Left ventricular lipoma resected using thoracoscope-assisted limited sternotomy

A case report and literature review

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Abstract

Rationale: A cardiac lipoma is an uncommon primary tumor, with a reported incidence ranging from 2.9% to 8% among all benign cardiac tumors. Although the prognosis in most asymptomatic cases is good during long-term follow-up, some reports have shown that untreated cardiac lipomas may be fatal when they cause arrhythmic or obstructive symptoms.

Patient concerns: We present a rare case of left ventricular (LV) lipoma. The mass measured 25 mm × 10 mm, with a pedicle on the LV posterior wall near the apex.

Diagnoses: The patient was diagnosed as left ventricular lipoma using echocardiography.

Interventions: The LV lipoma was resected using thoracoscopy-assisted limited sternotomy.

Outcomes: Histopathologic examination was consistent with lipoma. No signs of recurrence were detected on an echocardiogram during a 3-month follow-up period.

Lessons: We performed a comprehensive review of relevant literature and summarized the known 21 cases from 1980 to 2017. LV lipoma may present with or without symptoms, and endoscopic resection may be a good alternative to open surgery.

Abbreviations: LV = left ventricular, MRI = magnetic resonance imaging.

Keywords: cardiac tumor, left ventricular lipoma

1. Introduction

A cardiac lipoma is an uncommon primary tumor, with a reported incidence ranging from 2.9% to 8% among all benign cardiac tumors.1–4 Although the prognosis in most asymptomatic cases is good during long-term follow-up, some reports have shown that untreated cardiac lipomas may be fatal when they cause arrhythmic or obstructive symptoms.3 We present a rare case of left ventricular (LV) lipoma. The mass measured 2.5 mm × 10 mm, with a pedicle on the LV posterior wall near the apex, and was diagnosed with echocardiography and resected using thoracoscopy-assisted limited sternotomy.

2. Case presentation

A 70-year-old woman was admitted to the hospital because of fainting and general malaise for 5 years, worse in the prior 6 months. The symptoms were mainly triggered by flexing the neck and changing body position. There was no other discomfort and no significant past history. Her body mass index was 28.52, with blood pressure 144/77 mm Hg, and a radial pulse rate of 80 beats/min and regular. Physical examination showed slight pitting edema in both legs. She had no pathologic cardiac murmur or significant abdominal findings. The echocardiogram revealed a LV mass attached to the posterior wall near the apex, measuring 16.1 mm × 11.1 mm (Fig. 1). The mass had a

Figure 1. A preoperative transthoracic echocardiogram showed a hyper-echoic mass in the left ventricle.
geal echocardiogram confirmed that the echodense mass was attached by a pedicle to the LV posterior wall adjacent to the apex. As valve motion prevented a clear surgical view because the deeply located mass was near the apex, we inserted a thoracoscope into the ventricle to help visualize the tumor. The mass was found to be a lipoma, based on its well-encapsulated, yellow appearance. The tumor (25 mm × 10 mm) was carefully removed using scissors and suction (Figs. 2 and 3). No invasion in the ventricular muscle was observed.

Histopathologic examination was consistent with a lipoma (Fig. 4). Postoperative recovery was uneventful and the patient was charged 20 days after surgery. No signs of recurrence were detected on an echocardiogram during a 3-month follow-up period (data not shown).

3. Literature review and discussion

Primary cardiac tumors can be classified into different types on the basis of their tissues of origin, and include myxomas, fibromas, lipomas, and rhabdomyomas. Myxomas account for over 50% of cardiac tumors, and lipomas only about 8.5% to 20%. A lipoma in the left ventricle is especially rare. A comprehensive review of the literature revealed a total of 20 cases of LV lipoma. Patient data and tumor characteristics are summarized in Table 1.\[4\]–\[22\]

