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A Left Atrial Mass Presenting as Ischemic Stroke in a Young Adult: A Case of Suspected Atrial Myxoma

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Abstract:

- ***Background:***

Atrial myxoma is the most common benign primary cardiac tumor and may occur sporadically or as part of a familial syndrome. Although clinical manifestations vary, neurological complications secondary to tumor embolization are relatively uncommon. We report a case of atrial myxoma presenting as acute ischemic stroke in a young, previously healthy adult.

- ***Case Presentation:***

A 25-year-old previously healthy man presented with a 4-day history of acute neurologic deficit. Non-contrast computed tomography of the brain demonstrated multiple acute ischemic infarcts involving the left cerebral hemisphere. Echocardiography subsequently revealed a large, mobile, hyperechoic intracardiac mass, highly suggestive of a left atrial myxoma and providing a likely source of cardioembolic stroke.

- ***Conclusion:***

This case demonstrates the importance of prompt cardiac evaluation in young patients presenting with unexplained ischemic stroke, as early identification of an intracardiac mass may facilitate appropriate management and prevent recurrent embolic events.

- ***Summary:***

Atrial Myxoma is the most common benign primary cardiac tumor that rarely presents with neurologic deficits. We present a case of a 25-year-old male with acute-onset neurological deficits. Echo revealed a large mass highly suggestive of atrial myxoma. This case highlights the importance of prompt cardiac evaluation in young patients with unexplained ischemic stroke to identify intracardiac sources and prevent recurrence.

Keywords: *Atrial Myxoma; Ischemic Stroke; Cardioembolic Stroke; Young Adult; Left Atrial Mass; Systemic Embolization; Echocardiography.*

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I. INTRODUCTION

Atrial myxoma is the most common primary cardiac tumor in adults. [1] Although it is histologically benign, its clinical manifestations can be potentially life-threatening. The presentation varies considerably and may include constitutional symptoms, cardiac obstruction, heart failure, embolic phenomena, or, occasionally, sudden cardiac death.

Most atrial myxomas are sporadic, although a proportion occur in familial settings, including association with the Carney complex. [1] Myxomas may occur at different ages, with familial cases tending to present at a younger age. [2] They most commonly arise from the interatrial septum near the fossa ovalis, although they may originate from other atrial structures. Neurological manifestations are an important presentation of atrial myxoma. Tumor fragments or associated thrombotic material may embolize the system, resulting in transient ischemic attacks, ischemic stroke, seizures, or retinal artery occlusion with sudden visual loss. If atrial myxomas are left undiagnosed or untreated, sudden cardiac death may occur in up to approximately 15% of patients. [3]. We report the case of a 25-year-old man who presented with acute neurological

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deficits and was subsequently found to have a large mobile left atrial mass suggestive of atrial myxoma.

II. CASE PRESENTATION

➢ *Patient Information*

A 25-year-old man was referred from the Ibeju-Lekki General Hospital due to acute-onset neurological deficits that had persisted for four days before presentation.

The patient had no significant past medical history, significant family history, or previous hospital admissions. There was no history of previous surgery or blood transfusion, chronic medication use, or known drug allergies. The patient did not smoke, consume alcohol, use illicit drugs, or report consumption of herbal preparations.

➢ *History of Presenting Illness*

He was referred from Ibeju-Lekki General Hospital with a four-day history of sudden-onset weakness of the right upper and lower extremities, associated with aphasia. The patient was reportedly found on the floor of his room after a fall resulting from sudden weakness. He also had ptosis of the left upper eyelid and the left side of the face. He denied fever, headache, dizziness, loss of consciousness, weight loss, excessive sweating, chest pain, cough, dyspnea, breathlessness, fatigue, or generalized body pain. The review of systems was negative. He was urgently referred to another facility for further evaluation due to his neurological deficits.

➢ *Physical Examination*

On admission, he was conscious but aphasic. He was not pale, icteric, or cyanosed, and was afebrile, adequately hydrated, and had no peripheral edema. His random blood glucose was 90 mg/dL, reference range (<140mg/dL)

Cardiovascular examination revealed a pulse rate of 68 beats/minute, which was full-volume and regular, with a blood pressure of 120/70 mmHg. The precordium was normoactive, and the apex beat was located in the fifth left intercostal space at the midclavicular line. The first and second heart sounds were present, with no added sounds. Respiratory examination revealed a respiratory rate of 22 cycles/minute, with no crackles or other added breath sounds on auscultation.

