Case Report

Ethical and Clinical Dilemma from an Incidental Cardiac Lipoma in a Young and Healthy Patient

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ABSTRACT

Incidental cardiac tumors are rare and mostly detected on autopsy as patients largely remain asymptomatic. However, diagnosis of an incidental cardiac mass on unrelated workup can pose significant ethical and clinical challenge to the care team. Surgical resection has been the most successful intervention for most primary cardiac tumors; which involves cardiopulmonary bypass-assisted major surgery and is not risk free. Cardiac lipoma is the second most common primary cardiac benign tumor. We report a case of a young otherwise healthy patient who had a cardiac lipoma on computerized tomography scan that was done to rule out kidney stone.

Keywords: Cardiac lipoma, echocardiography, incidental cardiac tumor, TEE

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INTRODUCTION

Primary cardiac tumor is very rare (0.02–0.05%).[1,2] Fortunately, majority of primary cardiac tumors are benign, myxoma being the most common. Depending on the origin and location of the cardiac tumor, symptoms and signs can be of varieties, for example, palpitation, heart failure, embolization, and valvular stenosis. Incidental cardiac tumor is mostly diagnosed on autopsies as majority of the patients remain asymptomatic during their lifetime.[2] But when an incidental primary cardiac tumor is diagnosed in unrelated work up, it poses serious medical as well as ethical challenges to care team. It becomes crucial to determine the nature and extent of invasion of the tumor and rule out malignancy for further management. Surgical resection is the recommended treatment for most symptomatic cardiac tumor but same can be controversial and tricky in an asymptomatic, young patient when detected incidentally. We report a case of incidental primary cardiac lipoma after obtaining informed consent from the patient.

CASE REPORT

This is a healthy 32-year-old man presented with left-sided flank pain. His abdominal computerized tomography (CT) scan was remarkable for a left kidney stone and a left ventricular mass. Patient did not have any symptoms suggestive of cardiac pathology. Subsequent transthoracic echocardiography (TTE) was remarkable for a round trabeculated density along the mid-to-distal anterolateral (AL) wall of the left ventricle. Cardiac magnetic resonance imaging (MRI) demonstrated an enhancing mass along the lateral wall of the left ventricle measuring 3 cm by 2 cm. Since both TTE and cardiac MRI suggestive of but inconclusive of the tumor as well as its invasion, we further performed

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a transesophageal echocardiography (TEE) to confirm the diagnosis. TEE showed normal biventricular size and function with no valvular regurgitation and a left ventricular mass abutting the lateral wall measuring approximately 3 cm by 2 cm [Videos 1 and 2; Figure 1].

Echocardiographic challenge

1. Confirmation of diagnosis of a cardiac mass that was incidentally detected on CT scan
2. Origin and extent of the tumor
3. Involvement of surrounding structures (AL papillary muscle and mitral valve [MV] apparatus in this case) which will determine the extent of surgery and possible outcomes
4. Management—this was a great ethical dilemma on diagnostic and management team's part which consisted of cardiologists, cardiothoracic surgeons, cardiothoracic anesthesiologists, oncologists, and intensivists. The patient was otherwise healthy, 32-year-old, and completely asymptomatic as far as a cardiac tumor is concerned. Diagnosing a mass as cardiac tumor implies a major cardiac surgery involving sternotomy and cardiopulmonary bypass (CPB). Not intervening a mass that has been diagnosed early enough not to cause any symptoms can prove to be a "ticking bomb" and potentially lead to a fatal outcome if left untreated in case of a malignant tumor.

After multidisciplinary discussion and providing informed choices to patient, it was decided to proceed with surgical resection of the mass.

On the day of surgery, he received oral acetaminophen 1 g and IV midazolam 2 mg prior to entering the operating. He underwent general endotracheal anesthesia (GETA) followed by placement of the right radial arterial line and right internal jugular multi-access lumen. Patient was deemed to be appropriate candidate for enhanced recovery after cardiac surgery (ERACS) and was administered opioid-sparing multimodal analgesia.

