

## Unilateral brachial artery duplication: a rare case with an original image

*Tek taraflı brakiyal arter duplikasyonu: Orjinal görüntü ile nadir bir olgu*

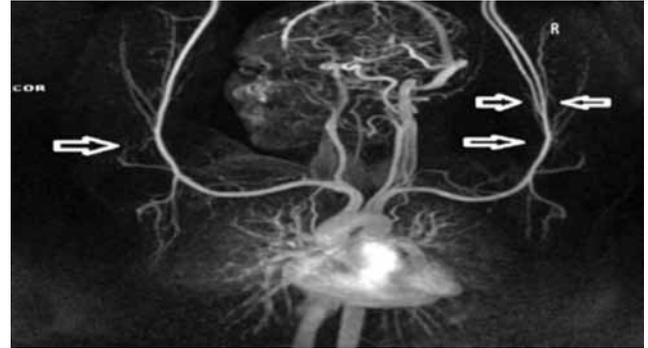
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The brachial artery is the main artery which feeds the upper extremities. It is the continuation of the axillary artery 5-6 mm in diameter and 25-26 cm in length. It splits into radial and ulnar arteries under the bicipital aponeurosis. It is suitable for blood pressure measurement.<sup>[1,2]</sup> Its anatomical variations have gained a great importance due to possible damages. A 38-year-old female patient was admitted to our clinic with symptoms of numbness in the left upper extremity for approximately two years. Physical examination findings and pulse measurements were normal. Bilateral upper extremity magnetic resonance (MR) angiography showed brachial artery to be splitted shortly and continued in duplicate, indicating the cause of her symptoms. This case was presented due to its rare occurrence with unilateral duplicate in the light of original MR images (Figures 1-3).

A 38-year-old female patient was admitted to our clinic with complaints of numbness and pain in her hands when she folded her left upper arm for past

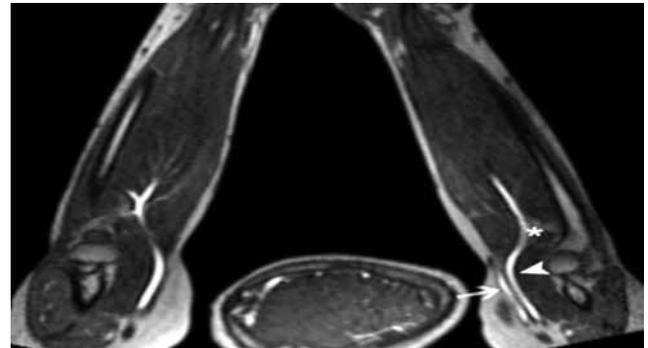
two years. Physical examination findings and pulse measurements were normal, although left arm arterial blood pressure was weaker than the right. Upon the chronic complaints of the patient, a cervical three-way



**Figure 2.** Upper extremity magnetic resonance angiography image showing the level of brachial artery duplication.



**Figure 1.** Upper extremity magnetic resonance angiography image showing the right brachial artery duplication with radial and ulnar arteries.



**Figure 3.** Coronal contrast-enhanced T<sub>1</sub>-weighted and coronal maximum intensity projection magnetic resonance angiography images of the forearm. Bifurcation of brachial artery above the level of elbow is seen on the left, whereas brachial artery is in normal anatomic position on the right (arrow: radial artery, arrowhead: ulnar artery, asterisk: bicipital aponeurosis).



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telegraph and then the left upper extremity arterial color Doppler ultrasound (CDU) were performed. There was no clear pathology in these tests and radiological imaging studies. An upper extremity MR angiography was performed and the cause of complaints was found in the brachial artery.

All test results and radiological imaging findings for potential vascular pathologies were found to be normal. As the patient's complaints continued, we investigated the etiology using other diagnostic techniques. An upper extremity MR angiography was requested for the patient. It showed that the brachial artery was splitted unilaterally into radial and ulnar arteries after 5-6 cm instead of 20-25 cm, different from the normal anatomy. The diameter of the brachial artery was thinner and radial and ulnar arteries were 10-15 cm longer than normal. Therefore, blood flow decreased significantly, when the arms were folded. On MR angiography, vascular anatomy of the right upper extremity seemed normal. When the left arm was folded, distal blood flow was reduced due to the small diameter of the vessels and pain and numbness, therefore, persisted. After MR angiography, the patient was examined using CDU. It revealed that ulnar and radial arteries had normal arterial flow with triphasic flow pattern during the full extension of forearm. During the full flexion, spectral sampling at the level of elbow produced spectral changes in the radial

artery characterized by triphasic flow pattern loss, decreased volume, and high resistance. These findings were consistent with an entrapment/occlusion. The patient who was not operated was discharged with a prescription of acetylsalicylic acid 300 mg/day for prophylaxis.

In conclusion, we found a duplication, a variation of the unilateral brachial artery, through MR angiography in our case who suffered from numbness in her hand for many years without any specific vascular pathology. This case was presented due to its rare occurrence with unilateral duplicate in the light of original MR images of the brachial, ulnar, and radial arteries.

#### **Declaration of conflicting interests**

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