Neurologic examination showed power in the Right upper limb: 1/5, right lower limb: 3/5, left upper limb-5/5, left lower limb-5/5. There was no neck stiffness or other clinical evidence of meningeal irritation. The right pupillary reflex was intact, whereas the left pupillary reflex could not be adequately assessed because of ptosis.

➢ *Assessment*

The initial clinical diagnosis revealed an ischemic cerebrovascular accident with a possible cardioembolic source. Connective tissue disease was also considered as a differential diagnosis. Initial investigations included a brain computed tomography (CT) scan, full blood count, erythrocyte sedimentation rate (ESR), malaria parasite testing, serum electrolytes, urea and creatinine, fasting lipid profile, genotype, viral markers, retroviral disease screening, chest radiography, electrocardiography (ECG), and echocardiography. Non-contrast brain CT demonstrated multiple left acute ischemic infarcts involving the left hemisphere.

Table 1 Full Blood Count

Full Blood Count (Patient's Values)	Reference Range
PCV:37%	PCV-40-54%
ESR:12mm/hr	ESR: 0-15mm/hr
WBC: 9.2 x 10^3/L	WBC: 4.5 to 11.0 × 10^9/L
Neutrophils: 52.3%	Neutrophils:40-70%
Lymphocyte: 39%	Lymphocyte:20-40%
Monocyte: 8.7%	Monocyte:2-8%
Platelets: 212 x 10^3/L	Platelets:150 to 450 × 10^9/L

Table 2 Electrolyte/Urea/Creatinine

Electrolyte/Urea/Creatinine (Patient Values)	Reference Range
Sodium: 134mmol/L	Sodium: 135–145 mmol/L
Potassium:3.03mmol/L	Potassium: 3.5 to 5.2 mmol/L
Chloride: 84.6mmol/l Low	Chloride: 96–106 mmol/L
Bicarbonate: 20mmol/L	Bicarbonate: 22 to 29 mmol/L
Urea: 3.1mmol/L	Urea: 2.5 to 7.8 mmol/L
Creatinine: 68.5 µmol/L	Creatinine: 64 to 104 µmol/L

Table 3 Fasting Lipid Profile

Fasting Lipid Profile (Patient Values)	Reference Range
Total Cholesterol: 3.6 mmol/L	Below 5.0 mmol/L
Triacylglycerol: 2.3 mmol/L	Less than 1.7 mmol/L
High Density Lipoprotein (HDL): 0.9 mmol/L	Above 1.0 mmol/L
Low Density Lipoprotein (LDL): 2.0 mmol/L	Less than 2.6 mmol/L

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Table 4 PT/INR

PT/INR (Patient Values)	Reference Range
Prothrombin Time (PT): 26.2seconds	11-13.5 seconds
International Normalized Ratio (INR) : 1.88	0.8-1.1

