



eISSN 2279-7483

<https://www.pagepressjournals.org/index.php/vl/index>

Publisher's disclaimer. E-publishing ahead of print is increasingly important for the rapid dissemination of science. The **Early Access** service lets users access peer-reviewed articles well before print / regular issue publication, significantly reducing the time it takes for critical findings to reach the research community. These articles are searchable and citable by their DOI (Digital Object Identifier).

Veins and Lymphatics is, therefore, e-publishing PDF files of an early version of manuscripts that have undergone a regular peer review and have been accepted for publication, but have not been through the typesetting, pagination and proofreading processes, which may lead to differences between this version and the final one. The final version of the manuscript will then appear in a regular issue of the journal.

E-publishing of this PDF file has been approved by the authors.

All legal disclaimers applicable to the journal apply to this production process as well.

Veins and Lymphatics 2023 [online ahead of print]

To cite this article:

Simona Sica, Francesca De Nigris, Fabrizio Minelli, et al. Extensive congenital asymptomatic renal arteriovenous malformation. *Veins and Lymphatics*. 2023;12:11695. doi:10.4081/vl.2023.11695

 ©The Author(s), 2023
Licensee PAGEPress, Italy

The publisher is not responsible for the content or functionality of any supporting information supplied by the authors. Any queries should be directed to the corresponding author for the article.

All claims expressed in this article are solely those of the authors and do not necessarily represent those of their affiliated organizations, or those of the publisher, the editors and the reviewers. Any product that may be evaluated in this article or claim that may be made by its manufacturer is not guaranteed or endorsed by the publisher.

Extensive congenital asymptomatic renal arteriovenous malformation

Simona Sica^{1,2}, Francesca De Nigris^{1,2}, Fabrizio Minelli^{1,2}, Alessandro Cina^{1,3}, Giovanni Tinelli^{1,2},
Yamume Tshomba^{1,2}

¹Università Cattolica del Sacro Cuore, Rome;

²Unit of Vascular Surgery, and ³Unit of Radiology, Fondazione Policlinico Universitario A. Gemelli
IRCCS, Rome, Italy

Corresponding author: Simona Sica, Università Cattolica del Sacro Cuore, Largo Agostino
Gemelli, 8 - 00168 Roma, Italy.

Tel. +39 345 83 18878. E-mail: simonasica1@gmail.com

Key words: renal arteriovenous malformation, AVM, personalized medicine.

The publisher is not responsible for the content or functionality of any supporting information supplied by the authors. Any queries should be directed to the corresponding author for the article.

All claims expressed in this article are solely those of the authors and do not necessarily represent those of their affiliated organizations, or those of the publisher, the editors and the reviewers. Any product that may be evaluated in this article or claim that may be made by its manufacturer is not guaranteed or endorsed by the publisher.

Authors' contributions: all the authors made a substantive intellectual contribution. All the authors have read and approved the final version of the manuscript and agreed to be accountable for all aspects of the work.

Conflict of interest: the authors declare no potential conflict of interest.

Funding: none.

Availability of data and materials: all data generated or analyzed during this study are included in this published article.

The publisher is not responsible for the content or functionality of any supporting information supplied by the authors. Any queries should be directed to the corresponding author for the article.

All claims expressed in this article are solely those of the authors and do not necessarily represent those of their affiliated organizations, or those of the publisher, the editors and the reviewers. Any product that may be evaluated in this article or claim that may be made by its manufacturer is not guaranteed or endorsed by the publisher.

Abstract

Renal arteriovenous malformations (AVM) are abnormal communications between the intrarenal arterial and venous systems. These lesions may present with a wide range of signs and symptoms, including hypertension and hematuria. We report a case of a 71-year-old woman with incidentally diagnosis of asymptomatic right renal AVM.

The publisher is not responsible for the content or functionality of any supporting information supplied by the authors. Any queries should be directed to the corresponding author for the article.

All claims expressed in this article are solely those of the authors and do not necessarily represent those of their affiliated organizations, or those of the publisher, the editors and the reviewers. Any product that may be evaluated in this article or claim that may be made by its manufacturer is not guaranteed or endorsed by the publisher.

