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Recurrent Acute Myocardial Infarction Caused by Intra-cardiac Metastatic Undifferentiated Pleomorphic Sarcoma during Cancer Treatment

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A 54-year-old male visited the emergency room for sudden chest pain. In his previous medical history, he had been diagnosed as left axillary undifferentiated pleomorphic sarcoma two years ago without metastasis in the heart at our hospital (Fig. 1A). Despite surgery, multiple sessions of chemotherapy and radiation therapy, the cancer had proliferated. One year after diagnosis, he had started taking pembrolizumab to target the metastasis of sarcoma. After initiation of pembrolizumab, the patient was hospitalized for sudden cardiac arrest due to acute myocardial infarction (AMI) induced by metastatic sarcoma embolus and an angioplasty had been performed at another hospital a year ago. We performed direct percutaneous coronary intervention due to ST segment elevation myocardial infarction, anterior wall and found the total occlusion of the distal left anterior descending artery (Fig. 1B). We utilized a thromboaspirate suction catheter to suction the area multiple times and obtained mucoid white tissue debris (Fig. 1C). In the final coronary angiography, the coronary flow had been completely restored (Fig. 1D). In his echocardiography six months ago, a huge mass with heterogeneous echogenicity was located in the left atrium and attached to the interatrial septum with a prolapse into the left ventricle (Fig. 2A, Supplementary Movie 1). However, the mass had significantly decreased in size on new echocardiography (Fig. 2B, Supplementary Movie 2). We compared the cytologic and immunohistochemical findings of primary axillary sarcoma with the acquired intracoronary embolus tissue. The embolus tissues were composed of discohesive round sarcoma cells and scattered pleomorphic giant cells, which were diffusely immunoreactive with CD68, a macrophage marker, and vimentin, a representative mesenchymal marker (Fig. 3). These findings confirmed that the pathologic findings of coronary embolus tissues were compatible with the primary axillary undifferentiated pleomorphic sarcoma.

Cardiac metastases were present in 25% of consecutive autopsies of patients with soft-tissue sarcoma, which is higher than was recognized clinically, which suggests that most cases are probably missed.[1)] Metastatic cardiac tumors may induce devastating consequences depending on the cardiac structures involved, so the establishment of appropriate management is very important.[2)] As in our case, the occurrence of AMI due to cancer embolus in response to treatment was extremely rare.[3)] Moreover, most cases of the coronary embolization of malignant tumors are confirmed by autopsy study.[4)] There were a few cases that were histologically confirmed by obtaining tissue *in vivo*.[5)] Our case illustrates that recurrent AMI was induced by coronary emboli of intra-cardiac metastatic pleomorphic sarcoma. We obtained embolus tissue *in vivo* and compared it with the previous primary axillary sarcoma. In the case of malignant tumors in the heart, the mass of a tumor may fall off and embolize during treatment, which can cause AMI or sudden cardiac death. Therefore, we suggest that echocardiography should be considered in cases of malignancy that presents with soft-tissue metastases, because of the condition's highly life-threatening nature and the possibility of soft-tissue dissemination.

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Supplementary movie legends

Movie 1. Echocardiography: parasternal long axis view at the time of pembrolizumab treatment six months ago.

Movie 2. Echocardiography: parasternal long axis view at the time of this current admission after acute myocardial infarction.

