

CASE REPORT

Late onset seroma post-thymectomy presenting as cardiac tamponade

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Late onset seroma is a rare post-operative complication occurring after various surgeries including thymectomy. Most cases are asymptomatic; however, seromas occurring in the mediastinal cavity may cause compression symptoms including airway compression or cardiac tamponade. We present a 62-year-old male with a history of thymectomy for myasthenia gravis who presented with cardiac tamponade several years ago. Further evaluation revealed a late onset seroma anteriorly compressing the cardiac chambers resulting in tamponade physiology.

Keywords: *thymectomy; complication; seroma*

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A seroma is a collection of clear, ultrafiltered serum surrounded by a fibrinous capsule formed in response to surgery or physical trauma (1). Seromas often occur as a post-operative complication after a variety of surgeries including thoracic, abdominal or reconstructive surgeries (2–4). Seromas are uncommon complications after thymectomy and have been described in about 0.9% of thymectomies in a large series (5).

Although most seromas occur early in the post-operative course, late onset seromas have been well documented in the literature (6). Most cases of seromas are asymptomatic or rarely require therapeutic intervention. Occasionally, seromas may lead to serious complications such as cardiac tamponade (2).

In this case report, we present a case of a 62-year-old male with myasthenia gravis who presented 6 years following thymectomy with features of cardiac tamponade due to a late onset seroma.

Case

A 62-year-old white male with a past medical history of hypertension, diabetes and a history of myasthenia gravis status post-median sternotomy with thymectomy 6 years ago, presented with 1 month history of shortness of breath, bilateral lower extremity edema and abdominal distention. Surgical history was otherwise unremarkable. The patient was a lifetime non-smoker, denied any use of drugs and endorsed occasional consumption of alcohol.

He had initially been seen as an outpatient and underwent a trial of diuresis with loop diuretics with no resolution of symptoms and had worsening of renal function with serum creatinine (Cr) elevation up to 3.6 mg/dl from a baseline of 0.9 mg/dl. Patient had missed his outpatient echocardiography that had been requested during that visit.

The patient was referred to admission from the clinic for further workup of worsening shortness of breath. Upon presentation to the hospital, his vitals were temperature of 37°C, pulse rate 93 beats per minute, blood pressure 91/58 mmHg, respiratory rate 15 breaths per minute with oxygen saturation of 97% on room air. His prior systolic blood pressure readings were anywhere between 130 and 150 mmHg. Physical examination was notable for elevated jugular venous pressure estimated to be 20 cm H₂O, pitting edema of bilateral lower extremities up to the level of sacrum, ascites and clear lung fields. Pulses paradoxus was 18 mmHg. Heart sounds were not muffled at the time of our examination.

Laboratory values including complete blood count and a comprehensive metabolic panel were within normal limits except for an elevated Cr of 3.6 mg/dl. Meanwhile, a 12-lead electrocardiogram showed normal sinus rhythm with low voltage waves (Fig. 1).

The patient underwent a trans-thoracic echocardiogram (TTE), which showed a large fluid extrinsic collection present anteriorly, resulting in significant compression

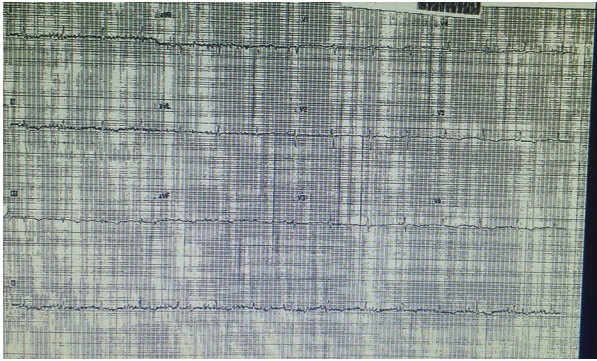


Fig. 1. 12-lead electrocardiogram of the patient at presentation showing low-voltage waves.

of the right atrium (RA) and ventricle, as well as the proximal right ventricle (RV) outflow tract (Fig. 2). The fluid appeared anteriorly, but extended posteriorly around the inferior aspect of the RV free wall. There was significant hemodynamic compromise of the right heart with elevated tricuspid mean inflow gradient of 4–5 mm Hg, dyssynergic ventricular wall motion and a restrictive mitral Doppler inflow pattern (peak E wave 92.3 cm/s, peak A wave 52.8 cm/s, E/A ratio 1.75 and peak gradient 3.41 mmHg) (Movie clip 1).

