

Hypoplastic Vertebral Artery as a predisposing cause for dissection

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Citation

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Abstract

Dissection in a hypoplastic vertebral artery is extremely rare and has never been described previously in adults. We report a case of a 28 year old male who developed stroke following dissection in a hypoplastic left vertebral artery. In addition to describing the imaging findings of this rare combination, the authors discuss the role of hypoplasia as a predisposing factor for dissection.

INTRODUCTION

Posterior circulation stroke following spinal manipulation is a well recognized entity ¹.

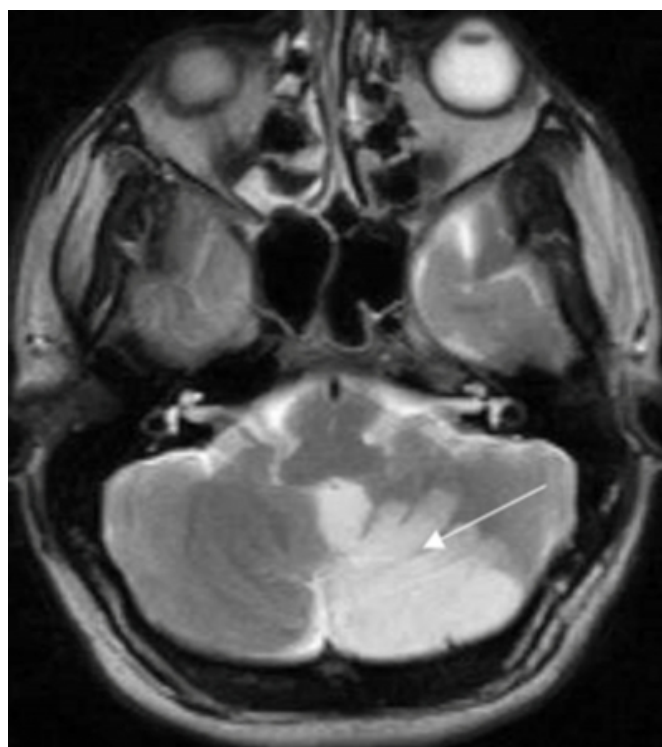
Though hypoplastic vertebral artery has been known to be a risk factor for stroke ²; its role as a cause for dissection is not well documented in literature, except for a single case report described previously in a child ³. We report a case of dissection in a 28 year old male developing in a hypoplastic vertebral artery following aggressive cervical manipulation by a hair dresser.

CASE REPORT

A 28 year old, previously asymptomatic male presented with acute onset giddiness and vomiting with severe occipital headache and painful restriction of neck movements following an aggressive cervical manipulation by a hair dresser. Magnetic Resonance Imaging (MRI) of the brain was performed which revealed an acute infarct in the left inferior cerebellar hemisphere (Figure 1).

Figure 1

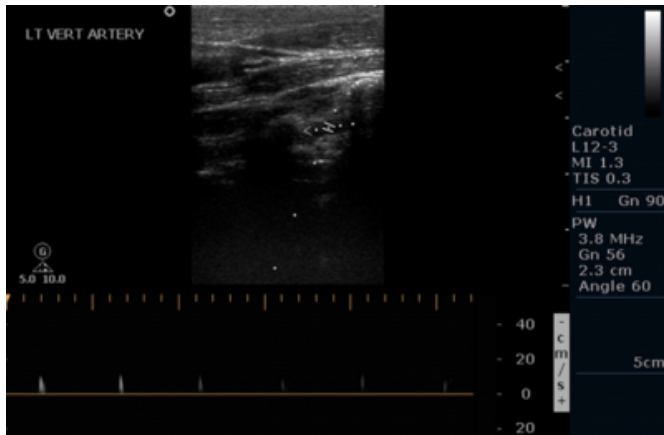
Figure 1. Axial T2WI of the posterior fossa shows left cerebellar infarct (Long white arrow).



Doppler study performed subsequently revealed a hypoplastic left vertebral artery (1.7 mm caliber) showing a highly resistive dampened wave form with absent diastole suggestive of distal occlusion (Figure 2).

Figure 2

Figure 2. Doppler study of the left vertebral artery shows highly resistive dampened wave form with absent diastole (“Stump-thump pattern”).



Computed tomography (CT) angiography revealed complete occlusion of the C2 segment of the left vertebral artery with no evidence of bony injury (Figure 3 and Figure 4).

Figure 3

Figure 3. Axial CT section of the neck showing complete occlusion of the left vertebral artery (White arrow).