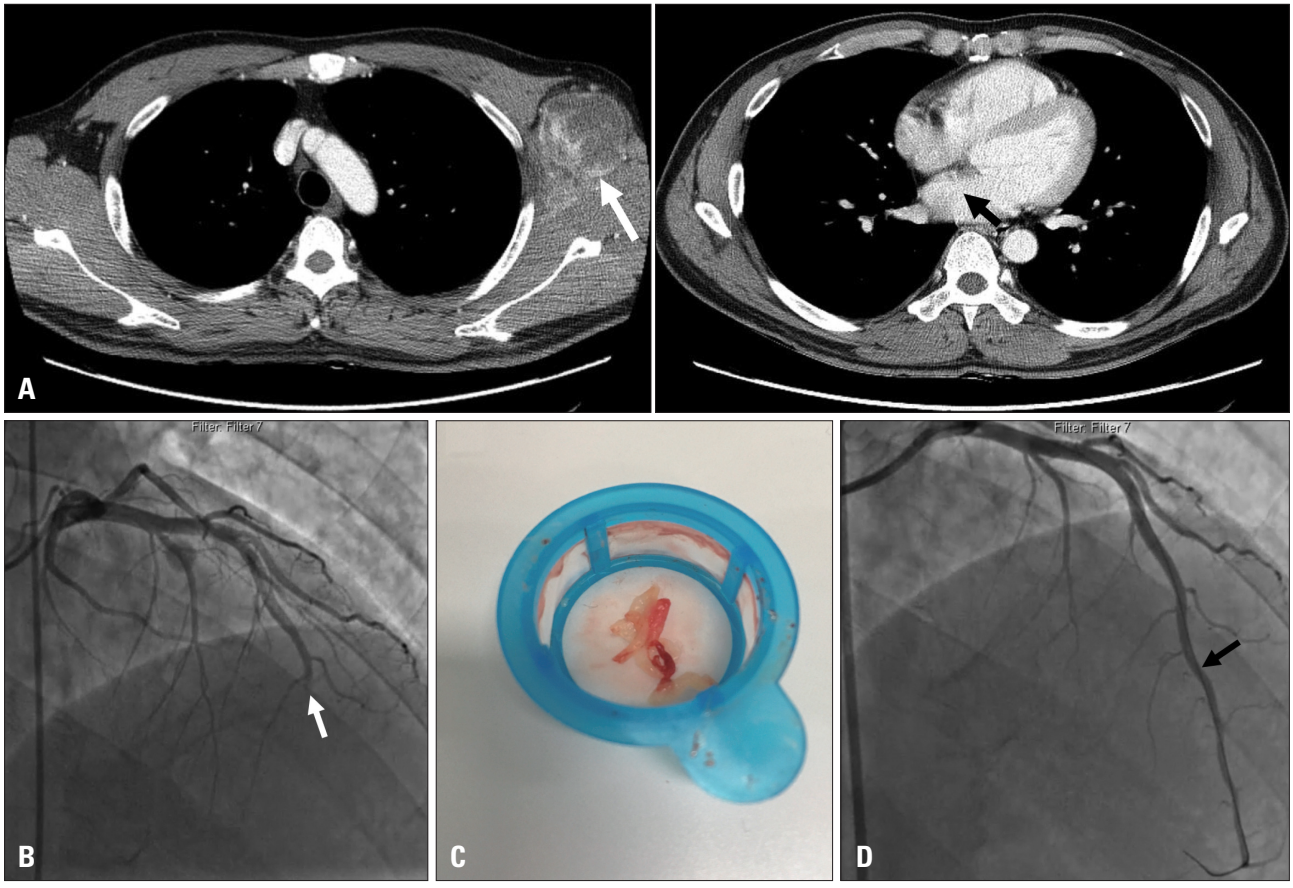

Fig. 1. Computed tomography and coronary angiography. A: Initial chest computed tomography showed a large, infiltrative, and heterogeneously soft tissue mass at the left axilla (white arrow). There was no definite mass in the left atrium (black arrow). B: Coronary angiography showed the total occlusion of the distal left anterior descending artery (white arrow). C: The aspirated tissue material appeared as mucoid and whitish debris. D: The final coronary angiography showed that flow had been completely restored (black arrow).

