Mitral Valve Papillary Fibroelastoma as the Cause of Ischemic Stroke in a Young Patient: A Case Report

ABDEF 1 Milena Miranda Vasconcelos
BDEF 1 Caroline F. da S.M. Pupo da Silveira
DEF 2 Marcello Lameza Felicio
DEF 3 Marcelo Padovani de Toledo Moraes
DEF 1 Renato Teixeira
BEF 4 Stella de Angelis Trivellato
DEF 4 Gabriel Pinheiro Modolo
DEF 4 Rodrigo Bazan
ACDEF 1 Silméia Garcia Zanati Bazan

Corresponding Author: Silméia Garcia Zanati Bazan, e-mail: sgz.bazan@unesp.br
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Patient: Female, 27-year-old
Final Diagnosis: Ischemic stroke • papillary fibroelastoma
Symptoms: Motor aphasia and hemiparesis in the right dimidium
Medication: —
Clinical Procedure: —
Specialty: Cardiology • Neurology

Objective: Rare disease
Background: Primary cardiac tumors represent less than 5% of total cardiac tumors. Fibroelastoma is a rare benign cardiac tumor that is usually asymptomatic but is acknowledged for its embolicogenic potential for causing cardiac, neurological, and vascular symptoms and increasing patient morbidity and mortality.

Case Report: This report describes the clinical case of a 27-year-old woman who entered the Emergency Department with motor aphasia and hemiparesis in the right dimidium. A brain computed tomography scan was performed at admission, which showed left frontal-parietal hypodensity. The diagnosis of ischemic stroke was made, but cerebral reperfusion therapy with intravenous recombinant tissue plasminogen activator was not instituted due to the time that had passed since ictus (15 h 40 min). On the first day of hospitalization, the patient had a fever, with no apparent infectious cause. She underwent transthoracic echocardiogram that showed a sessile, isoechoic mass adhered to the atrial surface of the anterior mitral valve leaflet, measuring 6.8×5.5 mm. Antibiotic therapy with ceftriaxone and gentamicin was initiated due to the initial diagnosis of infective endocarditis. Three blood culture samples had negative results. Given a differential diagnosis of fibroelastoma, transesophageal echocardiography and cardiac resonance imaging were performed, and the findings were compatible with a diagnosis of mitral valve fibroelastoma. After clinical discussion, the patient was referred to cardiac surgery and underwent tumor resection with anatomopathological diagnosis of papillary fibroelastoma of the heart valve.

Conclusions: Young patients with ischemic stroke must be investigated with transthoracic and transesophageal echocardiograms. Papillary fibroelastoma is potential cause of ischemic stroke in young patients, and surgical resection is curative and has excellent prognosis.

Keywords: Echocardiography, Doppler • Endocardial Fibroelastosis • Stroke

Full-text PDF: https://www.amjcaserep.com/abstract/index/idArt/930561
**Background**

Primary cardiac tumors represent less than 5% of total cardiac tumors [1]. Among them, the most common tumors are myxomas and lipomas, followed by fibroelastomas [2]. However, the majority of cardiac tumors are metastatic.

Fibroelastoma is a rare benign cardiac tumor that is usually asymptomatic, but it is acknowledged for its embolicogenic potential for causing cardiac, neurological, and vascular symptoms and increasing patient morbidity and mortality [2,3].

**Case Report**

A 27-year-old woman presenting with motor aphasia and right-sided hemiparesis was admitted to the Emergency Department. She denied any prior diseases, such as hypertension or diabetes, and had a history of previous cocaine, cannabis and light tobacco use. She was employed at a meat cold storage facility and a middle school.

A brain computed tomography scan was performed upon admission and showed hypodensity in the left frontoparietal region; the hypodensity compromised over a third of the left medium cerebral artery territory (Figure 1A). Ischemic stroke was diagnosed, but cerebral reperfusion therapy with recombinant tissue plasminogen activator was not started because 15 h 40 min had elapsed between the last deficit-free encounter and admission to the hospital. This time span was outside the current accepted reperfusion window.

Biochemical tests, such as viral serologies (HIV, hepatitis B and C) and syphilis, and investigation of vasculitis and thrombophilia were all within normal levels. The patient then underwent transcranial Doppler imaging that suggested intracranial stenosis of the left medium cerebral artery.

