



Case Report: Compressive Cervical Radiculopathy Caused by Spontaneous Bilateral Vertebral Artery Dissection

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Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

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Case Report

ABSTRACT

Cervical artery dissection accounts for almost 20% of ischemic strokes in young patients. Vertebral artery dissection is considered less common than carotid dissection, and 18% of cases are bilateral. The typical presentation is posterior neck pain, holocranial or frontal headache, and focal neurological manifestations if a secondary ischemic event occurred. Compressive radiculopathy is a rare complication of vertebral artery dissection and C5 is the most commonly affected root. We report two cases of cervical radiculopathy, a rare complication of vertebral artery dissection.

Keywords: Stroke; vertebral artery dissection; carotid artery; internal; dissection; radiculopathy.

1. INTRODUCTION

Cervical artery dissection accounts for 20% of ischemic strokes in young patients [1]. Vertebral

Artery Dissection (VAD) is considered less common than carotid dissection and bilateral VAD accounts of 18% of cases [2,3,4]. Typical presentation is posterior neck pain, headache

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and focal neurological signs if an ischemic stroke occurred [1,3]. Compressive radiculopathy is a rare complication of VAD [3,5]. The most commonly affected root is C5 while C4, C6, and C7 are rarely injured [6]. Upper extremity weakness, pain, or numbness are the most frequent manifestations. We report two cases of compressive radiculopathies related to VAD.

2. CLINICAL CASES

Patient 1 was a 39-year-old Hispanic woman taking oral contraceptives, without history of cervical manipulation, trauma or physical activity. She developed bilateral neck pain radiating to the right arm until the elbow. Two weeks later she began to present weakness of the right arm. The patient was admitted to the hospital with paresis (3/5) of the right biceps brachii, deltoids, supraspinatus, and infraspinatus muscles, with decreased biceps tendon reflex on the same side. Also, she had hypoesthesia and dysesthesia over the lateral side of the arm (C5 right dermatome). The rest of the neurological examination was unremarkable. A MR

angiography showed bilateral VAD of the V1 segment on the left vertebral artery and the V1-V2 segment on the right, with an intramural hematoma in the right vertebral artery at C4-C5, compressing the ipsilateral C5 root (Fig. 1); less severe findings were described in C6. Also, a subacute (and asymptomatic) ischemic stroke on the territory of the left posteroinferior cerebellar artery was diagnosed. Acetylsalicylic acid, acetaminophen and pregabalin were started, and oral contraceptives were stopped. The electrophysiological test demonstrated a decreased pattern of recruitment of right biceps brachii, deltoids, supraspinatus, infraspinatus, and rhomboid. Radiculopathy of C5 and C6 motor roots was concluded. Connective tissue disorders studies were not done as she did not had any other physical finding, neither personal nor familiar history of connective tissue disorders. Physical therapy was started and after 3 months she was asymptomatic. The MR angiography showed complete recanalization of both arteries. She was advised to do not take hormonal contraceptives.

