

Intracardiac Metastasis of SCC Of Lung: Rare Unusual Incidental Finding on Autopsy Case Report

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ABSTRACT

Introduction: Metastatic tumors of the heart are extremely rare and these cases are mostly diagnosed at autopsy. Although being rare, these tumors are 30 - 40 times more common than the primary cardiac tumors. The incidence of metastatic tumor of the heart is 1.5 to 20.6% which is gradually increasing in number. In the majority of carcinomas metastatic to the heart, the primary tumor is in the thoracic cavity or contiguous area, and the tumor reaches the heart by metastasizing to the mediastinal lymph nodes and from there it extends in a retrograde fashion to the cardiac lymph vessels.

Methodology: Autopsy was conducted on a 40-year-old male patient who had died of a chronic unknown illness and his organs which included heart, lungs, liver, spleen and kidneys were received in our department.

Observation and Results: Microsections from lung and various portions of the heart showed a well differentiated SCCs with keratinization and sporadic keratin pearls.

Conclusion: Metastasis to the heart develops very rarely as the initial presentation of a malignancy. Most of the patients have widespread metastasis and cardiac involvement is usually diagnosed at autopsy. Although cardiac metastasis from heart is rare, the possibility of the primary should be considered in the absence of a previous history, symptoms or even a discrete lesion.

Keywords: Intracardiac metastasis; Squamous cell carcinoma; Primary lung tumors; Autopsy.

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INTRODUCTION

Metastatic tumors of the heart are extremely rare and these cases are mostly diagnosed at autopsy.¹ Although being rare, these tumors are 30 - 40 times more common than the primary cardiac tumors. The incidence of metastatic tumor of the heart is 1.5 to 20.6% which is gradually increasing in number.²⁻⁴ In the majority of

carcinomas metastatic to the heart, the primary tumor is in the thoracic cavity or contiguous area, and the tumor reaches the heart by metastasizing to the mediastinal lymph nodes and from there it extends in a retrograde fashion to the propensity for hematogenous spread to the heart are cardiac lymph vessels. Malignancy tumors with a malignant melanoma, renal cell carcinoma, choriocarcinomas, and rhabdomyosarcoma.^{5,6} It can occur via direct invasion, lymphatic and vascular routes. Metastatic cancer to the heart is usually a late manifestation of malignancy as the patient usually already has metastasis in other locations. The heart is very rarely the only site of metastasis.⁷

Lung cancer often leads to the development of metastatic changes in regional and distant lymph nodes, bones, the central nervous system, the liver or adrenal glands.⁸ Cardiac metastases are among the least known issues in oncology with only a few studies dedicated to this topic.⁹ In lung carcinomas, rate of metastasis depends on the particular histological type. Adenocarcinoma spread to the heart in approximately 26% of cases, squamous cell carcinoma in 23.4%, and undifferentiated carcinoma in 21.2%. Intra-pulmonary veins and intra-atrial masses can cause widespread emboli and circulatory impairment through outflow obstruction.¹⁰

We here report a 40-year-old male whose organs were received in our department post autopsy.

CASE REPORT

Autopsy was conducted on a 40-year-old male patient who had died of a chronic unknown illness and his organs which included heart, lungs, liver, spleen and kidneys were received in our department. We received single piece of lung measuring 7x5x2 cm. The external surface was gray black in color. On cut surface multiple firm to hard grey white areas were noted largest measuring 2x1 cm. The specimen of heart received measured 10x9x4 cm. The interventricular septum, right ventricular wall and left ventricular wall measured 1.6, 0.5 and 1.5 cm respectively. The stump of aorta measured 2.5 cm. The coronary arteries were traced as far as possible. Multiple firm to gray white nodules were noted on the external as well as ventricular surfaces, ranging from 3x3 to 0.5x0.5 cm. The specimens were grossed as per standard protocols and appropriate sections were taken. Sections from the atrio-ventricular walls showed metastatic focal deposits of tumor infiltration in the myocardium.

Haematoxylin and eosin stained micro sections were examined under light microscope. Microsections from lung and various portions of the heart showed a well differentiated SCCs with keratinization and sporadic keratin pearls.

GROSS & MICROSCOPY



Fig. 1 A-D: Gross images of lung and heart having multiple gray white nodules.

