Atrial Myxoma Presenting with Young-Onset Stroke and Late Post-Stroke Epilepsy

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ABSTRACT

BACKGROUND

Atrial myxoma, the most common benign cardiac tumour, may present with neurological complications, including ischaemic stroke in young adults. The optimal timing of surgical resection after stroke and the risk of subsequent post-stroke epilepsy remain unresolved clinical challenges.

CASE SUMMARY

An 18-year-old man presented with acute aphasia, right hemiplegia, and seizure. Brain imaging showed a large left middle cerebral artery infarct with ipsilateral carotid occlusion. Transthoracic echocardiography revealed a left atrial myxoma. Surgery was deferred for three months due to the extensive infarct and high haemorrhagic risk. Elective resection confirmed atrial myxoma. Seven months later, the patient developed late-onset post-stroke epilepsy secondary to cortical encephalomalacia, well controlled on levetiracetam.

DISCUSSION

This case highlights the diagnostic importance of echocardiography in young-onset stroke, the balance between early and delayed cardiac surgery following cerebral infarction, and the need for long-term neurological follow-up after curative resection.

Keywords
Atrial myxoma, cardioembolic stroke, surgical timing, post-stroke epilepsy, young stroke

INTRODUCTION

Atrial myxoma, though rare, represents a critical cardiac source of embolic stroke, particularly in young adults. Despite an annual incidence of 0.5 per million, it remains the most frequent primary cardiac tumour associated with neurological events.[1] Neurological manifestations occur in up to 30% of cases, often as large-vessel embolic infarcts.[2]

Although surgical resection is curative, its optimal timing after stroke remains contentious. Early surgery mitigates recurrent embolic events but increases the risk of haemorrhagic transformation, particularly in large infarcts.[3] Additionally, post-stroke epilepsy (PSE) may occur months later in patients with cortical injury or encephalomalacia.[4] This report illustrates the multidisciplinary considerations in managing atrial myxoma presenting with stroke and subsequent epilepsy.

CASE REPORT

An 18-year-old right-handed man, previously healthy apart from a 5-pack-year smoking history, presented with sudden-onset aphasia and right hemiplegia. The onset was preceded by tonic stiffening of all limbs with drooling, lasting one minute, followed by post-ictal unresponsiveness. On admission, he was drowsy but arousable (GCS E3V1M6) with dense right hemiplegia, Wernicke's aphasia, neglect, and an NIHSS score of 22.

Non-contrast CT brain excluded haemorrhage. CT angiography revealed a large left MCA/ACA infarct with occlusion of the ipsilateral internal carotid artery (Figure 1). ECG showed sinus rhythm and baseline blood tests were unremarkable. He presented outside the thrombolysis window, and mechanical thrombectomy was unavailable locally.

Bedside transthoracic echocardiography revealed a pedunculated, friable mass measuring 4 × 4.5 cm attached to the interatrial septum, intermittently obstructing mitral inflow, consistent with left atrial myxoma (Figure 2).

Owing to the extensive infarct and high risk of haemorrhagic transformation, urgent surgery was deferred. He received multidisciplinary rehabilitation with gradual improvement in comprehension but persistent motor deficits. Antiepileptic therapy was discontinued after two weeks as no further seizures occurred.

Three months later, elective resection of the atrial mass was performed. Intraoperatively, a friable tumour was excised completely, and histopathology confirmed atrial myxoma (Figure 3). Postoperative echocardiography showed preserved function with no residual mass.

Figure 1: Initial non-contrast CT brain (a) demonstrated a large acute infarction within the left MCA territory, involving the insular cortex, lentiform nucleus, and M1–M6 regions, without evidence of haemorrhage. CT angiography of the brain and carotids (b–d) revealed long-segment non-opacification of the left internal carotid artery from the petrous to terminal segment, with irregularities at the left A1 and M1 segments and a short segment of non-opacification in the distal M1. The extracranial left ICA (e) appeared irregular and reduced in calibre. Collectively, these findings were consistent with large-vessel occlusion and extensive established ischaemia.

