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Case report

VOLAR GANGLION CYST OF THE WRIST SIMULATING A RADIAL ARTERY PSEUDOANEURYSM: A CASE REPORT

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ABSTRACT

Pseudoaneurysms (PAs) of the radial artery are common following percutaneous cardiac catheterization. Ganglion cysts (GCs) are also a commonly identified entity in patients with history of trauma, osteoarthritis or inflammatory joint diseases. It can be challenging to differentiate a GC from a PA of the radial artery if the ganglion is located adjacent to the radial artery, especially when the medical history is suspicious. We herein present a rare case of a GC in the wrist simulating an iatrogenic PA of the radial artery in an elderly patient who had undergone to a recent diagnostic cardiac catheterization at the same site. Clinicians should be aware of the diagnostic techniques for the study of superficial lesions of the wrist in order to recognize the possible pathologies in the differential diagnosis.

1. Introduction

Volar ganglion cysts (GCs) are uncommon soft tissue tumors. It can be challenging to differentiate a GC from a pseudoaneurysm (PA) of the radial artery if the ganglion is located adjacent to the radial artery, especially when the medical history is suggestive [1].

Today, radial artery access is frequently chosen for cardiac intervention procedures. It has advantages compared to femoral artery access because the radial artery is anatomically superficial. Therefore, minor swelling can be easily recognized, and control of bleeding from the artery is straightforward. Moreover, the radial artery forms the deep and superficial palmar arches with the ulnar artery, and these arches help to prevent ischemic complications of the hand. However, the formation of radial iatrogenic hematomas or PAs is common in the literature [2].

Herein, we report a case of a volar GC of the wrist in a elderly patient with a recent history of transradial cardiac catheterization, which initially was misdiagnosed as radial artery PA.

2. Case report

78-years-old female patient was referred to our department for evaluation of a swelling along the radial aspect of the volar side of the wrist. The patient complained of a slowly enlarging swelling, which had become increasingly painful over the last 2 months.

Her medical history revealed wrist osteoarthritis, which had been treated with oral non-steroidal anti-inflammatory drugs (NSAIDs) for the last 5 years. There was also a history of unspecified wrist trauma 10 years earlier. Additionally, the patient mentioned a more recent painful arterial puncture during a diagnostic cardiac catheterization through the ipsilateral brachial artery 8 months before.

During the physical examination, a soft, mildly tender, and pulsatile swelling was palpated on the radial aspect of the wrist. No obvious hematoma or overlying ecchymosis was noted. There were no signs of ischemia or claudication of the ipsilateral forearm or hand nor any neurologic deficits.

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Thus, due to the swelling location, clinical presentation, and history of transradial catheterization, a clinical diagnosis of radial artery PA was initially suspected.

Plain radiographs were obtained, which showed a soft tissue mass adjacent to the radial styloid and scaphoid without evidence of soft tissue calcification or osseous abnormality (Figure 1).

Ultrasound (US) assessment of the region revealed an approximately 3cm cystic, fluid-filled, avascular lesion adjacent to the brachial artery, which was compressed and slightly displaced (Figure 3). No flow disturbance was seen in the radial and ulnar run-off arteries. After US scanning, which confirmed the complete avascularity of the lesion by Doppler techniques, a different radiological diagnosis of volar GC of the wrist was proposed.

To better assess the lesion, the patient was submitted to a magnetic resonance imaging (MRI) examination, which showed a 3 cm diameter cystic lesion centered about the radial aspect of the scaphoid, extending from the radial styloid. The lesion was hypointense to muscle on T1-weighted, and homogeneously hyperintense on T2-weighted images. It was intimately associated with the wall of the distal radial artery. Additionally, a stalk-like connection to the radio-carpal joint was noted (Figure 4). The lesion was removed surgically. In order to avoid post-surgical recurrence, surgery included the resection of the communicating stalk with the joint. Finally, the tissue was sent for histopathological examination, which confirmed a GC. Following the surgery, the patient did well without recurrence of symptoms or need for follow-up imaging.