Table 5 Others

Others
Viral Markers: Negative
RVD Screening: Negative
Genotype: AA

➢ *Echocardiography*

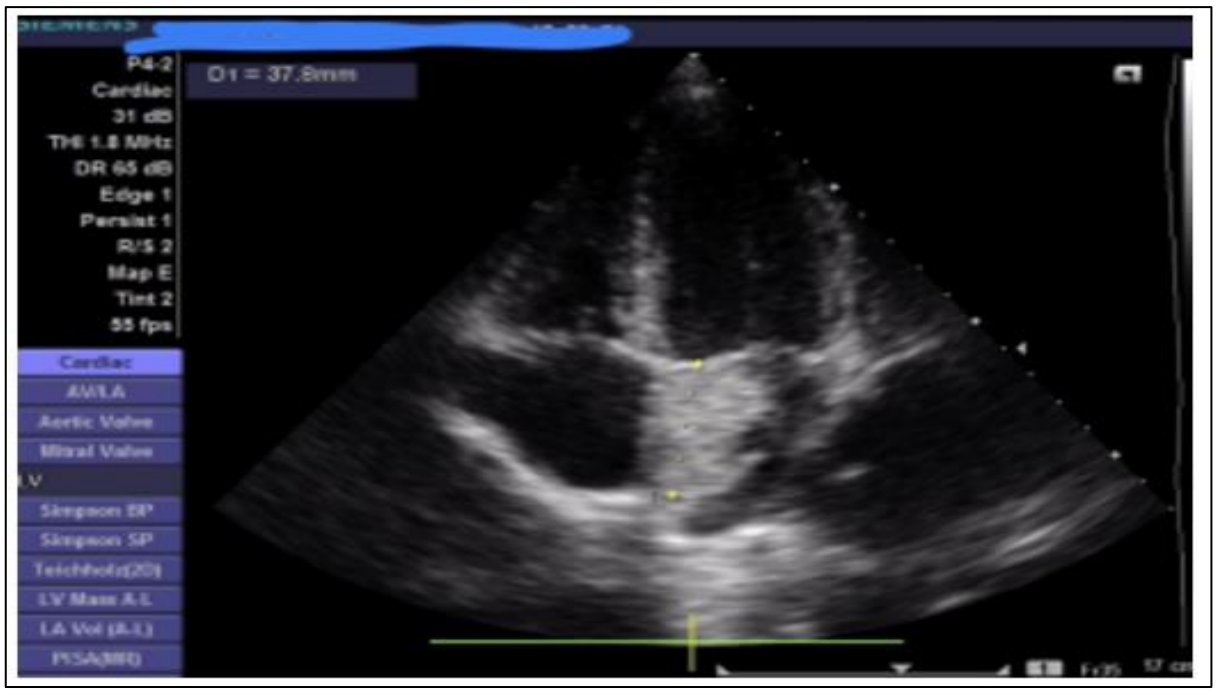


Fig 1 Echocardiography Performed on Day 4 During Admission. Length of Mass: 37.8mm

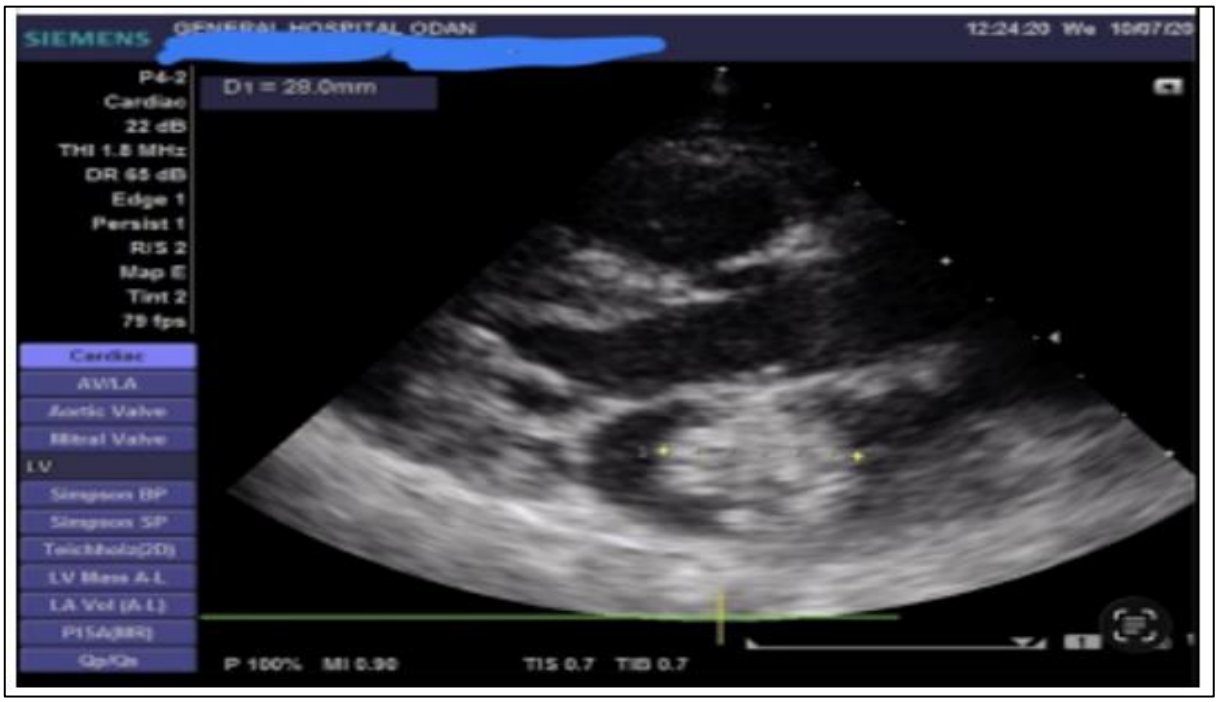


Fig 2 Echocardiography Performed on Day 14th During Admission. Length of Mass: 28.0mm

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Echocardiography performed on day 4 post-admission revealed a large hyperechoic mass within the left atrial cavity. The mass was mobile and appeared close to obstructing the mitral valve orifice. No turbulence was observed, and the systolic ejection fraction was preserved; the other cardiac chambers were within normal limits. Based on the clinical presentation and echocardiographic findings, the clinical diagnosis was ischemic cerebrovascular accident secondary to presumed intracardiac thromboembolic material with arterial embolization and findings suggestive of an atrial myxoma.