Congenital Arteriovenous Malformations (AVMs) are abnormal communications between arteries and veins with a vascular nidus that bypass the capillary bed.¹ Congenital renal AVM are rare, with reported incidence of 0.04%.² However, the true prevalence may be higher because many renal AV shunts remain clinically asymptomatic. Symptoms include massive hematuria, retroperitoneal hemorrhage, flank pain, hypertension, and high-output heart failure.³

We report a case of a 71-year-old woman with incidentally diagnosis of asymptomatic right renal AVM. The patient's consent for publication was obtained.

The patient had no hematuria, no hypertension, and renal function was normal with a serum creatinine of 0.75 mg/dL and a glomerular filtration rate of 81 mL/min/1.73m². Medical history included dyslipidemia and arthrosis. The patient did not report any history of renal trauma or recent medical intervention in which percutaneous instrumentation was used.

A Computed Tomography (CT) angiography showed a large AVM in the right kidney (*Figure 1, Appendix 1*). Multiple tortuous and coiled feeding arteries directly shunting into a single venous sac were observed (*Figure 2*).

In consideration of the absence of symptoms and the age of the patient, no treatment was performed. Imaging follow-up with Color Doppler ultrasonography was performed at three and six months from the diagnosis, and yearly thereafter. A strict clinical follow-up and monitoring of the renal function was performed.

Indications for treating an AVM are the progressive increase in the size, recurrent or persistent hematuria, and hemodynamic effects associated with the abnormality, especially hypertension, and high-output cardiac failure.³ Surgical procedures, including nephrectomy and ligation of the feeding

The publisher is not responsible for the content or functionality of any supporting information supplied by the authors. Any queries should be directed to the corresponding author for the article.

All claims expressed in this article are solely those of the authors and do not necessarily represent those of their affiliated organizations, or those of the publisher, the editors and the reviewers. Any product that may be evaluated in this article or claim that may be made by its manufacturer is not guaranteed or endorsed by the publisher.

artery and endovascular embolization have been described.⁴ However, in case of asymptomatic incidentally diagnosed renal AVM, conservative treatment should be considered.

The publisher is not responsible for the content or functionality of any supporting information supplied by the authors. Any queries should be directed to the corresponding author for the article.

All claims expressed in this article are solely those of the authors and do not necessarily represent those of their affiliated organizations, or those of the publisher, the editors and the reviewers. Any product that may be evaluated in this article or claim that may be made by its manufacturer is not guaranteed or endorsed by the publisher.

References

1. Cura M, Elmerhi F, Suri R, et al. Vascular malformations and arteriovenous fistulas of the kidney. *Acta Radiologica* 2010;51:144-9.
2. Cho KJ, Stanley JC. Non-neoplastic congenital and acquired renal arteriovenous malformations and fistulas. *Radiology* 1978;129:333-43.
3. Carrafiello G, Laganà D, Peroni G, et al. Gross hematuria caused by a congenital intrarenal arteriovenous malformation: a case report. *Journal of medical Case Reports* 2011;5:510.
4. Maruno M, Kiyosue H, Tanoue S, et al. Renal Arteriovenous Shunts: Clinical Features, Imaging Appearance, and Transcatheter Embolization Based on Angioarchitecture. *Radiographics* 2016;36:580-95.

The publisher is not responsible for the content or functionality of any supporting information supplied by the authors. Any queries should be directed to the corresponding author for the article.

All claims expressed in this article are solely those of the authors and do not necessarily represent those of their affiliated organizations, or those of the publisher, the editors and the reviewers. Any product that may be evaluated in this article or claim that may be made by its manufacturer is not guaranteed or endorsed by the publisher.