Figure 1 A (upper) and B (lower). Patient photograph. A soft, mildly tender, and pulsatile swelling on the radial aspect of the wrist.

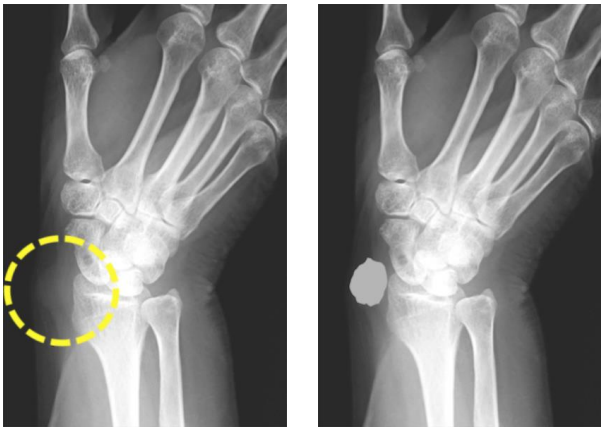

Figure 2 A (left) and B (right). (a) Radiographic semipronated oblique view of the wrist shows a soft tissue mass (yellow circle) adjacent to the radial styloid and scaphoid without evidence of associated calcification or osseous abnormality. (b) Corrisponding schematic drawing.

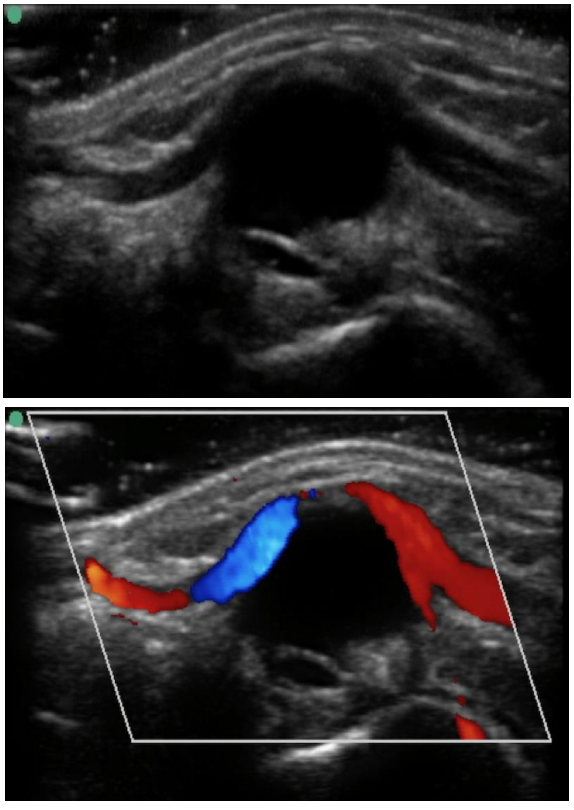

Figure 3 A (upper) and B (lower). B-Mode (a) and color-Doppler (b) US images reveal a cystic, fluid-filled, avascular lesion adjacent to the brachial artery, which is compressed and slightly displaced.

