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The unforeseen danger of a seemingly benign act: A case of self-induced ischemic stroke following carotid sinus massage

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Abstract

This case report describes an unusual ischemic stroke in a man in his seventies, triggered by self-massage of the carotid artery while checking his pulse. He had no known vascular risk factors but was later found to have moderate carotid stenosis. The stroke, confirmed by neuroimaging, was likely caused by either a ruptured plaque or repeated stimulation of the carotid sinus leading to cerebral hypoperfusion.

This case highlights the dangers of neck massage, even in individuals without prior vascular disease. It emphasizes the need for public and clinician education about the risks of carotid sinus manipulation. While carotid sinus massage can be a useful clinical tool, it should only be performed by trained professionals and followed by a clinical evaluation.

Thorough patient history taking is crucial, as even seemingly harmless actions like checking one's pulse can be relevant to diagnosis. Earlier mention of the self-massage might have led to faster, targeted vascular imaging.

This case adds to the growing evidence of ischemic stroke following carotid sinus massage. While rare, this complication can be serious. Increased awareness can help prevent such incidents. Patients should avoid neck manipulation, and clinicians should exercise caution when performing carotid sinus massage, especially in those with suspected or known carotid artery disease.

Finally this case of self-induced ischemic stroke following carotid sinus massage serves as a potent reminder that seemingly benign actions can have serious consequences, especially in the context of undiagnosed vascular disease. It highlights the critical importance of thorough patient history taking, clinician awareness of rare complications, and public education regarding the potential dangers of neck manipulation. Furthermore, this case underscores the need for clinicians to consider unusual etiologies when evaluating patients presenting with stroke symptoms, ensuring a comprehensive diagnostic approach.

Keywords: Ischemic stroke, carotid sinus massage, neck massage, carotid stenosis

Introduction

Carotid sinus massage (CSM) is a valuable clinical tool for managing certain cardiac arrhythmias, but it carries a risk of neurological complications, primarily ischemic stroke^[1]. This risk is heightened in individuals with underlying carotid artery disease, but as this case demonstrates, stroke can occur even in those without known vascular risk factors. We present an unusual case of self-induced ischemic stroke in a man who unknowingly triggered this event by repeatedly massaging his carotid artery to check his pulse. This case highlights the potential dangers of carotid sinus manipulation and underscores the need for increased awareness among both healthcare professionals and the general public.

Case report

A 70-year-old Caucasian male presented to the emergency department in University hospital in Ireland with a two-day history of left hand weakness. The onset of weakness coincided with an episode of self-induced carotid sinus massage. The patient, motivated by a newspaper article detailing normal resting heart rates, had been palpating his right carotid artery while simultaneously timing his pulse using his left hand. He reported that during this self-examination, his left hand abruptly lost strength and he dropped his phone. This occurred twice before persistent left hand weakness prompted him to seek medical attention. The patient denied any associated symptoms such as loss of consciousness, headache, nausea, vomiting, or seizures. He had no significant past medical history, no known vascular risk factors, and no family history of stroke. His social history was notable for moderate

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alcohol consumption (16-18 units per week) but no history of tobacco or illicit drug use.

On initial examination in the emergency department, his vital signs revealed an elevated systolic blood pressure of 191 mmHg and a heart rate of 58 beats per minute. Neurological examination demonstrated left arm pronator drift, with a National Institutes of Health Stroke Scale (NIHSS) score of 2, indicating minor stroke severity.

Investigations

Given the clinical suspicion of an ischemic stroke, initial imaging with non-contrast computed tomography (CT) of the head was performed, which was unremarkable. However, subsequent magnetic resonance imaging (MRI) of the brain revealed an acute cortical and subcortical infarct, confirming the diagnosis Figure ^[1, 2].