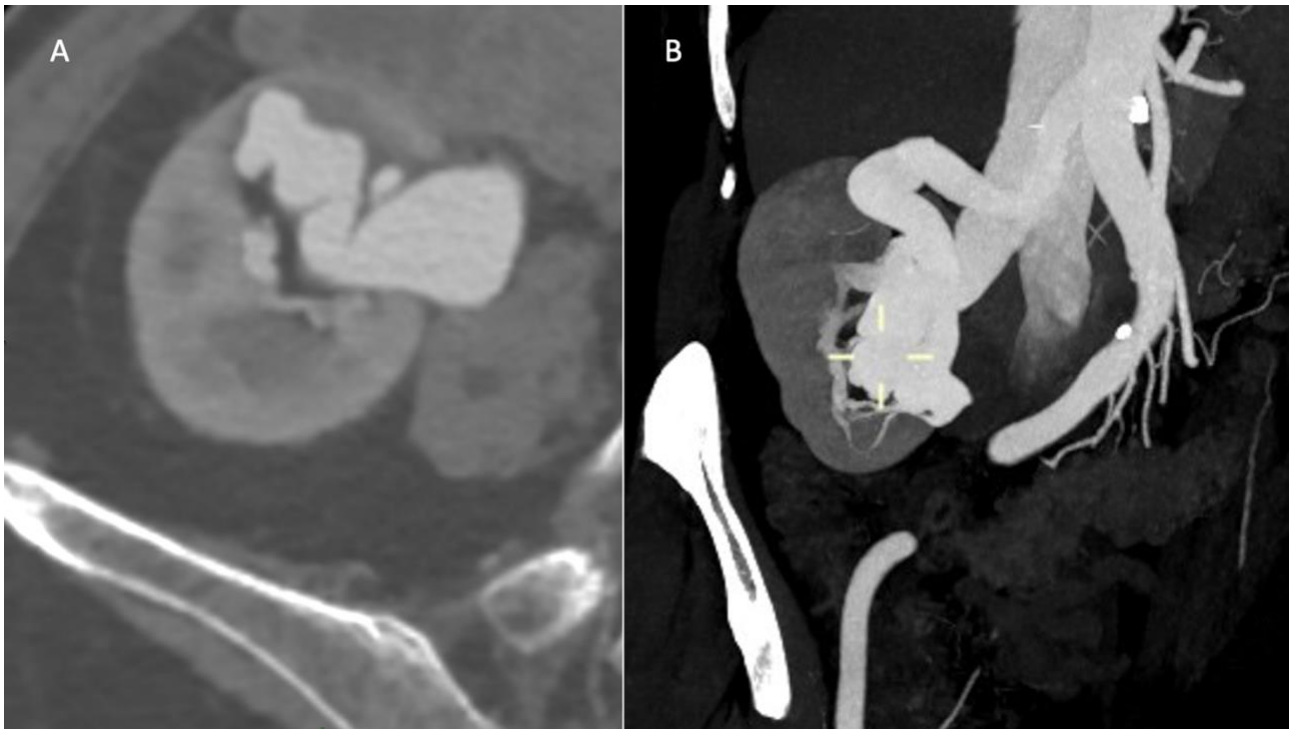
Figure 1. 3D Volume-rendering of the Computed Tomography (CT) angiography showing the right renal arteriovenous malformations.



The publisher is not responsible for the content or functionality of any supporting information supplied by the authors. Any queries should be directed to the corresponding author for the article.

All claims expressed in this article are solely those of the authors and do not necessarily represent those of their affiliated organizations, or those of the publisher, the editors and the reviewers. Any product that may be evaluated in this article or claim that may be made by its manufacturer is not guaranteed or endorsed by the publisher.

Figure 2. Maximum intensity projection, in axial **A)** and coronal **B)** plane of CT renal angiography in arterial phase demonstrating aneurysmal dilatation of segmental branch of main renal artery with early opacification of renal vein.



The publisher is not responsible for the content or functionality of any supporting information supplied by the authors. Any queries should be directed to the corresponding author for the article.

All claims expressed in this article are solely those of the authors and do not necessarily represent those of their affiliated organizations, or those of the publisher, the editors and the reviewers. Any product that may be evaluated in this article or claim that may be made by its manufacturer is not guaranteed or endorsed by the publisher.

Supplementary Materials:

Appendix 1. 3D Volume-rendering of the Computed Tomography (CT) angiography showing the right renal arteriovenous malformations.

The publisher is not responsible for the content or functionality of any supporting information supplied by the authors. Any queries should be directed to the corresponding author for the article.

All claims expressed in this article are solely those of the authors and do not necessarily represent those of their affiliated organizations, or those of the publisher, the editors and the reviewers. Any product that may be evaluated in this article or claim that may be made by its manufacturer is not guaranteed or endorsed by the publisher.