

# Pericardial Metastasis of Merkel Cell Carcinoma of the Skin

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## Abstract

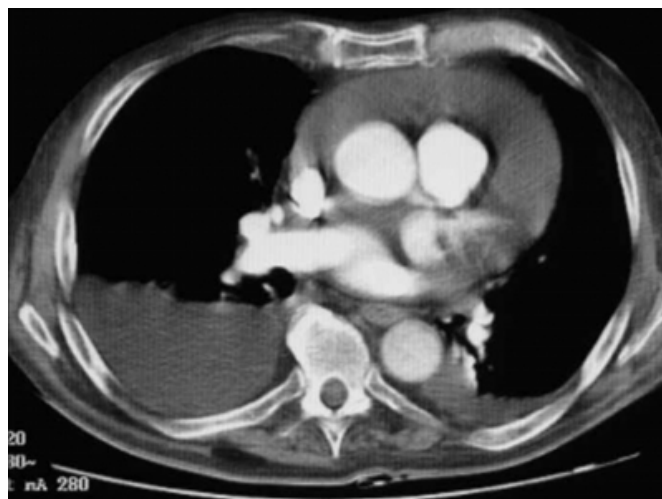
Merkel Cell Carcinoma (MCC) is a rare neuroendocrine tumor of the skin which has a histological appearance similar to small cell carcinoma of the lung. This case presents a patient with cardiac tamponade from a metastatic MCC to the pericardium. To my knowledge metastatic MCC to the pericardium has not been described in the past. This case will focus on the imaging findings and the differential diagnosis of pericardial masses.

## CASE REPORT

A 70-year-old male presented to the emergency department with shortness of breath and chest pain. He had a history of Merkel Cell carcinoma of the face which was excised and clear margins were observed at pathology. The patient was found to have pulsus paradoxus and dilated jugular veins on physical exam. Laboratory information was non-contributory. The examining physician clinical concerned was for a pericardial disease thus an emergent echocardiogram was performed which confirmed the clinical suspicion of a pericardial effusion, with tamponade physiology. There was a questionable mass seen along the right ventricle wall within the pericardial effusion (not shown). Contrast enhanced computed tomography (CT) of the chest confirmed the presence of a large pericardial effusion (Figure 1) and on subsequent images (Figure 2) there is a homogeneous soft tissue density mass abutting the right ventricle. On these images it is not possible to differentiate whether the mass is originating from the right ventricle wall or from the visceral pericardium. Dense contrast and partial collapse of the right ventricle was also noted suggesting tamponade. Given the patient's history these imaging findings were considered consistent with a metastatic lesion with questionable tamponade.

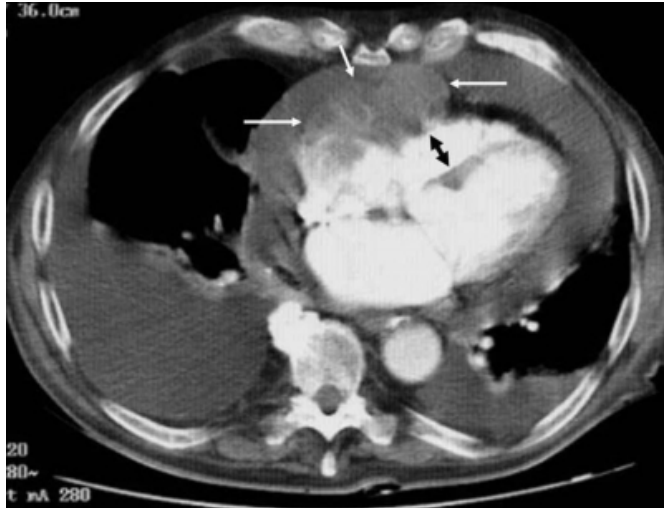
## Figure 1

Figure 1: Axial contrast enhanced CT image of the chest at the level of the pulmonary vein. There is a large pericardial effusion. There are moderately large bilateral pleural effusions.



**Figure 2**

Figure 2: Axial contrast enhanced CT image of the chest at the level of the right ventricle. There is a mass abutting the right ventricle (arrows) inseparable from the right ventricle. The epicenter of the mass cannot be clearly gleamed from these images. There is compression of the right ventricle (double headed arrow) by the mass and large pericardial effusion.



The patient was urgently brought to the operating room where a pericardial window was placed. During this procedure a pericardial mass was visualized and was found to be adherent to the visceral pericardium. There was no invasion of the myocardium. Histology was consistent with Merkel Cell carcinoma. Several days later the patient was released from the hospital. The patient died 3 months later from complication related to his primary tumor.

**DISCUSSION**

Pericardial effusions are relatively common disorders and are rarely related to masses in the pericardium (1). However, when an abnormality is seen in the pericardium it is essential to have a grasp of the possible etiologies. The differential diagnosis in this case includes primary and metastatic tumors of the pericardium. Metastatic lesions are more common than primary lesion, although both have been described. Rare benign masses of the pericardium have also been described.

Metastatic lesions to the pericardium are 20-40 times more common than primary tumors of the pericardium (1,2). Autopsy series have found metastatic disease to the pericardium in up to 12% of cases (3). Lung and breast are seen more frequent than any other metastatic neoplasm followed by lymphoma and melanoma (4). However, melanoma has the greatest propensity to metastasize to the

pericardium (1,2).

Primary neoplasms of the pericardium are rare. Benign etiologies of pericardial tumors include lipomas, teratomas, fibroma, and hemangiomas (4). Another rare benign cause of masses in the pericardium is thymoma, 4 have been presented in the literature (5). Malignant causes of pericardial masses include mesothelioma, sarcomas (undifferentiated sarcomas, angiosarcoma, rhabdomyosarcoma, and liposarcoma), malignant fibrous histiocytoma, and malignant teratoma, (1, 2, 4). While imaging finding is usually not able to differentiate the exact etiology of these masses, one can suggest the diagnosis of lipoma based its characteristic low attenuation on CT. All other masses require a biopsy for definitive diagnosis.

This patient's history is essential to a correct prospective diagnosis. Merkel Cell carcinoma of the skin is very aggressive neuroendocrine tumor with a high metastatic potential. The natural history of this disease is similar to small cell lung cancer. Merkel Cell carcinoma of the skin is known to metastasize diffusely; most commonly involving the lung, brain and liver (6, 7). Although, multiple other sites of metastasis have been reported to my knowledge there are no reports of metastatic disease to the pericardium.

Dawson et al (2) reviewed 26 patients with tumor involving the pericardium they found that 21 patients had nodular pericardial thickening. Only 6 of 23 patients with pericardial masses had pericardial effusions. CT was found to be superior to echocardiography for the evaluation of both effusion and masses in the pericardium in this study. The superiority of CT for imaging of pericardial masses was more recently confirmed by Karia et al (8). The reason for this discrepancy is likely related to better evaluation of anterior structure on CT while echocardiogram has poor near field evaluation. Additionally, evaluation of the posterior aspect of the heart is difficult on echocardiography. MRI has been shown to have similar benefits over echocardiography (2, 8).

**CONCLUSION**

This case illustrates that in patients with pericardial effusions and a history of a primary neoplasm one should carefully evaluate the pericardium on both echocardiography and CT to ensure no metastatic deposit is present. Given that in patients with a known malignancy, up to 12% of autopsy cases will reveal pericardial masses, patients with a history of a malignancy and new pericardial effusions would likely

benefit from CT or MR evaluation.

## References

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