Case Report

An Unusual Volar Wrist Mass: Radial Artery Pseudoaneurysm Following Transradial Catheterization

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Abstract

Arterial pseudoaneurysms can develop secondary to a vessel injury, for example, an arterial line installation. We present a case of an 18-year-old female with mitochondrial encephalopathy, lactic acidosis, and stroke-like episodes syndrome who developed left radial artery and right brachial artery pseudoaneurysms secondary to arterial line placement and repeated blood draws, respectively. The ultrasonographic features of pulsating mass in connection with an artery and the yin-yang sign, combined with the patient’s history, allowed accurate diagnosis. She was referred to vascular surgery for definitive treatment.

Keywords: Pseudoaneurysm, radial artery, yin-yang sign

Introduction

Arterial pseudoaneurysms, also referred to as false aneurysms, can develop secondary to a vessel injury, sometimes an iatrogenic complication of arterial catheterization or arterial blood draw.[1] It is not a true aneurysm, in that its wall is not composed of the arterial wall three layers but only the outermost two, as the blood gets trapped between the tunica media and the tunica adventitia.[2]

Case Report

This is a case of an 18-year-old female with a medical history of IgM nephropathy with resultant end-stage renal disease undergoing regular peritoneal dialysis for the past 2 years. She presented to the emergency department with visual hallucinations and intermittent jerky movements of her distal limbs and trunks and was hospitalized due to her worsening neurological condition.

After serial workups on the neurology ward, mitochondrial gene analysis revealed that she had mitochondrial encephalopathy, lactic acidosis, and stroke-like episodes (MELAS) syndrome.

During hospitalization, she was transferred to the intensive care unit (ICU) because of deteriorating heart function and she received medications for acute decompensated heart failure. Repeated needling for blood tests was performed on bilateral elbow and hand areas, as well as arterial line placement for ICU monitoring in the left radial artery at the level of the wrist.

After discharge, two tender pigeon egg-sized nodules developed on the left wrist and right cubital fossa [Figure 1]. The nodules enlarged gradually over a 1-month period, so she sought medical attention and was referred to the physical medicine and rehabilitation department for a musculoskeletal ultrasound (MSKUS). Prescanning physical findings showed that there was pulsation in the two nodules. MSKUS findings revealed one pseudoaneurysm of the left radial artery at the wrist, measuring approximately 1.5 cm × 1.5 cm × 1.0 cm [Figures 2-4 and Video 1], and another one of the right brachial artery at the cubital fossa,

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How to cite this article: Boudier-Revéret M, Lin MT, Wang TG. An unusual volar wrist mass: Radial artery pseudoaneurysm following transradial catheterization. J Med Ultrasound 2020;28:117-9.
measuring approximately 1.0 cm × 1.0 cm × 1.0 cm, without active blood flow, suggesting complete thrombus formation within the pseudoaneurysm.

She was referred to a vascular surgeon and excision was scheduled. A video case of her left radial artery pseudoaneurysm is presented with this article [Video 1].

**DISCUSSION**

A pseudoaneurysm, sometimes referred to as a traumatic aneurysm, is the consequence of a tear in the arterial wall with ensuing hemorrhage contained by a thin-walled capsule, which explains why it tends to expand rapidly. It does not contain all three layers of a true aneurysm (intima, media, and adventitia) but only the two outermost ones (media and adventitia). Management can include early compression, US-guided thrombin injection, or surgical excision.

On Doppler ultrasound, one can appreciate the typical bidirectional flow caused by swirling of blood, referred to as the yin-yang sign [Video 1]. Although this can be seen both in true and pseudoaneurysms, it is helpful in distinguishing them from other vascular masses such as angiomyolipomas.

**CONCLUSION**

Although physical medicine and rehabilitation specialists are not the ones managing these types of vascular masses, they might encounter them in rehabilitation patients who have had arterial lines while in the ICU or with patients referred for MSKUS in the context of a wrist mass.

**Acknowledgments**

All persons who have made substantial contributions to the work reported in the manuscript (e.g. technical help, writing and editing assistance, and general support), but who do not meet the criteria for authorship, are named in the Acknowledgments and have given us their written permission to be named. If we have not included an Acknowledgment in our manuscript, it indicates that we have not received substantial contributions from non-authors.

**Declaration of patient consent**

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

Financial support and sponsorship
Nil.

Conflicts of interest
There are no conflicts of interest.

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