Embolic Stroke From Cardiac Papillary Fibroelastomas

Edward J. Kasarskis, MD, PhD, William O'Connor, MD, and Gary Earle, MD

We describe two patients with cerebral emboli originating from a cardiac papillary fibroelastoma and compared them with six patients reported in the literature. Surgical excision was curative in both of our patients. The surface topography of the tumor, as visualized by scanning electron microscopy, is described. (Stroke 1988;19:1171-1173)

Cardiac papillary fibroelastomas are rarely encountered and, before 1981, were diagnosed only at autopsy.\(^1\) The lesion consists of a frond-like papillary growth, which typically occurs on the cardiac valves but can also appear over the papillary muscles, chordae tendineae, ventricular septum, or the endocardial surface.\(^2\) Although it has been recognized that occlusion of the coronary ostia by papillary fibroelastomas may rarely cause sudden death,\(^3\) the neurologic complications of this lesion have not been widely appreciated. We describe two patients in whom emboli originating from papillary fibroelastoma caused transient ischemic attacks (TIAs) and cerebral infarction.

Case Reports

Case 1. A 43-year-old Caucasian woman was found paretic and unresponsive by her daughter. Her neurologic deficits had totally resolved by the time of admission to the emergency department 4 hours later. Adult-onset diabetes mellitus was the only recognized risk factor for cerebrovascular disease. In addition to insulin, the patient had been taking 50 mg dipyridamole t.i.d. for several years. The examination was remarkable for obesity. No abnormalities were detected on cardiac examination, and there were no carotid bruits. The neurologic examination was normal. The following diagnostic studies were within normal limits: computed tomogram (CT scan) of the head, platelet count, electrocardiogram, electroencephalogram, oculoplethysmography, and 24-hour Holter monitoring. Lipid profile demonstrated slightly elevated high density lipoprotein. An echocardiogram revealed an echogenic mass measuring \(2 \times 3\) cm on the anterior leaflet of the mitral valve near the lateral commissure. The intracardiac tumor was resected on July 5, 1985, with the complication of a transient right hemiparesis and brief focal seizure. Several follow-up CT scans remained normal. Gross pathologic exami-
nation of the tumor revealed a mass, 1.8 cm in diameter, on a stalk with tiny hair-like appendages producing a sea anemone configuration. Histologic examination showed a typical papillary fibroelastoma consisting of nonvascularized cores of fibroelastic tissue covered with a loose myxoid layer and endocardial lining cells² (Figure 1). Scanning electron microscopy revealed variations in the thickness of the papillae, with some bunching and club-shaped tips partly covered by endocardial cells (Figure 2).

Case 2. This 52-year-old Caucasian man has a history of multiple cerebral infarcts occurring in July of 1981, November of 1982, and February of 1983. On one occasion, the infarction was complicated by tonic/clonic seizures requiring phenytoin and phenobarbital. He was admitted in August of 1984 after experiencing a TIA referable to the vertebrobasilar vascular system, manifested by tetraparesis without loss of consciousness lasting approximately 1 hour, followed by complete resolution of the new deficits. CT scans of his head with and without contrast (Figure 3) revealed five low-density, nonenhancing lesions involving the entire right occipital cortex, the anterior left occipital

![Figure 2](image-url)  
**Figure 2.** Case 1. Left: Low-power scanning electron micrograph showing elongated, tapered, and sometimes bunching fronds radiating from short central base. ×21. Right: High-power scanning electron micrograph of individual hair-like projections showing plump, pavemented covering of endothelial cells. ×213.

![Figure 3](image-url)  
**Figure 3.** Case 2. Computed tomogram of head demonstrating multiple infarctions in occipital cortices bilaterally, in left thalamus, in right insula, and in left parietal lobe.
cortex, the left thalamus, the right insula, and the left parietal lobe. A four-vessel cerebral angiogram established that the carotid and vertebrobasilar arterial systems were normal. An echocardiogram delineated a 1.5 x 2 cm mass on the posterior mitral valve that was removed on August 31, 1984, without complication. Pathologic examination revealed a frond-like tumor 1.3 cm in diameter on a stalk that on microscopic examination had an arborescent core and was consistent with a papillary fibroelastoma. No further cerebrovascular events have occurred during the 3-year postoperative follow-up.

Discussion

The papillary fibroelastoma is generally small (0.1-4.0 cm in diameter) and accounts for only 1% of primary heart tumors. It arises from the valvular connective tissue and is anchored by a short pedicle. Multiple hair-like fronds radiate from an avascular connective tissue and is anchored by a short pedicle.  

TABLE 1. Reports of Papillary Fibroelastoma and Stroke

<table>
<thead>
<tr>
<th>Author</th>
<th>Year</th>
<th>Patient's age</th>
<th>Patient's sex</th>
<th>Previous TIA or stroke</th>
<th>Infarct distribution</th>
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<tbody>
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<td>Yater</td>
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<td>LMCA</td>
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<td>54</td>
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<tr>
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<td>1986</td>
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<td>41</td>
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<tr>
<td></td>
<td></td>
<td>52</td>
<td>M</td>
<td>Yes</td>
<td>Basilar, L MCA, R MCA</td>
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</tbody>
</table>

TIA, transient ischemic attack; M, male; F, female; L, left; R, right; MCA, middle cerebral artery.

particularly clear based on the history of three previous vascular events, the CT visualization of multiple old cerebral infarctions in several vascular territories (Figure 3), the normal extracranial vessels, and the absence of further vascular events during a 3-year follow-up after the tumor was removed. Thus, it appears that papillary fibroelastomas carry a definite, albeit low, potential for cerebral embolization and should be included in the list of cardiac tumors causing stroke.

Acknowledgments

The authors would like to thank Mrs. Nancy Kelley for typing the manuscript and Mr. Richard Geissler for preparing the scanning electron micrographs.

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KEY WORDS • embolization • endocardial fibroelastosis • cerebral infarction • transient ischemic attack
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Stroke. 1988;19:1171-1173
doi: 10.1161/01.STR.19.9.1171

Stroke is published by the American Heart Association, 7272 Greenville Avenue, Dallas, TX 75231
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Print ISSN: 0039-2499. Online ISSN: 1524-4628

The online version of this article, along with updated information and services, is located on the World Wide Web at:
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