

Transient Isolated Aphasia Preceding Ischemic Stroke Due to Pulmonary Arteriovenous Malformation: A Case Report from Primary Care

I. Mohamud, MD^{1*}

¹Family Medicine Consultant, Primary Health Care Corporation, Doha Qatar

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*Corresponding author: I. Mohamud

Family Medicine Consultant, Primary Health Care Corporation, Doha Qatar

Abstract

Case Report

Background: Transient focal neurological symptoms frequently resolve before medical evaluation, creating a diagnostic challenge in primary care. While transient ischemic attack (TIA) is an important consideration, determining the underlying cause in younger adults without traditional vascular risk factors often requires a broader differential diagnosis. Pulmonary arteriovenous malformations (PAVMs) are an uncommon but treatable cause of paradoxical embolic stroke. **Case Presentation:** A previously healthy 40-year-old woman presented to her primary care physician after a several-minute episode of isolated expressive aphasia. She remained fully conscious and understood spoken language but was unable to produce speech despite attempting to articulate words. Neurological examination and non-contrast CT of the head were normal. Approximately one month later, while traveling on a commercial flight, she developed confusion, dysarthria, and unilateral weakness. Repeat CT imaging remained negative, whereas MRI confirmed an acute ischemic stroke. Further evaluation identified a right lower lobe pulmonary arteriovenous malformation, presumed to be the embolic source. She underwent successful transcatheter coil embolization followed by speech and physical therapy with substantial neurological recovery. **Conclusion:** This case emphasizes that transient isolated aphasia should be managed as a possible TIA even when symptoms have resolved and initial CT imaging is unrevealing. In younger adults with initially cryptogenic stroke, uncommon but treatable embolic sources such as pulmonary arteriovenous malformations should be considered.

Keywords: Acquired hemophilia A; factor VIII inhibitor; autoimmune bullous dermatosis; antiphospholipid antibodies; clinical-laboratory discrepancy.

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INTRODUCTION

Transient neurological symptoms are frequently encountered in primary care and often resolve before medical evaluation. Distinguishing benign self-limited conditions from transient ischemic attack (TIA) is a common clinical challenge, particularly in younger adults without established cerebrovascular risk factors. Speech disturbance is especially concerning because abrupt language dysfunction is highly suggestive of focal cerebral ischemia. A normal neurological examination after symptom resolution and a normal non-contrast CT scan may provide false reassurance despite ongoing risk.

The evaluation of ischemic stroke in younger adults requires a broader differential diagnosis than in older populations and includes cervical artery dissection, cardioembolism, thrombophilia, autoimmune disease, patent foramen ovale, and uncommon causes of paradoxical embolism. When no definite etiology is

identified despite appropriate vascular, cardiac, and laboratory evaluation, the event is classified as a cryptogenic stroke.

Pulmonary arteriovenous malformations are abnormal communications between pulmonary arteries and pulmonary veins that create a permanent right-to-left shunt, allowing venous thrombi to bypass the pulmonary capillary filter and reach the cerebral circulation.

This report describes a patient whose initial presentation to primary care with transient aphasia preceded a completed ischemic stroke one month later. The case focuses on the diagnostic reasoning relevant to primary care rather than the rarity of the final diagnosis.

CASE PRESENTATION

A 40-year-old previously healthy woman presented after a sudden episode of inability to speak

lasting several minutes. She remained alert throughout the event, understood conversation, and knew what she wished to say but was unable to produce speech. She denied facial droop, limb weakness, sensory loss, visual disturbance, headache, dizziness, seizure-like activity, or loss of consciousness. By the time of evaluation, she had returned to her neurological baseline.

Vital signs and general examination were normal. A comprehensive neurological examination demonstrated no focal deficits. Non-contrast CT of the head showed no acute intracranial abnormality. Routine laboratory investigations were unrevealing. Given complete symptom resolution and a normal evaluation, she was discharged with outpatient follow-up.