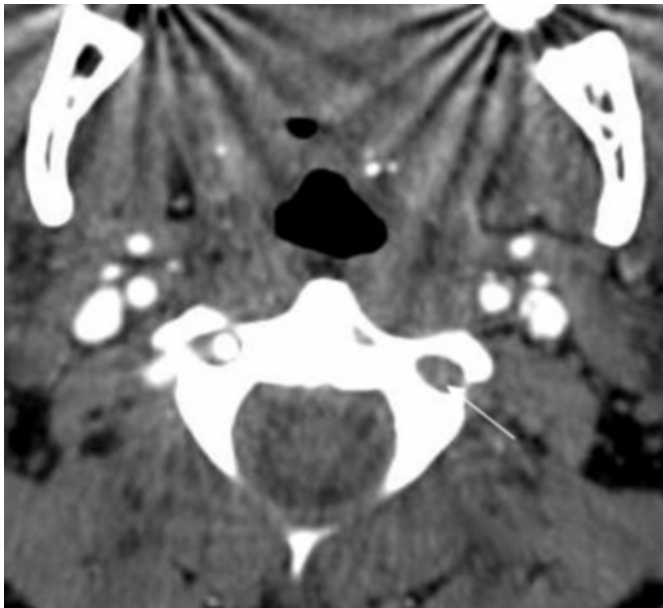


Figure 4

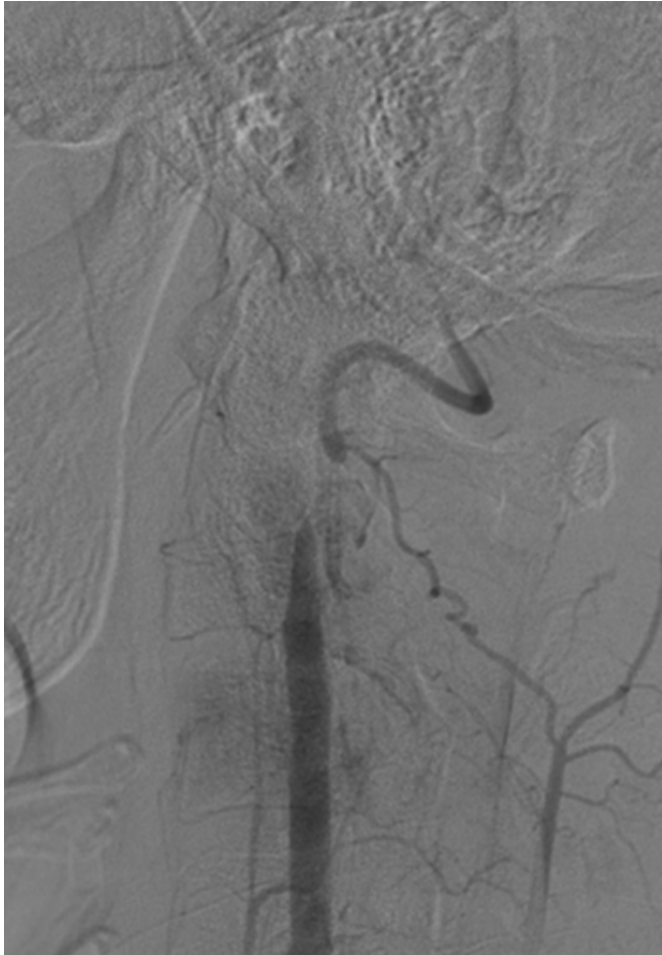
Figure 4. Volume rendered CT angiography image showing hypoplastic left vertebral artery with complete occlusion and distal reformation.



The vertebral artery proximal to the occlusion was hypoplastic (Figure 4). Catheter angiography performed subsequently confirmed left vertebral artery dissection (Figure 5).

Figure 5

Figure 5 . Lateral projection of catheter angiography study showing narrowing of the left vertebral artery progressing to complete occlusion at the C2 portion suggestive of dissection. Distal reformation by collaterals is seen.



DISCUSSION

Posterior circulation stroke following spinal manipulation is a well recognized entity ¹ .

In our case, aggressive cervical manipulation by a hair dresser was the cause of stroke. The clinical history of restricted neck movements and occipital headache was very classical of dissection which was confirmed by imaging. Though obvious intramural hematoma was not made out on CT, previous cases of dissection have been reported without evidence of intramural hematoma on imaging ³⁴⁵ . Our case

however did reveal occlusion of the C2 portion of the left vertebral artery, which by itself is highly suggestive of vertebral artery dissection ³⁶ . Moreover the characteristic dampened flow with high resistance, described as the “stump–thump” pattern noted in the Doppler examination, by itself is associated with dissection in the majority of the cases ⁷ . Hypoplastic vertebral artery has been known to be a risk factor for stroke ² . However the relationship between hypoplastic vertebral artery and dissection is not well described. There has been only one previous report of dissection developing in a hypoplastic vertebral artery, described in a child by Kawakami Y et al. ³ . Ours is the first ever case to be reported in an adult. In our case the dissection occurred at the C2 portion, similar to the case described by Kawakami Y et al. ³ . The normal tortuosity of the vertebral artery at this level probably predisposes this segment to increased torsion causing dissection. Moreover being thin walled, the hypoplastic vertebral artery is more prone for dissection. Identification of hypoplastic vertebral artery as a predisposing cause for dissection has immense clinical relevance as such patients should be cautioned against aggressive neck movements in order to prevent a neurological catastrophe.

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