Cardiac tumors: To treat or not to treat (or both)?

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In this issue of the *Journal*, Williams and colleagues¹ describe their management of an uncommon situation—a benign uterine leiomyoma that metastasized to the right ventricle (RV), the left ventricular (LV) epicardium, and bilateral lungs.¹ The RV mass was acting as a ball valve into the pulmonary artery and was in danger of embolizing or causing RV outflow tract obstruction. The echocardiograph and pathology images provided by the authors demonstrate how large this RV mass was, and that it required immediate operative intervention. By removing just the RV mass and leaving the LV epicardial mass (and not disrupting the coronary blood flow from the left anterior descending artery), a short-term imminent problem was neutralized but a long-term problem was marginalized. Pathology from the RV mass confirmed the preoperative diagnosis of a benign uterine leiomyoma, and the authors go on to describe hormone-based options for long-term management of the patient's disease. The bilateral nature of her pulmonary metastases precluded a curative operation, but at 2 months' follow-up, the patient felt well. Given the relative rarity of benign metastasizing uterine leiomyomas and the scant number of case reports in the cardiac surgery literature, this article is an important addition.

Several questions arise. How did the patient fare in the long-term, especially after her hysterectomy and bilateral salpingo-oophorectomy and after a longer course of hormone therapy? Second, benign metastasizing leiomyomas have hematogenous spread, which explains her right heart and pulmonary lesions, but not the LV epicardial mass—how did it become implanted there? We do not have any imaging of her pulmonary lesions and the authors do not comment on whether a tissue diagnosis was obtained, so how was a synchronous cancer excluded? Also, would it have been easier (because exposure may have been better) to resect the RV tumor through the outflow tract? Would there have been any benefit to performing a bypass graft to the left anterior descending artery and resecting the epicardial lesion? It is unclear whether removing the LV mass would contribute to improved long-term mortality.

The first case of benign metastasizing uterine leiomyoma was reported in 1939.² It is most commonly associated with

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Central Message

Cardiac surgeons are being asked to operate on an increasingly complex patient population to palliate metastatic disease.

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pulmonary metastases, but there have been at least 7 other reports of metastatic spread to the heart. There has been much debate on the true nature of this lesion, a tumor with benign histologic features that often metastasizes. It is commonly believed that benign tumors do not metastasize, but histologic, immunohistochemical, cytogenetic, and molecular evidence all support the current characterization of this tumor as benign.² Furthermore, metastatic implants are often associated with significant morbidity; thus, resection aids in long-term survival.

Williams and colleagues¹ are not alone in being referred these complicated, high-risk patients with unclear long-term prognosis. At our own institution, within the past month alone we have been consulted for recurrent metastatic left atrial sarcoma, surgical embolectomy of poorly differentiated metastatic renal cell cancer, and surgical embolectomy of a right ventricular *Mucor* fungus ball in a chronically immunosuppressed patient. The risk-to-benefit ratio of cardiac surgery with cardiopulmonary bypass in these patients is not always immediately clear. After a multidisciplinary discussion with referring physicians and other consultants, we are often inclined to offer an operation to an otherwise healthy patient who has no therapeutic alternatives. Removing a metastatic tumor or an infective embolus in an immunocompromised patient may be palliative, but cardiac surgery is grounded in palliative care. Coronary artery bypass grafting is palliation of a progressive vascular disease, and cardiac surgeons are therefore optimally positioned to intervene on these difficult cases. Of

paramount importance is a candid discussion with the patient and his or her family of all potential outcomes.

Williams and colleagues¹ should be commended for performing a well-planned and judicious operation. Their patient is no longer at risk of sudden death from RV outflow tract obstruction. She experienced no perioperative morbidity and has the potential for longer-term survival as a result of having undergone the operation. By publishing their experience, the authors broadened our cumulative knowledge of cardiac surgical palliation for patients with metastatic disease.

As cardiac surgeons, it is our nature to push boundaries. Increasingly, we will be consulted to operate on patients with metastatic tumors or other terminal disease processes. With novel chemotherapy agents, more precise radiation treatments, and targeted immune therapies, patients enjoy

an improved quality of life and longer survival than ever before. Referring physicians will thus seek out cardiac surgery for patients who formerly would not have been considered candidates for operation. As the frontiers of medicine continue to expand for the benefit of patients, cardiac surgeons will rise to the challenge of making conscientious decisions in the face of intractable disease processes.

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