CLINICAL VIGNETTE

A Hidden Rare Condition Discovered During a Routine Visit

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Case Report

An 80-year-old female presented to establish care. She was a healthy retired editor who just moved from Portland, Oregon. She lived an active and independent life in Portland until a year ago. She had two motor vehicle accidents within a two-month period. She attributed her first accident to being distracted by looking at the right-side view mirror while driving and suddenly losing control of the car. Her car ran into a car parked on the side of the street. She hit her chest on the steering wheel and suffered a minor chest wall contusion. No one was seriously injured but her car was totaled.

The second car accident occurred when she moved her car forward out of her garage to park on the driveway. She did wear her seatbelt on because it was such a short drive. She lost control of her car while looking back over her right shoulder to check if the garage door was shut. Her son was visiting and helplessly watched her car dart out across the street in front of her driveway and plunge down into a 60-feet ravine. She fractured 14 ribs, her right scapula, second lumbar spine and was hospitalized. While in the hospital, her work-up included a head CT, Carotid Ultrasound, Holter, and Echocardiogram. All were normal.

After witnessing this latest accident, her son attributed the cause of the accident to his mother accidently pressing on the accelerator rather than break pedal. Therefore, after totaling two cars in two months and with serious injuries the patient questioned her cognitive ability to drive and ultimately stopped driving. Other than the car accidents, she does not feel any cognitive decline or memory issue in any other facet. Nevertheless, at the urging of her family, she moved to be with her son. Since her move, while she has suffered no physical ailments, she complained of being isolated and lonely due to her loss of independence and social support. Her main reason for the visit is to get a referral to see a psychotherapist.

She does not smoke or drink alcohol. She walks 5 miles a day and volunteers regularly at community events. Past medical history was negative and she was not on any medications.

Review of systems was remarkable for brief moments of dizziness whenever looking to the right. She would have to brace herself otherwise she would stumble. Dizziness lasted for a few seconds and subsides spontaneously after a few minutes. She denied ever experiencing blurred vision, tingling or numbness in any part of her body, nausea or vomiting. At first she explained that her dizziness was intermittent and started after the two car accidents. She was specifically asked whether or not she had suffered these symptoms prior to the accidents. Upon further reflection, she recalled that there was one prior incident, but that episode was different. It occurred at a community volunteer event. She was looking for trashcan and saw one on her right side after turning in that direction. Suddenly she felt faint and nearly dropped to the ground. She managed to sit herself down by holding onto a tree. She completely recovered after a few minutes of sitting and carried on as usual.

In putting the pieces together, I could not help noticing an interesting pattern that could not be a matter of coincidence. She had her head turned to the right prior to both car accidents. I inquired further and asked her for more details, both prior to and after both car accidents. The first incident she reported driving down the street at 25 mph as she had done so many times feeling clear minded and focused. The last thing she remembered was checking her side view mirror, out of good driving habit, and the next moment she was staring at the back of a parked car on the side of the street. She did not feel the impact of the collision. She was clear-minded again after the car accident and called 911 by herself.

Similarly, she was feeling well and focused before the second car accident. Again, everything went wrong after she looked back over her right shoulder to check her garage door. She then recalled her vision suddenly turned dim and her car was accelerating down the driveway. Then the next thing she knew was she was looking at the apartment building across the ravine from her condo. She did not feel the impact when her car hit the bottom of the ravine. She was again clear-minded after the accident. She remembered firefighters cutting her out of the car and being rushed to the hospital on a stretcher.

Physical Exam

Blood Pressure 112/76 sitting and 108/72 standing, pulse rate 78 sitting and 82 standing. Temperature 98.6 F, Oxygen saturation 100%.

She became ataxic with head rotating to up and right (quadrant) or to the right pass her shoulder. Symptoms resolved with rotating head back to neutral position. The rest of the physical

exam was unremarkable and she had excellent cognitive function score.

Imaging

Neck MRA showed hypoplastic right vertebral artery with patent vertebral arteries bilaterally.

Cerebral angiogram revealed complete occlusion of the left vertebral artery with head rotating to the right. Turning head to neutral position and to the left completely resolved the stenosis. CT angiography with three-dimensional reconstruction to identified a large uncovertebral spur encroaching on the transverse foramen at C4-5 level.

Discussion

Rotational vertebral artery compression is an uncommon cause of vertebral basilar insufficiency. Bow hunter's syndrome (BHS) is caused by the compression of the dominant vertebral artery (VA) against a fibrous band or osseous prominence by rotational head movement, leading to ischemic insult in the vertebrobasilar territory. BHS presents as recurrent vertigo or drop attacks caused by head rotation. However, because of the collateral blood flow through the contralateral VA and the circle of Willis, VA occlusion does not cause symptoms in most individual cases. Thus, symptomatic BHS is rare. Due to the rarity of this pathology, there are no guidelines for its diagnosis and treatment.[1]

In this case, the two car accidents were caused by drop attacks from vertebral basilar insufficiency instead of cognitive confusion. Her vertebral basil insufficiency was caused by head rotation instead of atherosclerosis. She has a hypoplastic right vertebral artery. When her left (dominant) vertebral artery was compressed by her head rotating to the right, drop attacks occurred causing her to lose control of her car.

REFERENCES

1. **Go G, Hwang SH, Park IS, Park H.** Rotational Vertebral Artery Compression : Bow Hunter's Syndrome. J Korean *Neurosurg Soc.* 2013 Sep;54(3):243-5. doi: 10.3340/jkns.2013.54.3.243. Epub 2013 Sep 30. PubMed PMID: 24278656; PubMed Central PMCID: PMC3836934.

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