A 48-year-old man was admitted with exertional dyspnea. An ECG on admission revealed third-degree atrioventricular block (Figure 1). Transthoracic echocardiography demonstrated a giant mass, 6.4×6.5×7 cm, located in the basal interventricular septum (Figure 2A and 2B and Movie I in the online-only Data Supplement). The left ventricular outlet tract was mildly obstructed (Figure 2C and 2D and Movie II in the online-only Data Supplement). Cardiac magnetic resonance imaging (MRI) was recommended. A huge mass with well-defined borders was identified in the basal posterior interventricular septum (6×7 cm), which was low signal on a T1-weighted image, showed no signal suppression on a fat saturation sequence (Figure 3A and 3B and Movies III and IV in the online-only Data Supplement), and demonstrated low signal on a T2-weighted image (Figure 3C). There was no perfusion within the mass on first-pass gadolinium perfusion images (Figure 3D and Movie V in the online-only Data Supplement), and homogeneous late gadolinium enhancement was observed (Figure 3E–3G). A cardiac fibroma was diagnosed, and the patient was referred for tumor resection, which was successful (Figure 4A). Pathological examination confirmed the fibroma diagnosis (Figure 4B). After surgery,
the third-degree atrioventricular block persisted, and a DDD pacemaker was implanted.

Cardiac fibroma is one of the most commonly resected cardiac tumors in the pediatric population. However, it has rarely been reported in adults. The clinical presentation of a cardiac fibroma depends on tumor location and size. Overall, 30% of patients are asymptomatic and are incidentally diagnosed during routine physical examinations. The majority have symptoms such as palpitations, shortness of breath, and syncope as a result of tumor compression. Ventricular tachycardia or fibrillation has also been reported, which results from invasion or compression of the conduction system. In the present case, the fibroma was situated in the basal interventricular septum and resulted in mild obstruction of the left ventricular outflow tract. The third-degree atrioventricular block was also considered to be due to tumor compression. After successful tumor resection, the atrioventricular block did not recover, which we believe was due to irreversible degeneration of the conduction system caused by chronic tumor compression. To the best of our knowledge, this is the first report of third-degree atrioventricular block caused by a cardiac fibroma.

Cardiac MRI is one of the most important imaging techniques for diagnosing cardiac tumors. The comprehensive sequence that constitutes cardiac MRI can help identify tumor location, size, morphology, and borders and, most important, can provide tumor characterization. Cardiac MRI has been shown to correctly classify tumors as benign or malignant in 95% of cases with histology used as the gold standard. In a multicenter study, cardiac MRI predicted the likely tumor type in the majority of cases of suspected cardiac tumor on the basis of a comprehensive imaging protocol. In the present case, T1 fast spin echo, fat saturation, T2 spin echo, first-pass perfusion, steady-state free-precession cine, and a late gadolinium sequence were used, and the mass demonstrated typical fibroma signs on MRI. In addition, cardiac MRI provided accurate information on tumor location, the extent of the tumor, and its relationship to valves for preoperative planning. Most cardiac fibromas can be resected successfully and are associated with a good long-term prognosis. Cardiac MRI can improve the diagnosis and treatment of cardiac fibromas.

Figure 2. Transthoracic echocardiography images showing a large oval mass located in the posterior septum. The tumor has a well-defined border and protrudes into the left ventricular outflow tract, which causes acceleration of blood flow. A, Short axis view of ventricles; B, Long axis view; C, 5-chamber view of echocardiography; and D, Doppler measurement of blood flow in left ventricular outflow tract.
Disclosures

None.

References

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Circulation. 2013;127:e522-e524
doi: 10.1161/CIRCULATIONAHA.112.131417
Circulation is published by the American Heart Association, 7272 Greenville Avenue, Dallas, TX 75231
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Print ISSN: 0009-7322. Online ISSN: 1524-4539

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