

Autopsy Histopathology Reveals Rare Cause of Death - A Curious Case of Pericardial Metastasis

Dr. Deepshikha¹, Dr. Gajender Singh², Dr. Sant P Kataria³, Dr. Archana⁴, Dr. Rajeev Sen⁵, Dr. Gaurav Sharma⁶

¹Senior Resident, Department of Pathology, Pt. B.D. Sharma PGIMS Rohtak.

²Professor, Department of Pathology, Pt. B.D. Sharma PGIMS Rohtak.

³Professor, Department of Pathology, Pt. B.D. Sharma PGIMS Rohtak.

⁴Resident, Department of Pathology, Pt. B.D. Sharma PGIMS Rohtak.

⁵Senior Professor & Head, Department of Pathology, Pt. B.D. Sharma PGIMS Rohtak.

⁶Medical Officer, Govt. of Haryana.

*Corresponding author

Dr. Deepshikha

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Abstract: Cardiac tumors are very rare. Metastasis to the heart is an extremely uncommon condition but they occur comparatively more frequently as compared to the primary tumors of the heart. Metastases to the heart and pericardium are discovered at autopsy in 0.7-3.5% in the general population and upto about 9.1% in patients with some underlying malignancy. The clinical presentation of pericardial metastasis can be varied ranging from silent to prominent symptoms like cardiac tamponade or even sudden death. We have reported a rare case of pericardial metastasis diagnosed on post mortem histopathological examination of the heart alongwith primary tumor deposits of adenocarcinoma in the lung in a 50 year old male who according to the relatives died of an unknown illness.

Keywords: Autopsy, pericardium, rare, metastasis.

INTRODUCTION

Primary tumors of the heart are very rare and account for about 0.01% to 0.1% of the cases on post mortem analysis. They most commonly involve the endocardium, followed by myocardium and then pericardium. Almost 80% of the primary tumors are benign with atrial myxomas being the most common. However, metastases to the heart and pericardium are discovered at autopsy in 0.7-3.5% in the general population and upto about 9.1% in patients with some underlying malignancy [1].

Metastatic involvement of heart is reverse that of primary tumors. In descending order of frequency pericardium followed by myocardium and then endocardium are involved. The involvement of heart can occur by one of the four different pathways: lymphatic, hematogenous, direct extension and transvenous extension via the superior or inferior vena cava. Pericardial metastasis mainly occur by lymphatic spread[1]. The clinical presentation of pericardial metastasis can be varied ranging from silent to prominent symptoms like cardiac tamponade or even sudden death. Common tumors with cardiac metastatic potential are usually carcinomas of the lung, pleura, breast, esophagus, lymphomas, leukemias, sarcomas and malignant melanoma. Cardiac metastases are usually found late and are rarely seen as the first site of metastases [2].

CASE REPORT

We present a case report of pericardial metastasis diagnosed on postmortem histopathological examination of the heart along with primary tumor

deposits of adenocarcinoma in the lung piece submitted. The deceased was an apparently healthy 50 year old male who, according to the relatives died of an unknown illness. The deceased was brought dead for which a postmortem examination was carried out and heart alongwith pieces of lung, liver, spleen and kidney were sent for histopathological examination. Heart weighed 300 gm and measuring 13x11x5 cm. External surface was unremarkable. On cutting-open, the heart appeared unremarkable grossly. Also received were 2 pieces of lung tissue weighing 130 gm and 100 gm and measuring 13x7x4 cm and 10x5x2 cm respectively. Cut section of the lung pieces showed tiny grey-white areas in the parenchyma. Rest of the organs submitted was found to be unremarkable. Microscopic examination from different areas of heart showed metastatic deposits from adenocarcinoma in the pericardium. Sections examined from right and left coronary arteries showed patent lumen. Representative microsections examined from the lung pieces submitted showed deposits of adenocarcinoma. Microsections examined from liver, spleen and kidney pieces were unremarkable. Few

immunohistochemical markers were applied like TTF1, NSE and CD34 to rule out the primary adenocarcinoma of lung. Among these markers, TTF1 came positive in

the tumor cells. Therefore, a diagnosis of primary adenocarcinoma of lung with secondary deposits in the pericardium was suggested.



Fig-1: Gross image of cut section of lung piece showing tiny grey-white areas

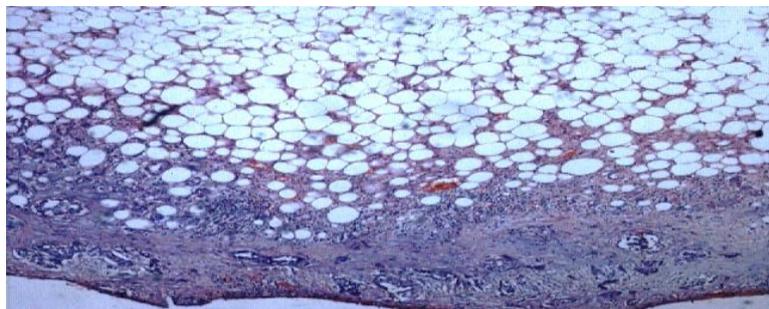


Fig-2: Microphotograph showing pericardial metastatic deposits (H&E, 40X)