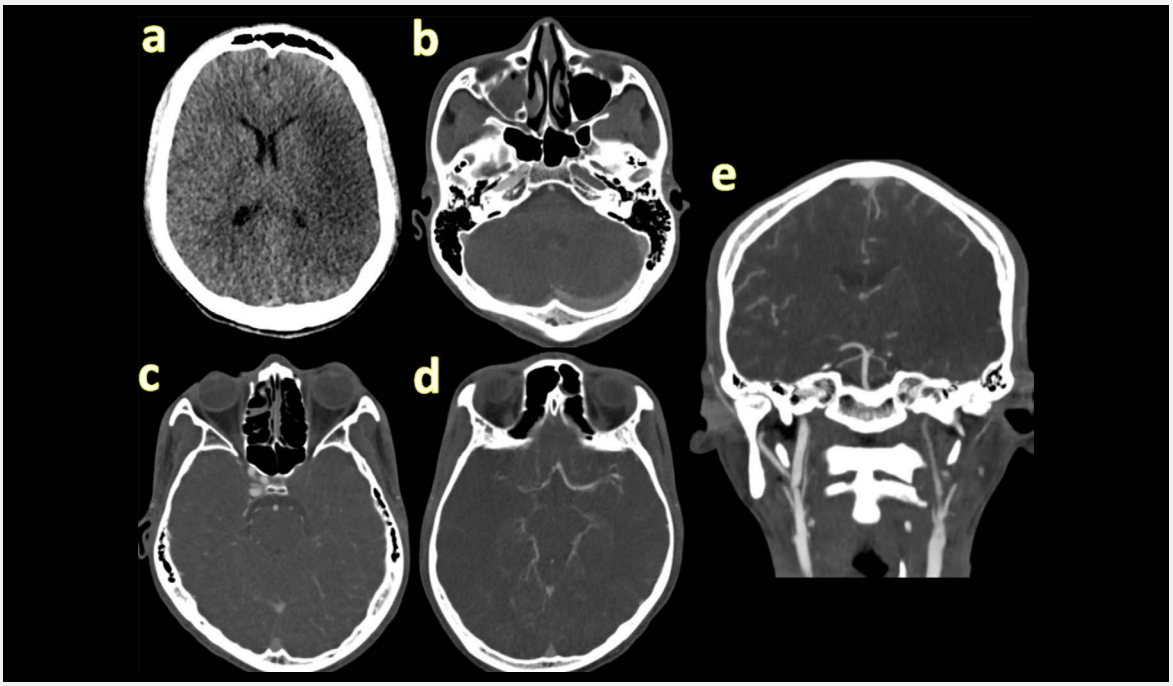


Figure 2: Bedside transthoracic echocardiography: parasternal long-axis view (a) and apical four-chamber views (b, c) demonstrate a well-circumscribed, hyperechoic mass arising from the interatrial septum, visible during both diastole (b) and systole (c), consistent with a left atrial myxoma. Postoperative apical four-chamber view (d) confirms complete resection, with no residual left atrial mass.

