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Broca's Aphasia Revealing a Left Ventricular Thrombus: A Case Report

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Abstract **Case Report**

Broca's aphasia as an initial manifestation of left ventricular thrombus (LVT) is an unusual and clinically significant presentation. LVT is a known complication of acute myocardial infarction and carries a high risk of systemic embolism, including stroke. We report the case of a 59-year-old man with a history of smoking and poorly controlled type 2 diabetes who presented with sudden-onset broca's aphasia, shortly after an episode of acute chest pain. Brain MRI confirmed a subacute ischemic stroke in the territory of the left middle cerebral artery. Subsequent cardiac work-up revealed a sizeable thrombus in the left ventricular apex. This case underscores the importance of considering cardioembolic etiologies in patients presenting with isolated aphasia, especially in the setting of recent ischemic cardiac events. Prompt diagnosis and targeted management of intracardiac thrombi are essential to reduce the risk of recurrent embolic events.
Keywords: left ventricular thrombus; aphasia; cardioembolic stroke; myocardial infarction; echocardiography; embolism.

INTRODUCTION

Although the incidence of left ventricular thrombus (LVT) following acute myocardial infarction has declined in recent decades, primarily due to the widespread use of early primary percutaneous coronary intervention (PCI) and optimized antithrombotic strategies—it remains a serious complication because of its sustained risk of stroke and systemic embolism [1]. Studies using transesophageal echocardiography have identified intracardiac thrombus (ICT) in 3–22% of patients presenting with ischemic stroke [2]. While the majority of these thrombi (up to 70%) are located in the left atrial appendage [3], left ventricular thrombi are not uncommon and are often associated with large-vessel occlusions and worse clinical outcomes [4]. We report the case of a patient who experienced an acute chest pain episode, but only sought medical attention after developing Broca's aphasia as the sole neurological symptom. Although cardioembolic strokes are well-recognized causes of neurological deficits, the isolated presentation of Broca's aphasia is particularly rare. This case highlights the importance of considering intracardiac thrombus in the differential diagnosis of atypical neurological presentations, especially when preceded by recent cardiac symptoms.

CASE REPORT

A 59-year-old male, with a history of chronic smoking and poorly controlled type 2 diabetes complicated by diabetic retinopathy, was admitted to Ibn Sina University Hospital with an acute impairment of speech output that had started nine days earlier. This episode was preceded by a sudden onset of severe, non-radiating retrosternal chest pain associated with vomiting. There was no prior use of antithrombotic medications.

On admission, the patient was alert and hemodynamically stable. He was no longer experiencing chest pain. Blood pressure was 120/80 mmHg, heart rate was regular at 110 bpm, and oxygen saturation was 98% on room air. Clinical examination revealed signs of pulmonary congestion, including dyspnea. Neurologically, the patient had a National Institutes of Health Stroke Scale (NIHSS) score of 2. Comprehension was intact, but he exhibited severe speech output impairment—unable to name common objects or close family members—consistent with Broca's aphasia. The 12-lead electrocardiogram (ECG) showed sinus tachycardia, low voltage in the frontal leads, and ST-segment elevation in leads V1 to V4, with a QS pattern, suggesting an anterior myocardial infarction.

Transthoracic echocardiography revealed a large, pedunculated thrombus within the left ventricular cavity, measuring 23 × 26 mm and attached to the apex (Figure. 1).

Figure 1. Transthoracic echocardiography, apical four-chamber view, showing a thrombus in the left ventricular apical cavity. The red arrow highlights a well-demarcated, pedunculated thrombus adherent to the endocardial surface

Associated findings included apical akinesia, severe hypokinesis of the septal wall, and a reduced left ventricular ejection fraction estimated at 30%. A brain CT scan revealed a subacute ischemic stroke involving both superficial and deep territories of the left middle cerebral artery (Figure. 2), without evidence of hemorrhagic transformation.