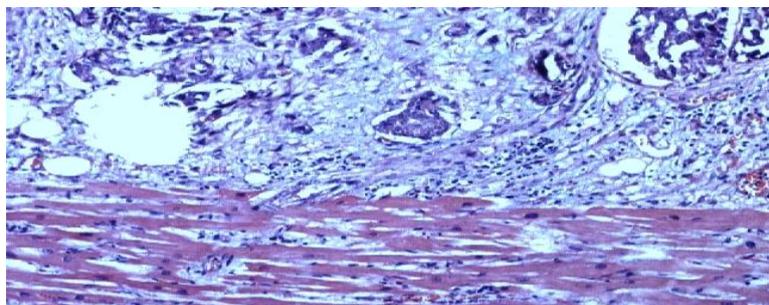


Fig-3: Microphotograph showing deposits of adenocarcinoma in pericardial fat with uninvolved myocardium. (H&E, 100X)

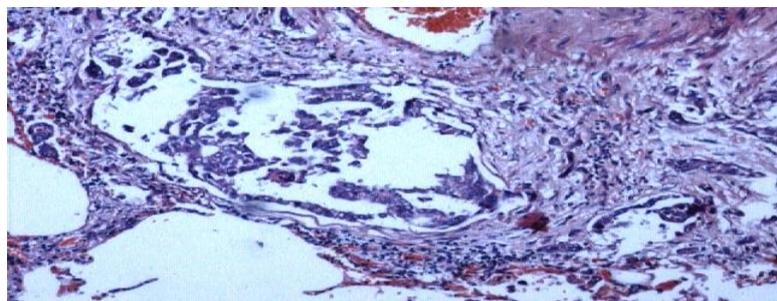


Fig-4: Microphotograph showing glandular formations characteristic of adenocarcinoma in Lung tissue (H&E, 200X)

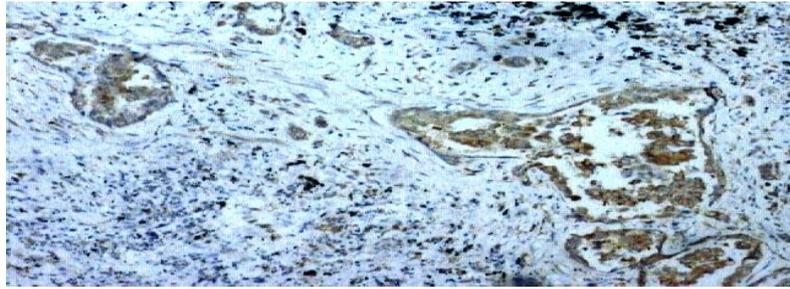


Fig-5: Microphotograph showing TTF1 positive expression in tumor cells in lung tissue (IHC TTF1, 200X)

DISCUSSION

Cardiac metastasis as compared to the primary cardiac tumors are definitely much more common. But the antemortem diagnosis of the cardiac metastasis is known to be seldom established because more than 90% of such cases are clinically silent[3]. At an early stage, there are minimal or no clinical findings at all. Metastatic tumors could gradually give rise to heart failure, conduction abnormalities, angina or valvular disease at more advanced stages. Sometimes, even advanced metastatic lesions to the heart can remain silent and can lead to sudden death. Sudden death has been reported in about 3% of the patients with cardiac metastasis. Common tumors with cardiac metastasis potential are usually carcinomas of the lung, pleura, breast, esophagus, kidney, malignant lymphoma, leukemia, sarcoma, and malignant melanoma. There are three main routes that result in extension of malignancy to the pericardium: (1) hematogenous, (2) lymphatic, and (3) local extension[4]. The most common malignant tumor to metastasize to the pericardium is the lung. Breast cancer is the most prevalent malignancy among the female population. Pericardial involvement can sometimes lead to pericarditis with pericardial effusion which can lead to urgent need of pericardiocentesis. In the past two decades, imaging has improved detection, with 2-dimensional transthoracic echocardiography (2D-TTE), 2-dimensional transesophageal echocardiography (2D-TEE), computed tomography (CT) and magnetic resonance imaging (MRI) being the mainstay of clinical evaluation[5] Although, the clinical diagnosis can sometimes be made on imaging, tissue histology remains the most definitive method for diagnosing pericardial metastasis and for planning definitive or palliative therapy in cases of live patients. Malignant cells can be identified in the majority of malignant pericardial effusions drained by pericardiocentesis and the cytology of malignant cells has an extraordinarily high correlation with the histological diagnosis.

CONCLUSION

Cardiac metastases are surprisingly common. Although often clinically silent, they should always be considered in any individual with new cardiac symptoms and known malignancy. The symptoms are generally dependent on the location and extent of involvement by the tumor. Various imaging modalities

like trans-esophageal echocardiogram, CT scan and MRI can be used to diagnose the presence of cardiac metastasis and management can be planned as per protocol. It is important that sound interdepartmental coordination is maintained and a meticulous autopsy be conducted lest a rare case like this is lost in oblivion.

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