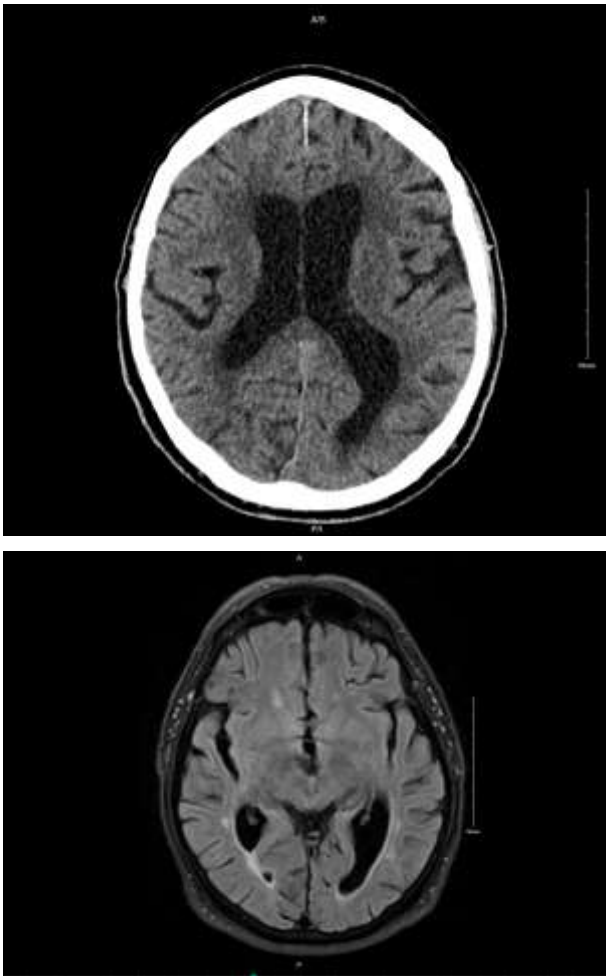


Fig 1 & 2: Magnetic resonance imaging (MRI) of the brain revealed an acute cortical and subcortical infarct, confirming the diagnosis

Laboratory investigations, including complete blood count, renal function tests, and liver function tests, were all within normal limits. His lipid profile showed an elevated total cholesterol level (>5 mmol/L) and a low-density lipoprotein (LDL) cholesterol level of 1.5 mmol/L. Continuous telemetry monitoring during his hospital stay revealed intermittent episodes of bradycardia with heart rates dropping to 40-50 beats per minute.

To further investigate the etiology of the stroke, computed tomography angiography (CTA) of the head and neck was performed, which revealed low-grade bilateral carotid artery

narrowing. A subsequent duplex ultrasound, conducted by the vascular surgery team, confirmed approximately 50% stenosis of the right internal carotid artery, with no significant stenosis on the left. Transesophageal echocardiography was performed to rule out a cardioembolic source but revealed no abnormalities.

Differential Diagnosis

In a patient of this age presenting with acute unilateral weakness, a broad differential diagnosis was considered, including:

Transient ischemic attack (TIA), Space-occupying lesion (e.g., brain tumor), Hypertensive encephalopathy, Drug toxicity, Conversion disorder, Electrolyte imbalance, Meningitis/encephalitis, demyelinating disorder.

However, the clinical presentation, coupled with the MRI findings and the absence of other contributing factors, led to the definitive diagnosis of an acute ischemic stroke secondary to carotid stenosis, likely precipitated by the patient's self-induced carotid sinus massage.

Treatment

The patient was managed in the stroke unit with a multidisciplinary approach. Pharmacological treatment was initiated with statins to address his hyperlipidemia and antiplatelet therapy (aspirin 75mg and clopidogrel 75mg daily for three months) to reduce the risk of recurrent stroke. His persistent hypertension was managed with antihypertensive medications, starting with ramipril and later adding amlodipine to achieve adequate blood pressure control. He also received supportive care, including physiotherapy and occupational therapy, to aid in his functional recovery.

Outcome and Follow-up

The patient demonstrated significant improvement with the implemented treatment strategies. At his three-month follow-up appointment, he was asymptomatic, with a modified Rankin Scale (mRS) score of 0, indicating no residual disability. He continues to be under regular follow-up with both vascular surgery and stroke specialists to monitor his condition and minimize the risk of future events.

Discussion

This case highlights a rare but serious complication of carotid sinus massage (CSM): self-induced ischemic stroke. While CSM is a valuable tool for diagnosing and managing certain cardiac arrhythmias, it is not without risk. As our case demonstrates, even seemingly benign self-manipulation of the carotid artery can have devastating neurological consequences, especially in the presence of underlying carotid stenosis.