- *Management*

Following the initial assessment, a treatment plan with subcutaneous Clexane 40 mg daily was initiated, with plans to overlap with warfarin 5 mg daily for 5 days. Baseline prothrombin time/international normalized ratio (PT/INR) was also obtained.[Figure 1.4] The patient was also started on atorvastatin (40 mg daily) and was referred to the neurology team for further review.

On the second day post-admission, the patient's neurological deficits showed improvement, with power of 3+ in the right upper limb and 3/5 in the right lower limb. His aphasia subsided; however, he remained confused. By the third day, the patient was ambulatory with support and had regained further power in both the right upper and lower limbs. He was also well-oriented at this stage.

On the fourth day, an echocardiogram was performed and interpreted, demonstrating a large mobile mass within the left atrial cavity, which was approaching the mitral valve orifice, with preserved systolic function and otherwise normal cardiac chambers. [Figure 1]

On the sixth day, the patient reported an inability to see in the left eye. He stated that visual loss had been present since the onset of his initial neurological symptoms but had not been reported earlier because of his aphasic state. Therefore, an ophthalmology consultation was requested for further evaluation of the patient.

From the seventh to the fourteenth day, the patient remained clinically stable and continued to show clinical improvement. He was able to ambulate without support on day fourteen and was discharged. A repeat echocardiogram was requested at the time of discharge, which demonstrated a reduction in the intracardiac mass and was interpreted and performed by the same sonographer. [Figure 2]. The patient was discharged and, on request, referred to a tertiary facility, for further management by the cardiothoracic surgery team.

III. DISCUSSION

Atrial myxoma is an uncommon cardiac tumor, but it is the most common primary cardiac tumor. Its clinical significance extends beyond the potential obstruction of intracardiac blood flow to its ability to cause systemic embolization. This case illustrates the diagnostic challenge of a suspected atrial myxoma presenting primarily with neurological rather than cardiovascular manifestations.

The patient was a 25-year-old previously healthy male with no documented history of conventional vascular risk factors who presented with sudden-onset focal neurological deficits. In young adults presenting with ischemic stroke, less common etiologies, including cardioembolic sources, should be considered, particularly in the absence of established vascular risk factors. Importantly, the absence of cardiovascular symptoms does not exclude a clinically significant cardiac source of embolization.

The cardiovascular examination was unremarkable, which supports the fact that atrial myxomas may remain clinically silent or present with nonspecific manifestations, and their clinical presentation depends on tumor size, mobility, location, and the predominant mechanism of disease, including intracardiac obstruction, constitutional symptoms, or embolization. Approximately 20% of cases are entirely asymptomatic and discovered as incidental findings on routine imaging. [4]

Brain computed tomography demonstrated multiple acute ischemic infarcts involving the left cerebral hemisphere. Atrial myxomas may cause embolic events through tumor fragments or tumor-associated thrombotic material.

Neurological embolization can manifest as a transient ischemic attack, ischemic stroke, or, less commonly, a seizure.[5] The patient also reported left-eye monocular visual loss beginning around the onset of his initial illness, raising the possibility of a concurrent retinal vascular event. However, ophthalmological findings were not available to confirm this association. Echocardiography played a central role in identifying the intracardiac lesion with preserved systolic function and otherwise normal cardiac chambers; however, CT angiography or MR angiography, carotid imaging, and brain MRI were not performed in this case because of financial constraints and limited availability of these investigations at the treating facility. These limitations restricted further characterization of the cerebral and vascular distribution of the embolic events and prevented a more comprehensive evaluation of the intracardiac lesion.

The differential diagnosis of a left atrial mass includes atrial thrombus and other cardiac tumors, including cardiac myxofibrosarcoma, which is an aggressive malignancy in the left atrium. Both these tumors have similar appearance on imaging; however, comprehensive histopathologic and immunohistochemical evaluation is required for definitive diagnosis. [6] Although the echocardiographic characteristics were strongly suggestive of atrial myxoma, surgical excision and histopathological examination are the definitive means of establishing the diagnosis, which could not be performed at the treating facility because of the limitations stated above. The patient requested a transfer to a tertiary facility for further management by the cardiothoracic surgical team. Consequently, histopathological confirmation was not possible at the time of discharge.