LV lipoma is a benign cardiac tumor, with equal incidence rates in patients of different ages and both sexes.\[23\] Some grow slowly and may be asymptomatic in the early stage. Therefore, early diagnosis is often missed unless routine or further cardiac examinations are performed for other diseases.\[24\] The electrocardiogram may show nonspecific ST-T changes.\[2,4,5\] As it grows, the LV lipoma occupies a larger space, with possible serious consequences through an effect on adjacent cardiac structures or obstruction of the LV cavity. At that time, clinical symptoms such as cardiac murmurs, arrhythmias, fainting, or palpitations\[6\] may be caused by obstruction of the LV inflow or outflow tract, impairment of cardiac valve function, and involvement of conductive tissue.\[7,8\] Even if discomfort is

![Figure 2. The yellow well-encapsulated left ventricular tumor was revealed clearly by a thoracoscope, and fully resected in the surgery.](image)

![Figure 3. The postoperative transesophageal echocardiogram showed that the LV tumor was resected completely.](image)
Documented cases of left ventricular lipoma based on PubMed search.

| Reference          | Age, y | Abnormality                              | Location                              | Size, cm      | Myocardium invasion |
|--------------------|--------|------------------------------------------|----------------------------------------|---------------|---------------------|
| Bradford et al[8]  | 52     | Chest pain                               | Anterior to mitral valve               | 3 × 4         | -                   |
| Pilichowski et al[14] | 48     | Arrhythmias                              | Apex of LV                             | 7 × 4         | -                   |
| Goebel et al[15]   | 59     | Syncope                                  | Posterolateral LV                      | 3 × 3         | No                  |
| Uwabe et al[16]    | 63     | -                                        | Base of anterior papillary muscle      | 2.5 × 2       | -                   |
| Murata and Kobayashi[17] | 63     | Palpitations                             | Posterior free wall                    | 2.5 × 2.5     | No                  |
| Alam and Silverman[18] | 67     | Syncope                                  | Apex of LV                             | -             | Yes                 |
| Srinivas et al[19] | 36     | -                                        | LV septum                              | 2.7 × 2.6     | -                   |
| Oyama et al[20]    | 67     | -                                        | LV anterior wall                       | -             | Yes                 |
| Pêgo-Fernandes et al[21] | 21     | Dizziness                                | LV posterior wall                      | 3.4 × 2.8     | No                  |
| Kelpis et al[22]   | 75     | Negative T wave                         | LV inferior wall                       | 3.2           | No                  |
| Lin et al[23]      | 74     | Palpitations                             | Near the LV outflow tract              | 7.1 × 4       | Yes                 |
| Akram et al[24]    | 78     | Dyspnea                                  | Inferior to the mitral valve           | -             | -                   |
| Heyashi et al[25]  | 55     | Palpitations                             | LV anterior wall                       | 5 × 4.2 × 4.4 | Yes                 |
| Kawarai et al[26]  | 50     | -                                        | mid and apical anterior LV wall        | 1.4 × 2.2     | No                  |
| Tanzola et al[27]  | 57     | Inverted T wave                         | Apical region of LV                    | 4.4 × 4.7 × 4.8 | No                  |
| Domoto et al[28]   | 70     | -                                        | LV apex                                | 2.6 × 4.5     | -                   |
| Kim et al[29]      | 57     | -                                        | LV apex                                | 2.5           | No                  |
| Valenti et al[30]  | 62     | Nonspecific lateral ST-T change         | LV anterior and lateral wall           | 15.4 mL       | Yes                 |
| Azarine et al[31]  | 18     | Palpitations                             | LV anterior and lateral wall           | 4 × 5         | -                   |
| Tanaka et al[32]   | 77     | Weight loss                              | LV apex                                | 2.5 × 2.8     | No                  |
| Semri et al[33]    | 53     | Abtypical chest pain                     | LV apex                                | 1 × 2.5       | No                  |

LV = left ventricular.
function. Both had a good outcome. Thus, for LV lipoma, diagnosis at an early stage and individualized treatment are essential.

Author contributions
Conceptualization: Wenyu Sun.
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