Primary cardiac tumors are rare, with the incidence between 0.17% and 0.19% in unselected autopsy series.\(^1,2\) After myxoma, cardiac fibroma is the second most common type of benign primary cardiac tumor.\(^1,3\) Untreated, cardiac fibroma has a poor prognosis, with death occurring in up to 25% of patients, usually the result of sudden death from conduction disturbances.\(^1,3\) Surgical extirpation is considered to be the treatment of choice but is associated with high morbidity and mortality in the early (10%) and late (4%) recovery periods.\(^4\)

In the present report, we describe a novel endovascular treatment for right ventricular (RV) fibrolipoma with successful outcome.

**Case Report**

A 38-year-old Caucasian male patient presented to our hospital with complaints of atypical chest pain. For several months, he had been having gradually worsening shortness of breath on exertion and generalized weakness and fatigue. The ECG revealed SIQIII pattern, incomplete right bundle-branch block, and negative T waves in V1-V4. The transthoracic echocardiogram (TTE) showed normal left ventricular ejection fraction (56%), elevated systolic pulmonary artery pressure (55 mm Hg), and an elongated 40/90 mm mass in the free wall of the RV.

Computed tomography (CT) confirmed the presence of a vascularized 39x85 mm intramural mass that obstructed the RV outflow tract (Figure 1). CT-guided percutaneous biopsy was performed. Histopathology confirmed the tumor as fibrolipoma (Figure 2). Coronary angiography showed a normal left coronary artery and a large area of hypervascularized myocardium near the RV projection that was supplied by the acute marginal branches of the right coronary artery (Figure 3).

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**Figure 1.** Contrast-enhanced computed tomography revealed elongated mass in the free wall of the right ventricle.

**Figure 2.** Biopsy material stained with hematoxylin and eosin (on the left) and picrofuchsin by Van Gieson (on the right) defined the tumor as fibrolipoma. Red outline indicates muscle; yellow, connective tissue; and green, fat.

**Figure 3.** Angiography of the right coronary artery (RCA): A large hypervascularized zone is supplied by acute marginal branches of the RCA.
Complete surgical resection was difficult because of the expansion of the tumor at the time of diagnosis. To minimize the amount of myocardial damage caused by surgical trauma, we opted to perform coil embolization of the heart tumor. For the procedure, balloons were placed in the 2nd and 3rd marginal branches. Flow was occluded for 15 minutes during balloon occlusion. The patient had no signs of myocardial ischemia during balloon occlusion as the 2nd, 3rd, and distal segments of the 4th marginal branch were successfully embolized with Trufill pushable coils (Cordis Neurovascular, Inc, Miami Lakes, FL) (Figure 4).

Control angiography demonstrated dramatic reduction of tumor supply (Figure 4).

The patient’s recovery was uneventful, and he was discharged to home the following day. Within 7 days after discharge, he reported no chest pain and a markedly improved tolerance to physical activity.

Table. Tumor Size by Computed Tomography

<table>
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<th>Baseline</th>
<th>2-Month Follow-Up</th>
<th>6-Month Follow-Up</th>
<th>1-Year Follow-Up</th>
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<tbody>
<tr>
<td>Tumor size by CT, mm</td>
<td>39×85</td>
<td>29×63</td>
<td>26×61</td>
<td>24×59</td>
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</table>

One month after the procedure, TTE revealed reduction of the tumor size to 3.5×8.3 cm. However, control coronary angiography showed recanalization of the 4th acute marginal branch. Therefore, the branch was reembolized with 3 Trufill pushable coils (Cordis Neurovascular, Inc, Miami Lakes, FL) (Figure 5).

At 2-month follow-up, the patient’s clinical status dramatically improved: frequency and intensity of chest pain was significantly reduced, and tolerance to general physical activity was nearly normal (confirmed by treadmill exercise stress test). Control echocardiography and CT showed significant reduction of the tumor size and enlargement of the RV volume (Table).

At 6-month and 1-year follow-up, the patient had no chest pain and normal tolerance to general physical activity. TTE and CT showed further reduction of tumor size (Table and Figure 6).

Further control TTE every 6 months and yearly CT and follow-up is planned.

Summary

To the best of our knowledge, this is the first reported case of endovascular treatment of a cardiac tumor.

Coil embolization was successfully performed and provided a less invasive treatment alternative to the surgical treatment to preserve the myocardium. Further comparative long-term data are needed to evaluate the efficacy of coil embolization for treatment of a cardiac tumor.
Disclosures
None.

References

Key Words: coil embolization ■ transcatheter ■ heart tumor ■ right ventricular tumor
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Nicholas Kipshidze, Akaki Archvadze, Vakhtang Kipiani, Zaza Katsitadze, Zviad Matoshvili and Ulrich Sigwart

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