Approximately one month later, while traveling on a commercial flight, she developed sudden confusion, slurred speech, and unilateral weakness. Repeat CT of the head again demonstrated no acute abnormality; however, MRI of the brain confirmed an acute ischemic stroke. Because of her age and absence of traditional vascular risk factors, further evaluation was undertaken. Transthoracic echocardiography demonstrated no structural cardiac abnormalities, prolonged cardiac rhythm monitoring revealed no arrhythmia, and CTA/MRA of the head and neck showed no significant vascular abnormality. Thrombophilia and autoimmune investigations were negative. CT imaging of the chest subsequently identified a pulmonary arteriovenous malformation within the right lower lobe, considered the most likely source of paradoxical embolization. There was no known family history suggestive of hereditary hemorrhagic telangiectasia.

The patient underwent successful transcatheter coil embolization of the PAVM. Following speech and physical rehabilitation, her neurological deficits improved steadily, and she regained independence in daily activities.

DISCUSSION

Diagnostic reasoning in primary care

Transient isolated aphasia presents a diagnostic dilemma because symptoms often resolve before assessment. The differential diagnosis includes TIA, migraine aura, focal seizure, hypoglycemia, and functional neurological disorders. In this patient, the abrupt onset, preserved comprehension, complete recovery, and later confirmed ischemic stroke strongly suggest that the initial episode represented a TIA.

Transient ischemic attacks are associated with a substantial short-term risk of completed stroke, particularly within the first days and weeks after symptom onset, underscoring the need for urgent evaluation even when symptoms resolve completely.

Normal CT does not exclude ischemia

Non-contrast CT is essential for excluding intracranial hemorrhage but is considerably less sensitive than diffusion-weighted MRI for detecting early ischemic infarction. Clinical history should guide decision-making when CT findings are normal but suspicion for cerebrovascular disease remains high.

Young-onset cryptogenic stroke

In younger adults without conventional vascular risk factors, evaluation should include cardioembolism, cervical artery dissection, thrombophilia, autoimmune disease, and paradoxical embolic sources. A broad differential increases the likelihood of identifying treatable conditions. In this patient, a negative cardiac, vascular, and thrombophilia evaluation, together with the presence of a PAVM, supports paradoxical embolization as the most likely mechanism of the stroke. Although initially considered cryptogenic, the subsequent identification of a pulmonary arteriovenous malformation established a likely source of paradoxical embolization and provided an explanation for the ischemic stroke. This finding underscores the importance of considering uncommon right-to-left shunts when routine investigations fail to identify an embolic source.

Pulmonary arteriovenous malformations

PAVMs create a right-to-left intrapulmonary shunt, allowing thrombi, air, and bacteria to bypass the pulmonary capillary filter and enter the systemic circulation. Although uncommon, neurological complications including transient ischemic attack, ischemic stroke, and cerebral abscess may be the first manifestation of disease. Isolated PAVMs may occur even without a family history of hereditary hemorrhagic telangiectasia.

Treatment and prognosis

Transcatheter embolization is the preferred treatment for most PAVMs because it eliminates the abnormal shunt while preserving lung tissue. Successful treatment substantially reduces the risk of recurrent paradoxical embolic events, although follow-up is recommended to assess for residual or recurrent shunting.

Limitations

Detailed MRI characteristics and angiographic measurements were unavailable for retrospective review. Nevertheless, the diagnosis of acute ischemic stroke and a right lower lobe PAVM was confirmed during hospitalization, and the patient's clinical improvement following embolization supports the proposed mechanism of paradoxical embolism.

Learning Points

- Transient isolated aphasia should be considered a possible TIA until proven otherwise.

- A normal neurological examination after symptom resolution does not exclude cerebral ischemia.
- A normal non-contrast CT does not rule out acute ischemic stroke.
- Young adults with initially cryptogenic stroke warrant investigation for uncommon embolic sources.
- PAVMs are uncommon but treatable causes of paradoxical embolic stroke.

CONCLUSION

This case illustrates how a seemingly benign episode of transient isolated aphasia represented an early warning sign of cerebral ischemia and preceded a completed stroke caused by an unsuspected pulmonary arteriovenous malformation. For primary care clinicians, transient focal neurological symptoms warrant urgent evaluation even when examination and CT findings are normal. Recognition of uncommon but treatable causes of initially cryptogenic stroke may help prevent recurrent neurological injury.

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