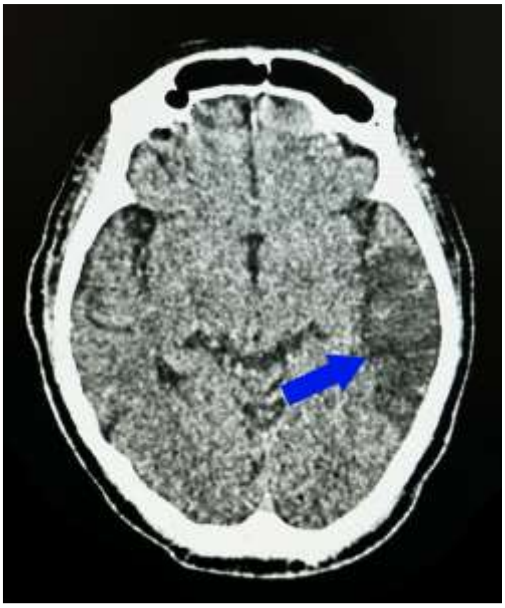

Figure 2. Non-contrast brain CT scan demonstrating an infarct in the territory of the left middle cerebral artery (MCA). The blue arrow indicates the ischemic region

Therapeutic anticoagulation with unfractionated heparin was initiated, with dose adjustments based on four-hourly activated partial thromboplastin time (aPTT) monitoring. The patient showed favorable clinical and neurological progression, with follow-up ultrasound demonstrating regression of the thrombus. Concurrently, management of acute heart failure and dual antiplatelet therapy were started.

DISCUSSION

Stroke remains one of the leading causes of mortality and disability worldwide [5]. Approximately 20% of ischemic strokes are attributed to cardioembolism [6], which tends to result in more severe neurological outcomes than other stroke subtypes. While atrial fibrillation is the most common etiology of cardioembolic stroke, patients with acute myocardial infarction (MI) are also at increased risk. This is due to the convergence of all three components of Virchow's triad: tissue injury (from endomyocardial necrosis), blood stasis (related to regional wall motion abnormalities and reduced contractility), and hypercoagulability (induced by the inflammatory state of MI) [7,8].

Despite these pathophysiological mechanisms, left ventricular thrombus (LVT) is considered a relatively infrequent complication. Reported prevalence stands at 2.7% following all myocardial infarctions and 9.1% following anterior infarctions [9]. However, recent evidence suggests that in anterior MIs with reduced left ventricular ejection fraction (LVEF <50%), the incidence of LVT may be as high as 19.2% [10]. This was the case in our patient, who presented with a large apical thrombus in the setting of an anterior MI and impaired systolic function.

More than half of cardioembolic strokes have a sudden onset, compared to 20–30% of atherosclerotic strokes [11]. According to Griñán *et al*., motor symptoms are observed in 79.6% of cardioembolic strokes [11]. Given the tendency of emboli to lodge in large-caliber or cortical arteries such as the middle cerebral artery (MCA), neurological signs like aphasia and hemispatial neglect are more frequently observed in cardioembolic strokes than in other etiologies [12]. Additionally, higher National Institutes of Health Stroke Scale (NIHSS) scores are more commonly associated with cardioembolic sources [13].

In our case, the patient experienced a cardioembolic stroke secondary to LVT following an anterior MI, resulting in left MCA territory involvement. Since the left hemisphere was dominant, this led to the development of Broca's aphasia as the primary and isolated neurological deficit.

Broca's aphasia is characterized by markedly reduced fluency, with impaired spontaneous speech output and disrupted grammatical structure. It typically results from ischemic injury to the dominant inferior frontal gyrus—specifically Broca's area—supplied by the superior division of the MCA [14]. The presence of isolated Broca's aphasia in this patient underscores the need to consider a cardioembolic source in such atypical presentations, particularly when preceded by recent cardiac events.

CONCLUSION

This case underscores the importance of considering cardioembolic sources in patients presenting with atypical neurological symptoms, particularly in the context of recent cardiac events. The identification of Broca's aphasia as an isolated initial manifestation highlights the potential for cerebral embolism from left ventricular thrombi to present subtly, without more common signs such as hemiparesis or visual field deficits. Early recognition and management of cardioembolic stroke are essential to prevent further complications, reinforcing the need for comprehensive neurological evaluation in post-myocardial infarction patients. This case also calls attention to the need for further research into the diverse neurological presentations of cardiac thromboembolic events to enhance diagnostic accuracy and patient outcomes

List of Abbreviations

LVT – Left Ventricular Thrombus
MI – Myocardial Infarction
PCI – Percutaneous Coronary Intervention
ICT – Intracardiac Thrombus
NIHSS – National Institutes of Health Stroke Scale
ECG – Electrocardiogram
TTE – Transthoracic Echocardiography
MCA – Middle Cerebral Artery
LVEF – Left Ventricular Ejection Fraction
aPTT – Activated Partial Thromboplastin Time
CT – Computed Tomography
STEMI – ST-Elevation Myocardial Infarction

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