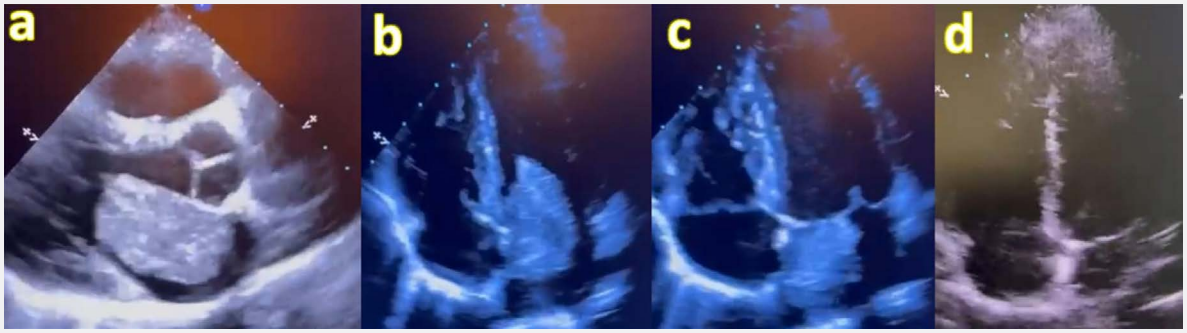
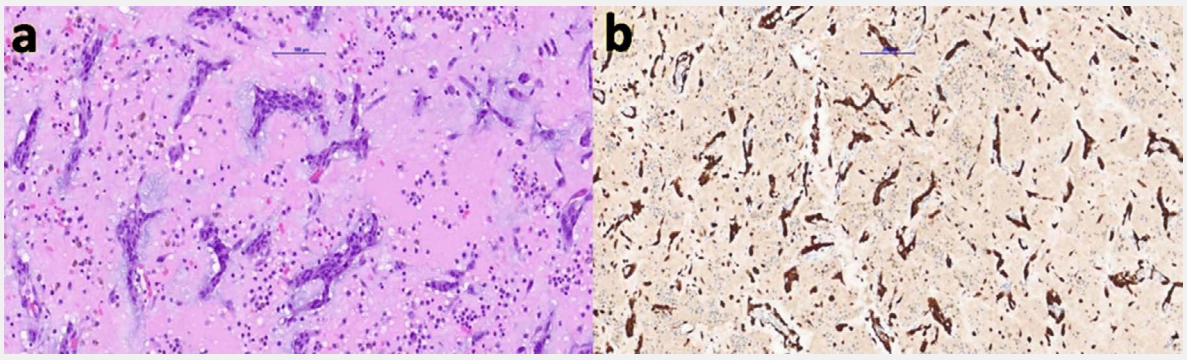


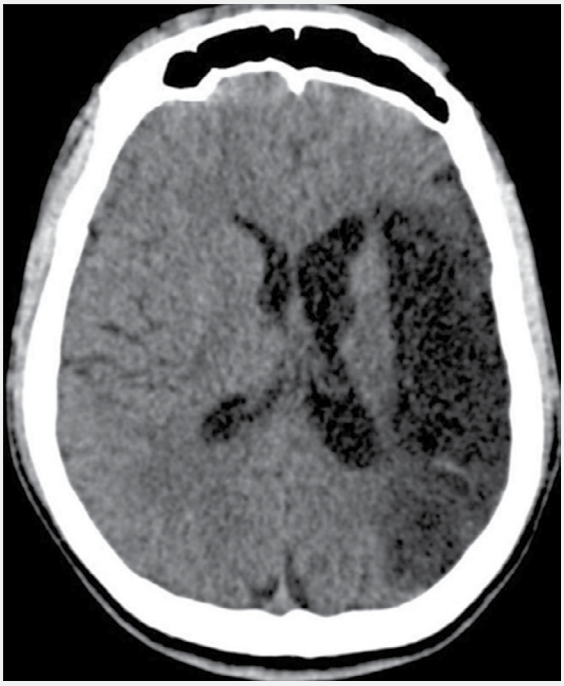
Figure 3: (a) Histopathological examination of the resected left atrial mass shows nests and cords of bland neoplastic cells within a myxoid stroma, without cytological atypia or mitotic activity. No features of malignancy are identified. (b) Immunohistochemistry demonstrates diffuse positivity for calretinin and focal positivity for S100, consistent with a diagnosis of cardiac myxoma.



Seven months after the index stroke, the patient re-presented with recurrent seizures, initially focal motor jerks of the right upper limb progressing to generalised tonic–clonic seizures. CT brain showed encephalomalacia of the left fronto-parieto-temporal cortex with ex vacuo dilatation of the lateral ventricle (Figure 4). He was commenced on levetiracetam 1 g twice daily with good seizure control.