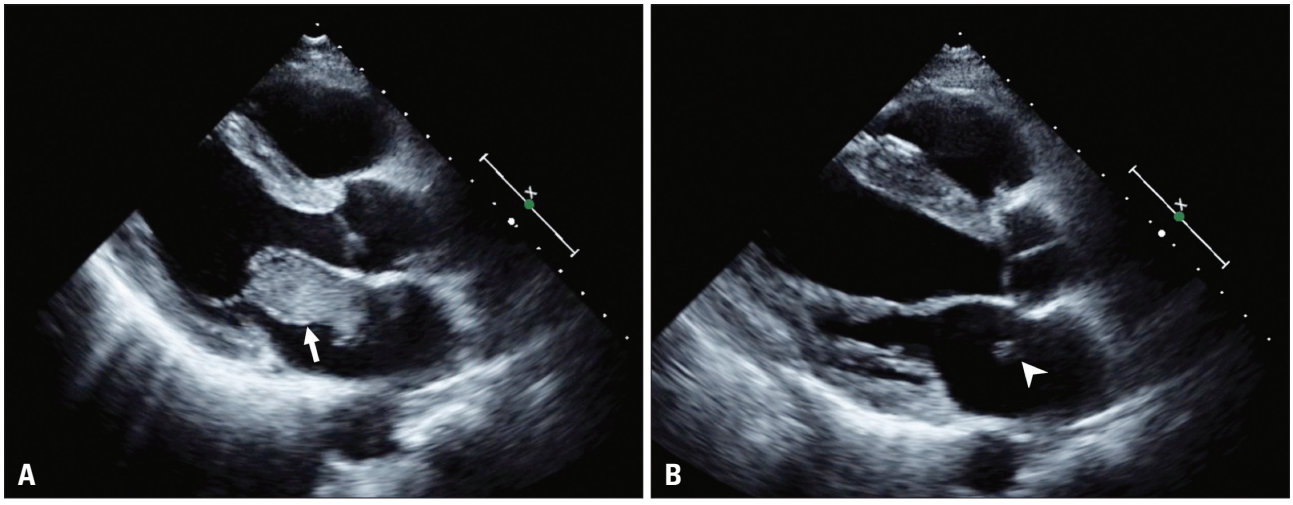

Fig. 2. Echocardiography. A: Echocardiography showed a huge mass with heterogeneous echogenicity in the left atrium affecting through the mitral valve leaflet before six months ago, at the time of pembrolizumab treatment (white arrow). B: The left atrium tumor mass was significantly decreased at the time of admission in the echocardiography (white arrow head).

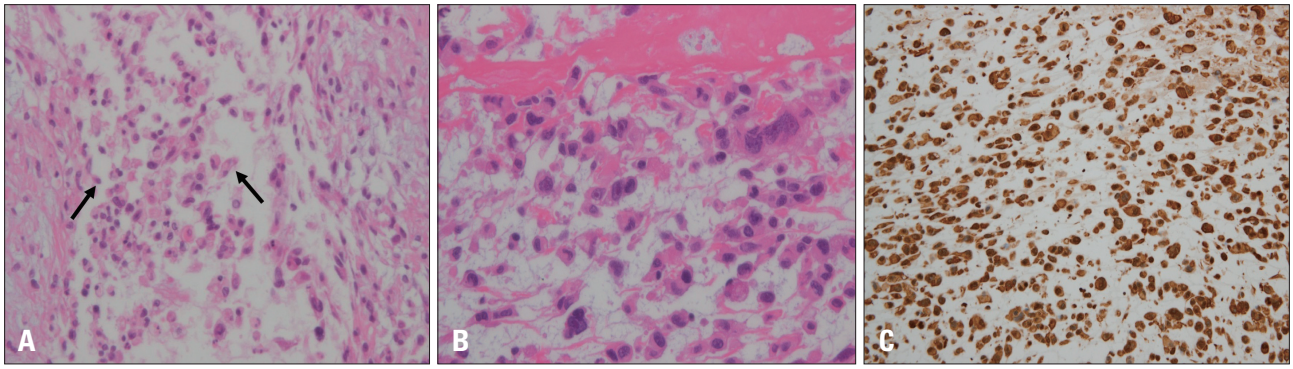

Fig. 3. Pathology findings. A: The primary axillary tumor was cytologically compatible with undifferentiated pleomorphic sarcoma that focally showed discohesive and relatively monotonous round cell components (black arrows) (H&E, × 200). B: The coronary embolus tissues showed similar round cell morphology and a few scattered pleomorphic giant cells (H&E, × 400). C: The tumor cells were diffusely immunoreactive with vimentin, a representative mesenchymal marker (ABC, × 200). H&E: hematoxylin and eosin.

References

1. Hallahan DE, Vogelzang NJ, Borow KM, Bostwick DG, Simon MA. *Cardiac metastases from soft-tissue sarcomas. J Clin Oncol 1986;4:1662-9.*
2. Takenaka S, Hashimoto N, Araki N, Hamada K, Naka N, Joyama S, Kakunaga S, Ueda T, Myoui A, Yoshikawa H. *Eleven cases of cardiac metastases from soft-tissue sarcomas. Jpn J Clin Oncol 2011;41:514-8.*
3. Ali MK, Ewer MS, Cangir A, Fisher DJ. *Coronary artery embolism following cancer chemotherapy. Am J Pediatr Hematol Oncol 1987;9:200-3.*
4. Chinen K, Kurosumi M, Ohkura Y, Sakamoto A, Fujioka Y. *Sudden unexpected death in patients with malignancy: a clinicopathologic study of 28 autopsy cases. Pathol Res Pract 2006;202:869-75.*
5. Steiner I, Vojáček J. *Carcinoma embolization in coronary artery causing myocardial infarction: diagnosis from coronary thromboaspirate. Pathol Res Pract 2014;210:198-200.*