

Vertebral Artery Dissection and High-Intensity Workouts in the Older Patient

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ABSTRACT

Vertebral artery dissection caused by exercise-induced mild cervical trauma is a common cause of ischemic stroke. This form of injury has been well studied in younger patients. However, with an aging US population and a preponderance of aging patients engaging in high-intensity exercise; caution should be taken in this high-risk group and clinicians need to broaden their differential when assessing older patients with suspected stroke-like symptoms. We report on a case of a 59-year-old male with medullary stroke from vertebral artery dissection who recently engaged in Cross Fit workouts.

Keywords: Vertebral artery dissection; Medullary stroke; High-intensity exercise; CTA

ABOUT THE STUDY

Ischemic strokes attributed to spontaneous cerebrovascular dissections account for approximately 2% of all ischemic strokes [1]. Up to 40% of spontaneous cerebrovascular dissections are attributed to mild cervical trauma, which are often exercise or sport induced [2]. This commentary is based on a case which described a 59-year-old athletic male who developed a lateral medullary stroke from a vertebral artery dissection [3]. The patient had initially presented with dysarthria and a right-sided facial droop. While CT angiogram had reported a diminutive and asymmetrically small right vertebral artery, arterial dissection was initially not considered. The patient was started on aspirin and statin medications as standard secondary prevention, with initial suggestion of otolaryngology evaluation for laryngeal pathology. The patient later underwent magnetic resonance imaging where lateral medullary infarction was identified. A subsequent investigation with further analysis of the CT angiogram and detailed historical timeline of events leading to symptom onset was made. It was then concluded that vertebral artery dissection had led to ischemic stroke, with initial onset caused by the patient's high-intensity exercise routine.

Exercise-induced traumatic spontaneous cerebrovascular dissection is a common cause of ischemic stroke in young adults. With an aging population engaging in exercise later in life, these injuries should be considered and identified quickly. Older adults often reengage in exercise with years removed from prior

training, and preexisting injuries for which to contend. Especially in regard to weightlifting exercises, fundamentally good form, at a safe weight and speed are essential for injury prevention. In high-intensity exercise such as Cross Fit, lifting movements may be compromised as the focus is on speed, not form. These workouts also focus on overhead movements and lifting involving weight placed on the cervical spine. This high-intensity workout then has the potential for spinal-related injuries, among others [4]. As clinicians, we advocate for exercise daily for primary health prevention. Cross Fit, and high-intensity workouts in general, are popular for the very reasons they are considered high-risk. Combining strength-based exercise with cardiovascular endurance allows for a well-rounded routine within a short time interval. Athletes can theoretically increase strength and endurance levels, while also burning additional calories and decreasing body fat in a single 60-minute session. This is now becoming a popular exercise option for many busy adults, but clinicians need to understand the risks and advocate for maximal health benefits with lowest possible harm.

Strokes caused by cerebrovascular dissections often present with a range of nonspecific symptoms that can often go missed [5,6]. A suspected stroke workup can vary largely based on age, as seen in the case described. Further, dissections can be missed on routine imaging, as there remains no gold standard between CTA and MRI/MRA for cerebrovascular dissections [7] and obtaining both during a workup may offset their respective

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likelihood ratios. A common diagnostic workup for assessment of thromboembolism and common risk factors, such as cardiovascular disease, cardiac arrhythmias, patent foramen ovale, diabetes, hyperlipidemia, hypothyroidism likely would have changed if dissection was included in the initial differential diagnoses [8,9].

CONCLUSION

We report a case of an older patient engaging in high-intensity exercise who developed a vertebral artery dissection with subsequent medullary stroke from mild cervical trauma. As clinicians, we overtly advocate for exercise in our patients but must be mindful of higher risk activities, such as CrossFit, and inclusive in our differential when older patients present with stroke-like symptoms

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