A Rare Case of Metastatic Dedifferentiated Chondrosarcoma to the Right Ventricle

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Introduction

Dedifferentiated chondrosarcoma is a rare, aggressive malignancy with reported overall survival rates ranging from 5-20%. Metastatic dedifferentiated chondrosarcoma is an infrequent cause of cardiac mass with scarce literature available pertaining to this disease. Upon literature review, it appears that less than 30 cases have been documented. The right atrium seems to be the most common site of metastasis (66%), followed by the right ventricle (33%), left atrium (28%) and left ventricle (17%). We report a rare case of metastatic dedifferentiated chondrosarcoma to the right ventricle.

Case Presentation

A 65-year-old male with a past medical history of hyperlipidemia and chondrosarcoma of the left humerus status-post surgical resection in 2017 presented with a few weeks of chest pressure and dyspepsia. On arrival, vital signs were stable and physical exam was unremarkable. He was evaluated by cardiology and he underwent left heart catherization showing mild coronary artery disease. Interestingly, during late phase imaging on left heart catherization, a large area of heterogenous hypervascularity with majority from RCA was noted.

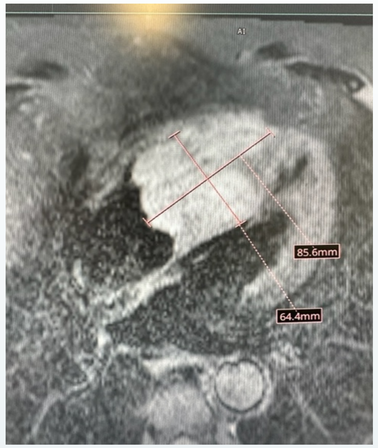

Figure 1 – Cardiac MRI

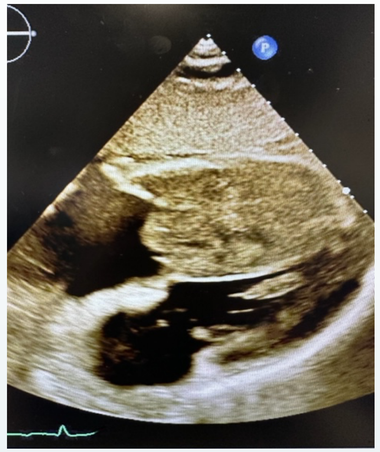

Figure 2 – Echocardiography

Case Presentation Continued

Follow up echocardiography showed preserved ejection fraction and a large right ventricular mass nearly obliterating the entire right ventricular cavity. Given this result, a cardiac MRI was obtained that demonstrated a large 8.6cm x 6.4cm x 6.1cm mass in the right ventricle that also invaded the myocardium of the intraventricular septum. A right heart catherization with endomyocardial biopsy was completed with pathology demonstrating high grade spindle cell sarcoma consistent with metastatic dedifferentiated chondrosarcoma from his prior chondrosarcoma site (left humerus). CT of his chest, abdomen and pelvis and PET scan showed no evidence of other metastatic disease. He was referred to oncology and did receive one dose of pembrolizumab. Unfortunately, the patient's clinical status continued to decline and the decision was made to pursue hospice. Sadly, he expired a week later.

Discussion

Clinical presentation of metastatic cardiac tumors may be non-specific, with many masses discovered incidentally, but should be considered in patients, especially with prior oncologic history. A multimodal imaging approach is useful for diagnosis and guides treatment decisions. Surgical removal, if possible, remains the standard of care for treatment of dedifferentiated chondrosarcoma. Unfortunately, and in this patient's case, most masses are unresectable and due to this disease's rarity, clinical efficacy of chemotherapy is limited and mostly inferred from data obtained in treatment of other sarcomas. This case documents a rare case of cardiac metastasis of chondrosarcoma to the right ventricle and emphasizes the need for further research on diagnosis and treatment for this disease.

Conclusion

Dedifferentiated chondrosarcomas are rare, aggressive malignancies with devastating survival outcomes. A multimodal imaging approach with echocardiography and cardiac MRI is useful for diagnosis. However, given the exceedingly rare frequency of this disease, standard of care for treatment remains unknown. This case highlights a rare case of metastatic chondrosarcoma to the right ventricle and identifies the continued need for further research in this area.

References

Haslinger, M. (n.d.). Right heart failure due to secondary chondrosarcoma in the right atrium ... https://www.ahajournals.org/doi/10.1161/CIRCIMAGING.119.009824
Metastatic chondrosarcoma: A rare cause of cardiac tamponade diagnosed ... (n.d.). https://www.jacc.org/doi/10.1016/S0735-1097%2823%2903402-2
Singh, A., Thorpe, S. W., Darrow, M., & Carr-Ascher, J. R. (2022, October 25). *Case report: Treatment of metastatic dedifferentiated chondrosarcoma with pembrolizumab yields sustained complete response*. Frontiers. https://www.frontiersin.org/journals/oncology/articles/10.3389/fonc.2022.991724/full#:~:text=Dedifferentiated%20chondrosarcomas%20(DDCS)%20are%20aggressive,with%20unresectable%20or%20metastatic%20disease.