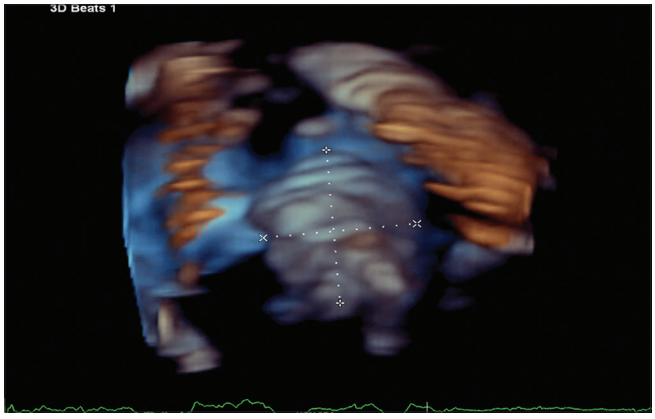

Figure 1: 3D TEE showing LV mass (3 × 2 cm)

After establishment of cardiopulmonary bypass (CPB), he underwent ventriculotomy lateral to apex of the left ventricle, and he was found to have a soft yellow mass at the base of the AL papillary muscle with no clear plane between mass and muscle. The mass was resected, and it appeared to not significantly affect the papillary muscle or MV apparatus which was a concern from preoperative imaging [Video 3]. He had an uneventful weaning off from CBP. His post-CPB TEE showed normal biventricular function and no significant mitral regurgitation (MR) [Videos 3 and 4]. After skin closure, he received bilateral transversus thoracic plane block and was transported to the intensive care unit without complications. He was extubated 4 h after ICU arrival and has an uneventful hospital course. He was discharged on postoperative day 4. Biopsy of the resected mass was reported to be benign lipoma (with some hamartomatous tissue).

DISCUSSION

Primary cardiac tumor perse is extremely rare.[1,2] Most of the primary cardiac tumors are benign. Based on the origin, location, type and size of the tumor, patient's symptoms, and sign can vary from none to arrythmia, heart failure, embolization, and obstructive valvulopathy.[3] Incidental cardiac tumor is uncommon and mostly diagnosed on autopsy. However, incidental diagnosis of a cardiac tumor on routine workup can happen and it poses significant ethical and clinical challenges to care team. Further diagnostic workup is warranted to confirm the diagnosis as well as to delineate other details. Multiple imaging modalities that carry significant value in diagnosis include but not limited to echocardiography, CT, MRI, and positron emission tomography scan.[1,4] Histopathology of the biopsy finally can conclusively prove the diagnosis. However, cardiac biopsy is an invasive procedure and should only be attempted after exhausting all other noninvasive modalities and/or when a decision has been made to proceed with surgical resection. Echocardiography often has been shown to be sensitive to determine location, attachment, size, and involvement of surrounding structures. Cleveland Clinic reported high sensitivity of echocardiography (TEE 77%; TTE 62%) in a 16-year-old analysis on papillary fibroelastoma—another common left-sided benign primary cardiac tumor.[5] In our patient, even though the mass that was diagnosed incidentally on CT scan, and a follow-up MRI and TTE were done to confirm the diagnosis, ultimately TEE deemed to be

very useful not only in confirming the diagnosis as well as for better delineation of the tumor. Intraoperative TEE clearly showed intactness of MV apparatus and absence of significant MR was reassuring. There was a concern of involvement of anterolateral papillary muscle of left ventricle. As a successful function of MV apparatus is highly dependent on secondary cords that are attached to the papillary muscle, ability of TEE to demonstrate that most of cordal attachment to AL papillary muscle was not invaded by the tumor and intact on long-axis transgastric (TG) view of LV even though TG short-axis view looked really worrisome of involvement of AL papillary muscle [Video 2].

Cardiac lipoma is a benign primary cardiac tumor and it is second most common in that category following myxoma.[6] Origin of cardiac lipoma can be subendocardial, myocardial, or subpericardial.[4] Size is highly variable and it appears as well-defined fat tissue. Lipoma originating from intra-atrial septum can be mistaken as myxoma but generally lipoma has broader base and lacks the mobility unlike myxoma.[7] Clinical symptomatology depends on size and location of the lipoma.[8] Mass effect from a sizable intracavitary lipoma can cause arrhythmia, valvular insufficiency, and other obstructive features. Encasement of coronary arteries by the lipoma can happen and lipoma parse may become unresectable.[9] Subpericardial lipoma can cause ventricular compression or displacement of lungs causing respiratory distress in either case.[6,9,10]

CONCLUSION

Incidental cardiac tumor is rare but when detected can pose serious challenges to care team. Diagnostic imaging including echocardiography is crucial to confirm the diagnosis as well as delineate minute details. Multidisciplinary discussion should be considered for diagnosis and further management.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

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