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In the absence of tissue diagnosis, the lesion should therefore be regarded as a suspected atrial myxoma based on its clinical and echocardiographic characteristics rather than a histologically confirmed myxoma. The absence of a positive family history or other features suggestive of a familial syndrome supported consideration of a sporadic form. However, a familial or syndromic etiology could not be definitively excluded because further evaluation, including genetic assessment where clinically indicated, was not performed because of financial limitations.

Management during admission was primarily directed toward acute neurological complications and prevention of further thromboembolic events. Surgical excision remains the definitive treatment for atrial myxoma, as medical therapy does not eradicate the tumor itself.

The patient demonstrated progressive neurological improvement during hospitalization with independent ambulation. A repeat echocardiogram demonstrated a reduction in the size of the intracardiac mass. According to the treating cardiologist, the interval reduction was considered consistent with the resolution of a suspected thrombotic component associated with the mass following anticoagulation. This finding is clinically important because it raises the possibility that part of the original echocardiographic mass represented a thrombus superimposed on the underlying suspected left atrial myxoma. However, in the absence of surgical excision and histopathological examination, the precise composition of the remaining mass could not be definitively established. Wide surgical resection of the myxomal stalk and its surrounding healthy tissue is generally associated with favorable outcomes and helps minimize recurrence[7]. Surgical resection provides a long-term cure with a reported actuarial survival rate of 96.8 ± 1.8% at 10 years.[8] Following surgery, the vast majority of patients remain completely asymptomatic and free from disease. Early perioperative mortality is low, typically ranging from 0.5% to 2.2% [9,10]

This case highlights the importance of maintaining a high index of suspicion for a cardiac source of embolization in young patients presenting with ischemic stroke, particularly when conventional vascular risk factors are absent. A normal cardiovascular examination and the absence of cardiopulmonary symptoms do not exclude an intracardiac lesion. Early echocardiographic evaluation can identify an otherwise unsuspected left atrial mass and facilitate appropriate cardiology and cardiothoracic referrals. The patient's young age, absence of documented conventional vascular risk factors, acute neurological presentation, and identification of a large mobile left atrial mass underscore the importance of considering atrial myxoma in the differential diagnosis of unexplained ischemic stroke in young adults, while recognizing the diagnostic limitations imposed by limited access to advanced imaging and histopathological confirmation.

IV. CONCLUSION

The clinical presentation of atrial myxoma is broad, ranging from nonspecific constitutional symptoms to sudden cardiac death. Approximately 20% of cases are entirely asymptomatic and discovered as incidental findings on routine imaging [11]. In young adults presenting with acute ischemic stroke without an obvious cause, a cardioembolic source should be considered.

Here, echocardiography identified a large mobile left atrial mass, highly suggestive of atrial myxoma, providing a plausible source for the patient's cerebral embolic event and subsequent visual disturbance. Early recognition allowed appropriate referral for cardiothoracic surgical management.

This case highlights the importance of echocardiography in the evaluation of unexplained ischemic stroke in young patients and reinforces the need for definitive surgical treatment of suspected atrial myxoma to prevent recurrent embolization and other potentially life-threatening complications.

➢ *Learning Points*

- Suspected atrial myxoma should be considered in young patients with otherwise unexplained ischemic stroke.
- Cardiac symptoms may be absent, and a normal cardiovascular examination does not exclude atrial myxoma.
- Echocardiography, especially transesophageal echocardiography, is central to identifying intracardiac masses and assessing their mobility, location, and relationship with the mitral valve.
- Atrial myxoma can cause cerebral and retinal embolization, making neurological manifestations an important mode of presentation for this condition.
- Surgical excision is the definitive treatment for atrial myxomas.
- Histopathological confirmation should be obtained whenever a tumor is surgically excised to establish a definitive diagnosis.

DECLARATIONS

➢ *Consent for Publication*

Verbal consent was obtained.

Formal IRB approval was not obtained. Verbal informed consent for publication was obtained from the patient.

- IRB approval: No
- Patient informed consent: Yes
- Consent for publication: Yes, assuming that's specifically what the patient consented to Patient-identifying information: Removed/protected
- Disclosure: Included in the cover letter and manuscript as requested

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➢ *Availability of Data*

All relevant clinical information is contained in the case report. Additional information may be available from the corresponding author upon reasonable request, subject to patient confidentiality and institutional requirements.

➢ *Competing Interests*

The authors declare [no competing interests/relevant competing interests].

➢ *Funding*

No specific funding was reported for this study.

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