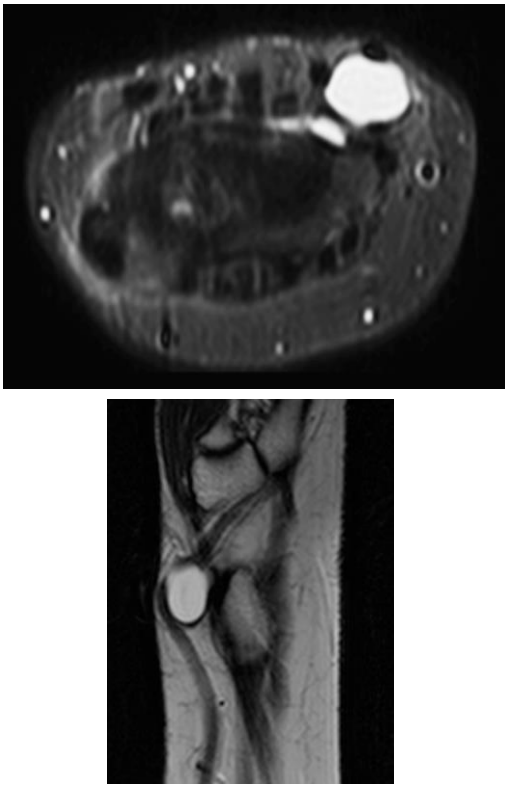

Figure 4 A (upper) and B (lower). MR axial fat saturated T2-weighted (a) and sagittal T2-weighted (b) images show a 3 cm cystic mass centered about the radial aspect of the scaphoid, which extends from the radial styloid. The cystic lesion is intimately associated with the wall of the distal radial artery A stalk which connects with the radio-carpic joint is also seen.

3. Discussion

GCs are the most common lesions with mass effect arising in the hand and wrist, accounting for 50–70% of all soft tissue tumours [3]. The elevated intra-articular pressure, due to accumulation of joint fluid in these diseases, causes herniation of joint fluid and synovium through a gap within the joint capsule. A degenerative process associated with mucin production within or adjacent to the joint capsule has been implicated as another aetiological factor [4].

GCs of the hand and wrist occur most frequently between the second and the fourth decades, but may also arise in the paediatric population and the elderly. There is a female predominance [5]. Most ganglion GCs are located at the dorsal aspect of the wrist adjacent to the scapholunate ligament (60–70%), whereas volar cysts between the radial artery and flexor carpi radialis account for approximately 18–20%. The size of these lesions, whether dorsal or volar, is usually between 1-2 cm [5, 6]. Half of the patients are asymptomatic, whereas the others may suffer from wrist pain, tenderness or functional impairment [6].

Imaging techniques such as US and MRI are the best modalities to characterize these lesions and have a direct impact on correct management and treatment of patients in order to provide a good outcome [6, 7].

US is considered the first-level study of choice for superficial lesions of the wrist because it is easy to perform, rapid, relatively low in cost, and widely available. US is accurate for defining the cystic nature of GCs, but it has limited ability in visualising deeper lying structures and their relationship with the adjacent joint [3]. Thanks to Doppler techniques, it also represents a simple and safe method for identifying vascular lesions as PAs, which show specific Doppler findings including internal swirling flow (yin-yang sign) [7, 8] and to-and-fro waveform [2].

When a volar ganglion cyst is located immediately adjacent to the radial artery, it may compress and displace the radial artery. In these cases, it can be difficult to differentiate intrinsic from transmitted pulsations on clinical examination. Thus, transmitted pulsatile movement of the GC can be misinterpreted by clinicians as an arterial PA, as it was also the case with our patient. Color (CD) and power Doppler (PD) techniques are very useful in depicting the relationship between these ventral ganglia and the radial artery [9]. In our case, in fact, CD provided the correct diagnosis by showing the absence of flow within the lesion, and demonstrating it was contiguous to the distal radial artery.

MRI can add further informations regarding the morphologic features such as the exact location and extent of these lesions. MRI also offers an objective, reproducible display of its anatomic relationships to the joint and surrounding structures [6]. The benefits of MR imaging are that it is less operator dependent, can assess deep structures more confidently, and can cover a larger body part. However, the potential downside of MRI is that is relatively more time consuming, more expensive and less available than US [10, 11].

4. Conclusion

The increasing rate of radial arterial catheterizations for percutaneous coronary interventions has led to an increase in the rate of procedural vascular complications involving the radial artery such as PAs. US and MRI are useful in the everyday clinical practice because they can exclude iatrogenic PAs, especially when the medical history is suggestive and there is a high possibility of misdiagnosis. Thus, we think that clinicians should be aware of the diagnostic techniques for the study of superficial lesions of the wrist in order to recognize the possible pathologies in the differential diagnosis.

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