Conflicts of interest

There are no conflicts of interest.

The other authors declared no conflicts of interest in writing this article.

REFERENCES

- Tapia-Canelas C, Zometa R, López-Oliva MO, Jiménez C, Rivas B, Escuin F, et al. Complicaciones asociadas a la biopsia de injertos renales en pacientes trasplantados [Complications associated with renal graft biopsy in transplant patients]. Nefrologia. 2014;34(1):115-9. Spanish
- Inci MF, Ozkan F, See TC, Tatli S. Renal transplant complications: diagnostic and therapeutic role of radiology. Can Assoc Radiol J 2014;65:242-52.
- Akbar SA, Jafri SZ, Amendola MA, Madrazo BL, Salem R, Bis KG. Complications of renal transplantation. Radiographics 2005;25:1335-56.