As on the first admission day, there was one fever episode without an apparent infectious cause, and the patient underwent a transthoracic echocardiogram, which showed a sessile, isoechoic mass adhered to the atrial surface of the anterior leaflet of the mitral valve, measuring 6.8×5.5 mm (Figure 1B). She was then started on antibiotics (ceftriaxone and gentamicin) due the initial hypothesis of infectious endocarditis. Three blood culture samples were collected, and all had negative results. The possibility of fibroelastoma as a differential diagnosis was then discussed, and transesophageal echocardiography was scheduled upon ending antibiotic treatment. The images supported the diagnosis of mitral valve fibroelastoma. After clinical discussion, evaluation for cardiac surgery was requested, and the patient underwent surgery for tumor resection (Figure 2A). Pathological analysis was compatible with papillary fibroelastoma of the heart valve (Figure 2B).

**Discussion**

Fibroelastoma is a rare primary cardiac tumor, corresponding to less than 5% to 10% of cases [3]. Although it usually affects cardiac valves, it is rarely related to valve dysfunction. Although infrequent, fibroelastoma can also affect other sites, such as tendinous cords, the endocardium, and papillary muscles [2,4].

![Image](A.png) ![Image](B.png)

**Figure 1.** (A) Brain computed tomography showing a left frontoparietal hypodensity. (B) Transthoracic echocardiogram showing a sessile, isoechoic mass adhered to the atrial surface of the anterior leaflet of the mitral valve.
Fibroelastoma presents as a single lesion that is small (less than 10 mm), not vascularized, and mobile, and it has a sea anemone-like appearance [4]. It more commonly affects the aortic valve, followed by the mitral, tricuspid, and pulmonary valves [5,6].

The etiopathogenesis of fibroelastoma is controversial due to its possible neoplastic origin [3], with other hypotheses suggesting origins in thrombosis, trauma, external stimuli, or even Lambl’s excrescences. Histologically, a fibroelastoma is composed of a central portion of dense connective tissue that is surrounded by loose connective tissue and covered by hyperplastic epithelial cells [1,2].

Most of these tumors are asymptomatic. Nonspecific symptoms, such as chest pain, asthenia, fever, dyspnea, syncope, or rarely valve dysfunction, can occur [3]. It is important to highlight that right-side tumors can cause pulmonary embolism and arrhythmias and left-side tumors can provoke acute myocardial infarction and mesenteric, renal, or liver ischemia. Fibroelastoma can ultimately induce ischemic stroke, which is the main complication of these left-side tumors when symptomatic, as reported in this case [2,4]. This emboligenic potential is a consequence of the fragmentation of its own spicule or even of thrombi formed by platelets and fibrin adhered to the irregular tumor surface [1,4,6]. It is important to stress that, for a young patient with cardioembolic ischemic stroke, as described here, without any evidence of cerebrovascular disease and with sinus rhythm, the possibility of cardiac tumor, as well as endocarditis and mitral valve prolapse, must be considered [1].

Fibroelastoma may occur at any age but is more common among adults over 40 years old [4,5], without a sex prevalence. Its differential diagnoses, aside from vegetation [7], thrombi, and degeneration of valvular tissue, are other cardiac tumors, such as lipoma and myxoma [3]. The diagnosis may be achieved through transthoracic echocardiogram, especially for large tumors [1,8]. For smaller tumors, transesophageal echocardiogram may help provide information about size and location [3,9].

Other examinations may help with the diagnosis, such as cardiac magnetic resonance, which provides detailed information of the tumor through the late enhancement technique [4]. It is important to highlight that the criterion standard diagnosis is made through anatomopathological study [1].

Surgical treatment is still a controversial subject in asymptomatic patients. Tumor characteristics, such as size and mobility, and the presence of symptoms [1,3] must be taken into account for decision making. If the patient presents with a patent foramen ovale and a right-side tumor, resection is recommended due to the risk of a paroxysmal embolism [3].

Our patient presented with an ischemic stroke as a complication, and after the exclusion of other possible cardioembolic sources, a fibroelastoma was considered the cause of the event. Thus, the patient was referred to cardiac surgery for tumor resection.

Surgical resection is performed at the tumor implantation base, with the aim to avoid tumor recurrence and new embolic events [1,5,10]. The procedure is curative in the majority of cases. Patients undergoing conservative treatment must remain on anticoagulants, although it is a controversial subject in the literature, with uncertain efficacy [4].
Conclusions

Young patients with ischemic stroke must be investigated with transthoracic and transesophageal echocardiograms. Cardiac masses require clinical history, blood cultures, laboratory tests, and imaging tests to establish differential diagnoses. Papillary fibroelastoma is a potential cause of ischemic stroke in young patients, and surgical resection is curative and has an excellent prognosis.

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Conflicts of Interest

None.