malignancies with immunotherapy or other unique therapies. Sadly, sarcoma involving the heart has yet to have specific targeted weaknesses identified that can be exploited to reduce its lethality.

Yin and colleagues¹ appropriately highlight the importance of conducting updated, large population,

multicenter reviews and the need to acquire new weapons and strategies to conquer sarcoma of the heart.

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Commentary: The yet-unsolved problem of effective treatment for primary cardiac sarcomas

Joe B. Putnam, Jr, MD, FACS

Primary cardiac sarcomas (PCS) are rare and often advanced at diagnosis when symptoms appear. The value of surgery may be limited by a lack of consistent and effective systemic management.

Yin and colleagues¹ reviewed 442 patients with PCS derived from the Surveillance, Epidemiology, and End Results Program (<https://seer.cancer.gov/>) between 1973 and 2015. Angiosarcoma was most common histology (54%) and had the worst median survival from diagnosis (7 months) compared with all other sarcoma types. Survival did not improve in the most recent treatment decade compared to prior years. Still, chemotherapy and surgery were independently associated with modest improvement in overall survival.

As with any population study, limitations are present. Neither chemotherapy, type of operation, nor the time interval between diagnosis and any treatment was described. Only 46 patients had total resection and 56 patients had no treatment. Tumor size was missing in

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CENTRAL MESSAGE

Management of primary cardiac sarcoma is variable and highly selective. Patients treated with surgery or chemotherapy may have slightly improved survival.

55% of patients and tumor grade in 45%. Staging was only available for the 198 patients (44.8%) treated after 2000. More than 75% of these patients were locally advanced (stage III, 21.2%) or metastatic (stage IV, 54%) (American Joint Committee on Cancer 7th edition).

Neither performance status, selection criteria for surgery, nor surgical mortality was presented. Although survival for patients receiving surgery was better than those receiving no surgery, and for younger compared with older patients, this advantage may reflect a selection bias—and survival advantage—for patients who were more fit. Patients with PCS had better survival for the first 2 years with surgery, and with chemotherapy, yet long-term survival was similar.

Hendricksen and colleagues² recently reviewed 617 patients with PCS identified through the National Cancer Database (2004-2015) and found that patients receiving surgery and adjuvant therapy had a 19-month median

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survival versus 8 months for surgery alone; median overall survival was 11 months. Surgical mortality was 22% to 29% at 90 days.

The results presented reflect the challenge of selecting patients who may benefit most from resection and/or systemic therapies. Still, some clinical processes could be considered to facilitate care in these complicated patients:

1. Multidisciplinary discussion of treatment options (cardiothoracic surgery, medical oncology). Surgeon, institutional expertise, and clinical infrastructure should be carefully considered to optimize the best course of care.
2. Extent of disease should be carefully defined. If an operation is considered, the surgeon should be confident to achieve complete resection. A debulking operation may not sufficiently improve quality of life or survival. Local control of PCS may be considered to prevent “sudden death” from outflow obstruction or to provide additional time for systemic therapy. Patients with metastatic disease will have limited survival. Neoadjuvant therapy could be used to assess biological response

before surgery, in anticipation of continuing that treatment after surgery.

3. With limited survival the norm, advanced care planning would be helpful to guide family and physicians in major future decisions.

Regrettably, the treatment of PCS has not advanced significantly over 40 years. Patients who present with locally advanced and metastatic disease have limited options, and the local and systemic management tools we have available are helpful but generally ill-equipped to manage the complexity of this disease process. Genomic analysis^{3,4} could provide predictive, prognostic, and therapeutic guidance.

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Commentary: Cardiac sarcoma— Can we win this battle?

Michael Magarakis, MD, and Tomas A. Salerno, MD

There are about 5144 articles listed in PubMed on cardiac sarcoma, with 1668 written in the last 10 years. This underscores the view that we have not developed an effective treatment modality for this dreadful disease. Mean survival for these unfortunate patients remains in the range of 7 to 12 months, despite early diagnosis and aggressive surgical treatment.¹

Michael Magarakis, MD (left), and Tomas A. Salerno, MD (right)

CENTRAL MESSAGE

Median survival for patients with cardiac sarcoma remains poor, in the range of 7 months to 1 year, indicating the need to search for new and innovative therapies to treat this dreadful cancer.

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