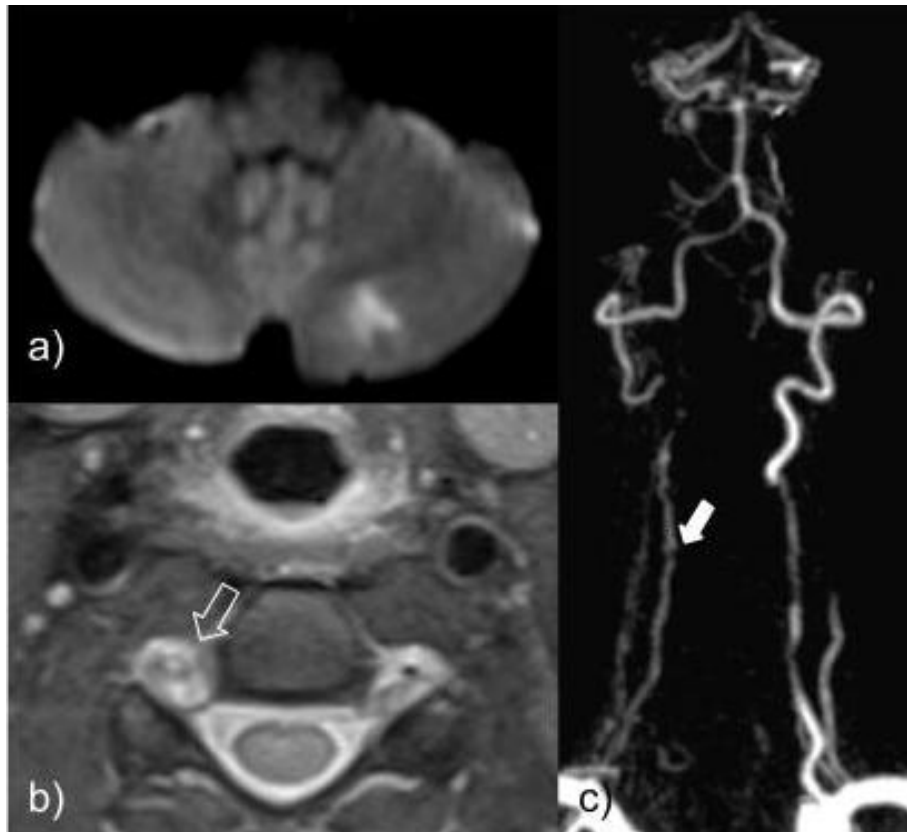


Fig. 1. MRI and AngioMRI of patient 1. a) Acute ischemic stroke in the left cerebellum hemisphere. b) T2 image showing a hematoma filling the right C5-C6 foramina (arrow). c) Reconstruction showing the dissection of both vertebral arteries, and the corresponding level of the right C5-C6 foramina (filled arrow)

Patient 2 was a 46-year-old Hispanic man with a medical history of hypertension and dyslipidemia on treatment; without history of intense physical activity, recent cervical manipulation or trauma. He presented at the emergency room after 2 weeks of bilateral cervicgia and two episodes of transient right blurred vision. His physical examination revealed a right homonymous inferior quadrantanopia without other finding, NIHSS 1. The MR showed a left temporo-occipital ischemic stroke and the MR angiography a left occlusive VAD of V2-V3 segments. Acetylsalicylic acid 100 mg and clopidogrel 75 mg per day were started. After three days he presented weakness and pain in his right shoulder. The physical examination revealed slight paresis of the deltoid (4/5) with preserved sensitivity and reflexes of the right upper limb. A MR angiography was repeated, and did not show any change. After nine days pain and weakness of the right deltoid, supraspinatus, and biceps brachii increased. Biceps and brachioradialis reflexes were absent, with normal sensitivity. The MRI showed a new right VAD on the V2 and V3 segment with mural hematoma and occlusive left VAD. Electromyography showed right C5 radiculopathy with active denervation and reinnervation. After 4 months she was completely asymptomatic with normal strength, sensitivity and no pain. The MR showed complete recanalization of the right vertebral artery and occlusion of the left.

In our prospective register of cervical arteries dissection, the occurrence of this 2 compressive radiculopathies represents 1,8% of VAD, confirming the infrequent presentation of this complication.

3. DISCUSSION

Spontaneous VAD is an under-diagnosed cause of ischemic stroke, of special importance in young adults. Secondary radiculopathy is even less frequent: 1,8% in our center and 1% in previous reports [3,5]. The most commonly affected cervical roots are the fifth and sixth [3,6], due to the close anatomical proximity with the V2 segment. Two hypotheses have been proposed to explain compressive radiculopathy after a VAD: a) compression of nerve roots due to expansion of the arterial wall [6,7,8], and b) inadequate perfusion of the vasa nervorum [7].

Both cases had neck pain and no history of cervical trauma or collagen disease, hence a spontaneous etiology was considered. Also, in

both cases bilateral VAD was present and secondary ischemic stroke confirmed. However, they showed unequal clinical presentations and different times of appearance of symptoms of compressive radiculopathy; whilst the first patient consulted for root symptoms that started with the cervicgia, the second consulted due to symptoms of an occipital ischemic stroke related with the left VAD and developed contralateral arm pain and weakness eight days later. In both cases, the intensity of motor impairment reached an M3-paresis and evolved satisfactorily until complete muscular strength recovery in four months with physical therapy, as others cases previously reported [6,7]

Interesting points of these cases are a) both patients had bilateral VAD, one at the time of diagnosis and the second delayed, remarking the probability to develop multiple cervical artery dissection short after the first. Indeed, the compressive radiculopathy was caused by the second dissection of patient 2. b) Both cases had ischemic strokes. The risk of stroke related to bilateral VAD is unknown, but unfavorable outcomes have been described [9]. c) Radicular pain and weakness worsened 7-10 days after cervicgia began. These symptoms should warn about this complication. d) Both cases had a complete recovery after 3-4 months.

4. CONCLUSION

Compressive radiculopathy is a rare complication of VAD (1,8%). It should be suspected if a patient with a VAD begins with pain and weakness of the arm, specially over dermatome C5 or C6, the most frequents roots involved. In our experience it has and excellent clinical recovery after 4 months, related with the arterial recovery.

CONSENT

Written informed consent was obtained from both patients.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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