Meanwhile, a computed tomography (CT) scan of chest without contrast was done for further evaluation of the mass and to delineate its margins. It showed an abnormal low- to mid-density fluid collection, which extended anteriorly from the level of the pulmonary artery to the base of the heart, in the expected location of the thymic bed with smooth margins. There appeared to be compression of the RA and ventricle (Fig. 3).

The patient underwent CT-guided catheter drainage with pigtail catheter placement with successful drainage of 500 cc of sero-sanguineous fluid with an additional 700 cc output over the course of the following 3 days (Fig. 4).

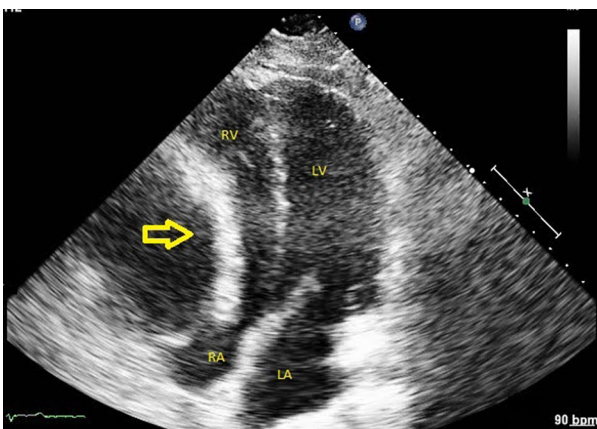
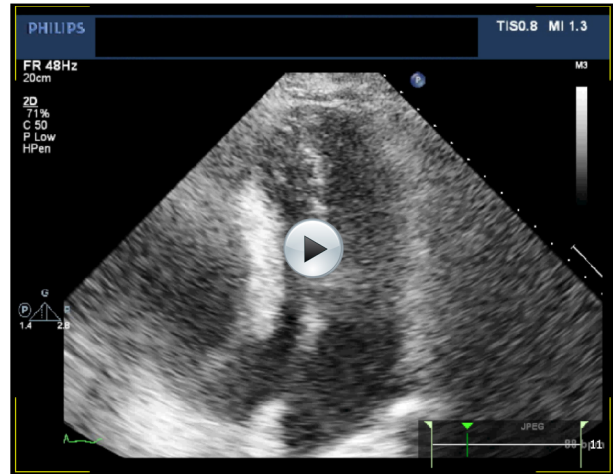


Fig. 2. Transthoracic echocardiographic image (apical 4 chamber view) showing extrinsic compression of the right heart by the seroma.



Movie clip 1. Cine image of the transthoracic echocardiography (apical 4 chamber view) showing compression of the right ventricle by the seroma.

The fluid was sent for pathology and fluid/cell block was negative for neoplastic cells or pathogens. The pigtail catheter was removed after 3 days. The patient had complete resolution of his symptoms and returning of his Cr to 1 mg/dl. Follow-up TTE showed resolution of the fluid collection and the RV normalized in size with normal systolic function with no RV collapse (Fig. 5), which was much improved as compared to the initial echocardiography at the time of presentation (Fig. 1). The patient was discharged on the sixth day of hospitalization in a stable clinical condition with a recommendation for close follow-up. A follow-up echocardiography 2 months following discharge was normal with no evidence of pericardial effusion, extrinsic compression of the heart or diminished right ventricular function.

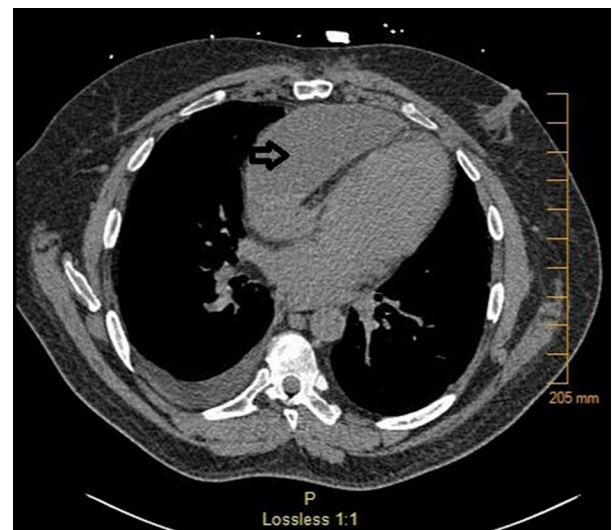


Fig. 3. Computed tomography of the chest showing anterior mediastinal mass completely obstructing the right ventricular cavity.