The pathophysiology of CSM-induced stroke involves two primary mechanisms: thromboembolism and cerebral hypoperfusion. In this case, the patient's moderate stenosis of the right internal carotid artery likely predisposed him to both. The repeated massage may have dislodged a plaque or thrombus, leading to embolic occlusion of a cerebral vessel. Additionally, stimulation of the carotid sinus baroreceptors can trigger a reflex bradycardia and hypotension, potentially causing cerebral hypoperfusion, especially in an individual with compromised cerebral blood flow due to carotid stenosis ^[2, 3].

While the risk of stroke following CSM is increased in those with pre-existing carotid artery disease ^[4], this case emphasizes that it can occur even in individuals without known vascular risk factors. This underscores the importance of thorough patient history taking, as seemingly innocuous actions like self-checking one's pulse can provide crucial diagnostic clues. Earlier recognition of the patient's self-massage might have prompted earlier vascular imaging and potentially altered management.

This report contributes to the growing body of literature documenting ischemic stroke following CSM ^[1, 5]. Tan *et al.* ^[6] described a similar case of embolic stroke after self-massage, highlighting the potential for serious complications even with seemingly benign neck manipulation. Around 200 case reports and series have been reported in the literature from different parts of the world with an increasing trend ^[7]. The increasing trend of reporting such cases reflects the growing awareness of this rare but significant complication and the need for heightened vigilance among healthcare providers.

The internal carotid artery is particularly vulnerable to external forces, and shear forces can lead to dissection, further increasing stroke risk ^[8]. Therefore, patients, especially those with known carotid artery disease or risk factors for it, should be advised against any form of neck manipulation, cervical chiropractic or neck massage ^[9]. Clinicians should exercise caution when performing CSM, adhering to established guidelines and considering alternative diagnostic and therapeutic options when appropriate ^[10].

This case also emphasizes the importance of a multidisciplinary approach to stroke management. The patient's positive outcome was attributed to a combination of pharmacological interventions (Antiplatelets, statins, antihypertensives), supportive care, and rehabilitation. This highlights the need for comprehensive care involving various healthcare professionals to optimize recovery and long-term outcomes.

In conclusion, this case of self-induced ischemic stroke following CSM serves as a potent reminder of the potential dangers of carotid sinus manipulation. It emphasizes the need for increased awareness, thorough patient evaluation, and cautious clinical practice to prevent such events.

Conflict of Interest

Not available

Financial Support

Not available

References

1. Chauhan A, Modi P, Patel NJ. Carotid Sinus Massage: A Review of Its Diagnostic and Therapeutic Value. *Cureus*. 2022;14(12):e32742.
2. Fedorowski A, Melander O. Carotid sinus hypersensitivity: an update. *Am J Geriatr Cardiol*. 2013;22(4):345-352.
3. Kenny RA, Ingram A, Bayliss J, Sutton R. Head-up tilt: a useful test for investigating unexplained syncope. *Lancet*. 1986;1(8491):1352-1355.
4. Lee VH, Brown RD Jr, Mandrekar JN, Mokri B. Incidence and outcome of cervical artery dissection: A population-based study. *Neurology*. 2006;67(10):1809-1812.
5. Debette S, Leys D. Cervical-artery dissections: predisposing factors, diagnosis, and outcome. *Lancet Neurol*. 2009;8(7):668-678.
6. Tan BY, Venketasubramanian N. Embolic stroke after self-massage of the neck. *Singapore Med J*. 2006;47(1):70-72.
7. Fridman S, Lownie SP, Mandzia J. Diagnosis and management of carotid free-floating thrombus: A systematic literature review. *Int. J Stroke*. 2019;14(3):247-256.
8. Ernst E. Adverse effects of spinal manipulation: a systematic review. *J R Soc Med*. 2007;100(7):330-338.
9. Dandamudi VS, Thaler DE, Malek AM. Cerebral embolus following chiropractic manipulation in a patient with a calcified carotid artery. *J Neuroimaging*. 2013;23(3):429-30.
10. Aminoff MJ, Greenberg DA, Simon RP. *Clinical Neurology*. 9th ed. New York: McGraw-Hill Education; c2015.

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