The final diagnosis was cardioembolic stroke secondary to atrial myxoma, complicated by late-onset post-stroke epilepsy.

Figure 4: CT brain seven months post-stroke demonstrates encephalomalacia of the left fronto-parieto-temporal region with ex vacuo dilatation of the ipsilateral lateral ventricle, consistent with chronic infarction



DISCUSSION

This case highlights several cardiological and neurological intersections. Cardiac sources, particularly atrial myxoma, should be actively sought in young-onset ischaemic stroke. Early echocardiography—transthoracic or transoesophageal—is crucial to prevent missed diagnoses and recurrent embolic events.[2]

We performed a PubMed search using the terms *"atrial myxoma AND stroke"*, *"cardiac tumor embolic stroke"*, and *"atrial myxoma AND epilepsy"* from database inception to August 2025, limited to human studies and English language. This search yielded 391 published articles. Reports of atrial myxoma causing stroke are well documented, but late-onset post-stroke epilepsy following curative resection remains extremely rare, reported in fewer than 5% of cases.

The timing of resection after stroke must balance embolic recurrence risk against perioperative haemorrhagic transformation. Emerging data suggest early surgery (≤30 days) may be safe in moderate infarcts, but extensive infarction (as in this case) warrants a delayed approach to avoid catastrophic bleeding.[3, 5, 6] In our case, the extensive infarct burden (NIHSS 22) rendered early surgery hazardous, justifying the three-month delay. Nevertheless, the risk of embolisation during this period underscores the urgent need for tailored, multidisciplinary decision-making between cardiology, neurology, and cardiothoracic surgery.

Among the 391 indexed cases, most involved patients aged 30–60 years, with mean age 45 years.[7, 8] Our patient was only 18 years old—among the youngest reported with combined *large hemispheric infarct, delayed resection, and late post-stroke epilepsy*. Reports of post-stroke seizures secondary to atrial myxoma emboli are exceedingly scarce, and even fewer document late epilepsy months after surgery.[9, 10]

PSE occurs in 6–15% of stroke survivors, with cortical involvement and encephalomalacia being major risk factors.[4, 11, 12] In this case, seizures developed several months after surgery, reinforcing the need for ongoing neurological surveillance even when the embolic source has been eliminated. Levetiracetam provided excellent seizure control, consistent with current first-line recommendations.[13, 14]

This case therefore emphasises the interplay between cardiovascular pathology, neurological complications, and the importance of long-term follow-up. It also highlights the educational value of a multidisciplinary approach involving neurology, cardiology, cardiothoracic surgery, pathology, and rehabilitation medicine.

This report is distinct for (1) the extremely young age of onset (18 years), (2) massive hemispheric infarction with high NIHSS, (3) delayed but successful curative resection, and (4) late post-stroke epilepsy — an exceptionally rare sequence not previously reported from Southeast Asia.

CONCLUSION

Atrial myxoma should be considered in the differential diagnosis of young-onset ischaemic stroke. Early echocardiography facilitates timely diagnosis, while the timing of surgical excision must balance recurrent embolic risk with perioperative neurological complications. Even after successful tumour resection, patients remain at risk for long-term sequelae such as post-stroke epilepsy, underscoring the importance of vigilant follow-up and comprehensive multidisciplinary care.

Declarations

Ethics Approval and Consent to Participate

- Not applicable

Consent for Publication

- Written informed consent was obtained from the patient for publication of this case report and accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal.

Availability of Data and Material

- Not applicable

Competing Interests

- The authors declare that they have no competing interests.

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Authors' Contributions

- SKI conceived the idea for case reporting and prepared the final manuscript with YHL. BHSN is the managing neurologist. CFC is the managing cardiologist. SYS is the managing cardiothoracic surgeon. JGLT interpreted all imaging studies. ZHC is the pathologist analysing all the histopathology specimens. All authors reviewed and approved the final version of the manuscript.

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- None declared

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