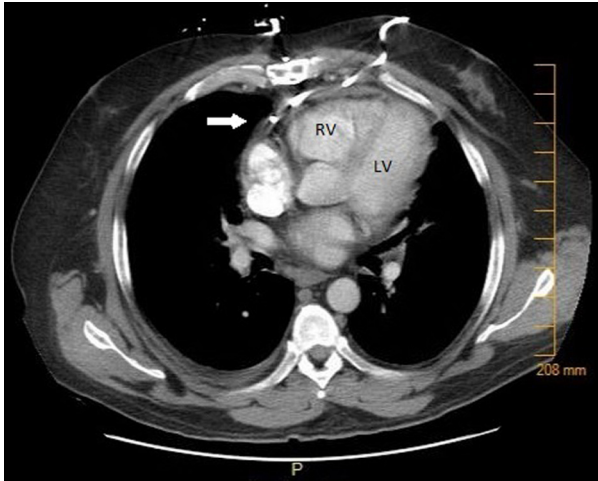


Fig. 4. Computed tomography of the chest showing well-visualized right ventricle following drainage of the seroma with a percutaneous pig tail catheter.

Discussion

In this report, we have presented a case of cardiac tamponade caused by compressive effect of a late onset post-operative seroma several years after a median sternotomy with thymectomy.

Seromas, as the name suggests, refer to serous clear fluid collection in the setting of surgery or trauma. A seroma is defined as late, if this complication occurs at least 4 months after surgery (7). Late onset post-operative seromas are uncommon and have been mostly described in the setting of breast surgery with implants (6). One study has suggested an estimated prevalence of 1–2% in this setting (8). Late onset seromas have also been rarely reported in children undergoing modified Blalock–Taussig shunt, as late as 15 years post-surgery (9, 10). To our

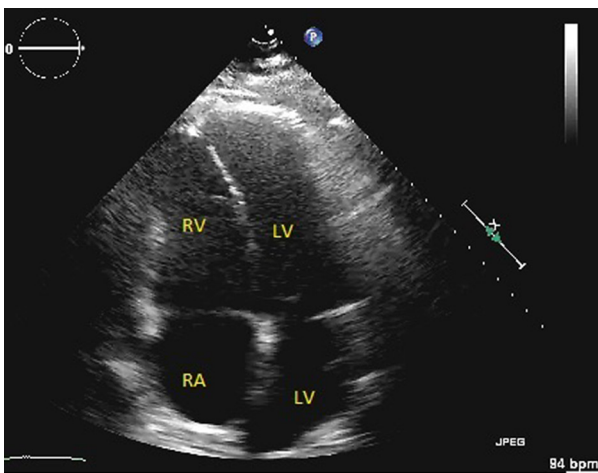


Fig. 5. Transthoracic echocardiographic image (apical 4 chamber view) following drainage of the seroma showing resolution of the extrinsic compression of the right heart by the seroma (compare with Fig. 2).

knowledge, late onset seroma in the setting of thymectomy has been rarely described in the literature.

Other differential diagnosis in our case include cystic neoplasms of the anterior mediastinum such as dermoid cysts, bronchogenic cysts, lymphangioma, meningocele and esophageal duplication cysts (11). However, in the setting of post-thymectomy and the mass being in the expected location of the thymic bed, we considered post-operative seroma as the more likely diagnosis in our case.

Most cases of seromas are asymptomatic and rarely require surgical intervention. Large seromas that form in the mediastinum may cause compressive symptoms leading to airway compression or cardiac tamponade (9, 12, 13). In our patient, continued seroma formation in the anterior mediastinum resulted in right ventricular compression resulting in cardiac tamponade physiology. The diagnosis of mediastinal seromas is usually made with echocardiography with or without CT (9). Pathological evaluation of the fluid may aid in diagnosis but the findings may be variable (14).

Most post-operative seromas resolve spontaneously; however, those that are symptomatic may necessitate treatment. Radiographically guided percutaneous drainage of mediastinal seromas has been previously reported with high success rates (14). The presence of a severe life-threatening complication in our patient required an urgent drainage procedure in our case.

Learning points/take home messages

1. Late seroma formation needs to be considered in the differential diagnosis of anterior mediastinal mass in patients with a history of thymectomy.
2. Performing complete physical exam including checking for pulsus paradoxus can be helpful in diagnosing patients with cardiac tamponade.
3. TTE can be helpful in confirming diagnosis in suspected cases of cardiac tamponade.
4. Seromas resulting in compressive symptoms need to be treated with urgent drainage procedures.

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