

Radial artery pseudo-aneurysm detected with a portable handheld ultrasound device in a COVID-19 patient

Lorenzo Loffredo, Pasquale Pignatelli

Department of Clinical Internal, Anesthesiologic and Cardiovascular Science, Sapienza University of Rome, Rome, Italy

Correspondence to:

Prof. Lorenzo Loffredo,
Department of Clinical Internal,
Anesthesiologic
and Cardiovascular Science,
Sapienza University of Rome,
Viale del Policlinico 155,
Rome, 00161, Italy,
phone: +39 064 997 01 03,
e-mail:
lorenzo.loffredo@uniroma1.it

Copyright by the Author(s), 2023

DOI: 10.33963/KPa2022.0218

Received:

June 6, 2022

Accepted:

July 29, 2022

Early publication date:

September 15, 2022

A 78-year-old male patient with COVID-19 was admitted to the emergency room for hemorrhagic shock related to a ruptured middle-colic artery aneurysm. In the days before admission, he was treated for a COVID-19 infection with monoclonal antibodies. In the emergency room, he appeared in a very serious clinical condition, was intubated and treated with inotropic drugs. Embolization of the middle colic artery was performed to stop active bleeding, and cannulation of the left radial artery was performed.

At admission to the medical ward, a pseudoaneurysm of the radial artery (Figure 1A) was detected with a portable ultrasound device (Butterfly IQ+). In the following days, the size of the pseudoaneurysm increased (Figure 1B).

The pseudo-aneurysmal formation was later confirmed by computed tomography (CT) (Figure 1C). CT showed a diameter of about 8 mm at the level of the distal third of the radial

artery, corresponding to the distal radial epiphysis. The following day a sudden rupture of the pseudoaneurysm was observed. Selective arteriography of the radial artery confirmed the pseudoaneurysm of the distal third of the artery with active spread of contrast medium. The pseudoaneurysm was embolized with a microcatheter. No blood flow was detected after embolization with a portable ultrasound device (Figure 1D). The patient was discharged in good clinical condition.

Pseudoaneurysm of the artery represents a rare complication (incidence of 0.048% [1]) that can occur after attempts to canalize the radial arteries [2]. We cannot exclude that COVID-19 increased the risk of fragility of the arterial wall. Inflammation of the arteries and increased oxidative stress could play a pivotal role in increasing vascular complications in COVID-19 patients [3, 4]. Some studies reported rupture of aneurysms or dissections aggravated by COVID-19 [5].

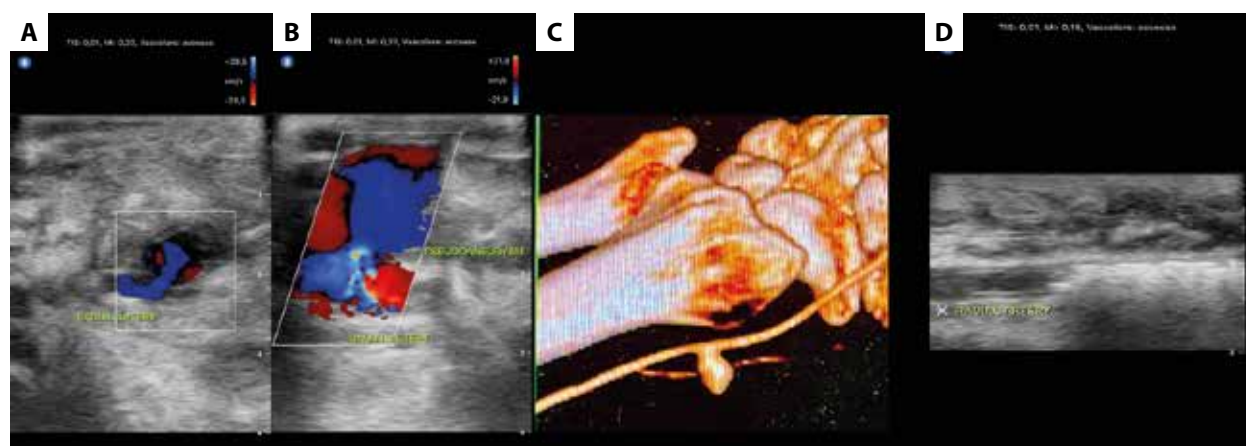


Figure 1. A. Pseudoaneurysm of the radial artery detected with a portable ultrasound device (Butterfly IQ+) upon admission to the medical ward. B. Increased size of pseudoaneurysm evaluated with a portable ultrasound device. C. Pseudoaneurysm evaluated by computed tomography. D. No blood flow after embolization evaluated with a portable ultrasound device

Portable ultrasound reliably diagnoses radial artery pseudoaneurysms and is a valuable tool for early detection of vascular diseases.

Article information

Conflict of interest: None declared.

Funding: None.

Open access: This article is available in open access under Creative Commons Attribution-Non-Commercial-No Derivatives 4.0 International (CC BY-NC-ND 4.0) license, allowing to download articles and share them with others as long as they credit the authors and the publisher, but without permission to change them in any way or use them commercially. For commercial use, please contact the journal office at kardiologiapolska@ptkardio.pl.

REFERENCES

1. Roy S, Kabach M, Patel DB, et al. Radial artery access complications: prevention, diagnosis and management. *Cardiovasc Revasc Med.* 2022; 40: 163–171, doi: [10.1016/j.carrev.2021.12.007](https://doi.org/10.1016/j.carrev.2021.12.007), indexed in Pubmed: 34952824.
2. Collins N, Wainstein R, Ward M, et al. Pseudoaneurysm after transradial cardiac catheterization: case series and review of the literature. *Catheter Cardiovasc Interv.* 2012; 80(2): 283–287, doi: [10.1002/ccd.23216](https://doi.org/10.1002/ccd.23216), indexed in Pubmed: 21735525.
3. Loffredo L, Violi F. COVID-19 and cardiovascular injury: A role for oxidative stress and antioxidant treatment? *Int J Cardiol.* 2020; 312: 136, doi: [10.1016/j.ijcard.2020.04.066](https://doi.org/10.1016/j.ijcard.2020.04.066), indexed in Pubmed: 32505331.
4. Violi F, Pastori D, Cangemi R, et al. Hypercoagulation and antithrombotic treatment in coronavirus 2019: a new challenge. *Thromb Haemost.* 2020; 120(6): 949–956, doi: [10.1055/s-0040-1710317](https://doi.org/10.1055/s-0040-1710317), indexed in Pubmed: 32349133.
5. Silvestri V, Recchia GE. Aortic Pathology During COVID-19 Pandemics. *Clinical Reports in Literature and Open Questions on the two Co-Occurring Conditions.* *Ann Vasc Surg.* 2021; 75: 109–119, doi: [10.1016/j.avsg.2021.02.037](https://doi.org/10.1016/j.avsg.2021.02.037), indexed in Pubmed: 33823253.