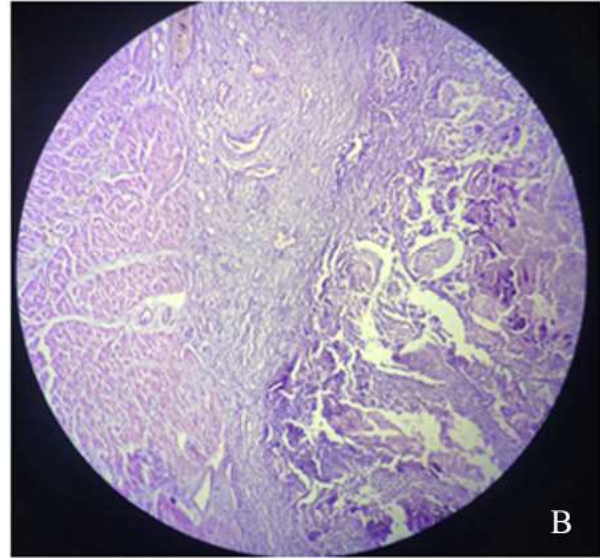
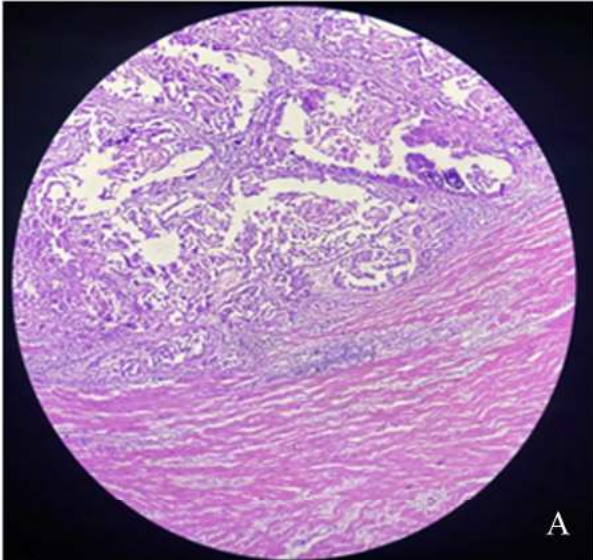


Fig. 2A & B: Showing metastatic deposits of squamous cell carcinoma in the cardiac tissue.

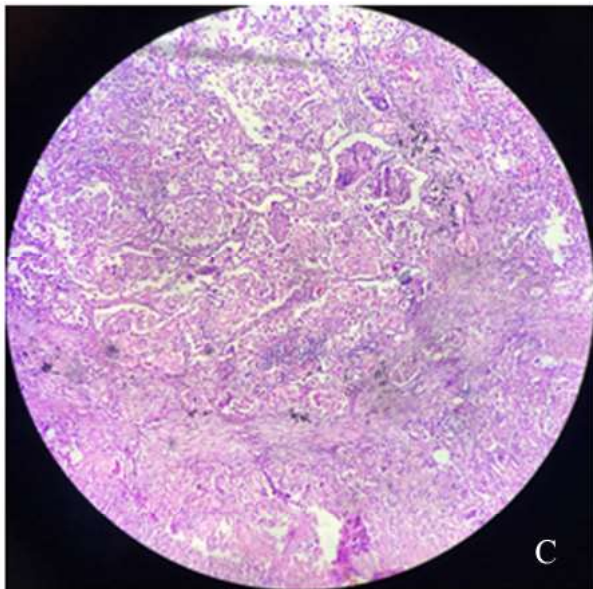


Fig. 2 C: Showing squamous cell carcinoma in the lung.

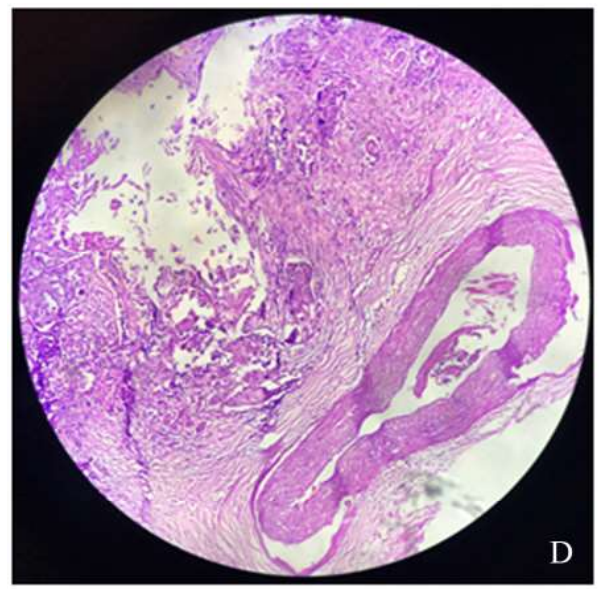


Fig. 2 D: Showing vascular invasion (coronary) by tumor tissue.

DISCUSSION

Tumors metastasising to heart are very rare. The incidence of cardiac involvement at autopsy has been described in 6% to 20% of patients with malignant neoplasms.¹⁰ The most common primary origin of metastatic neoplasms to heart is from lungs followed by nonsolid neoplasms such as leukaemia or lymphoma and tumours of the liver and colon, respectively.³ The heart is a very rare site of metastasis owing to the strong kneading action

of myocardium, metabolic peculiarities of striated muscle, rapid flow of blood through the heart and the fact that lymphatic flow is directed away from the heart.¹¹

The most common site of cardiac involvement is pericardium (61-81%)¹² while myocardial endocardial, intracavitary, or valvular metastasis is very rare.⁶ The right atrium is the most commonly affected chamber, and 80% of metastasis occurs to the right chambers. This is due to the filtering role of the pulmonary circulation, low intracavitary

pressure, slower flow and lighter contractile strength in the right chambers.¹³

The modes of cardiac metastasis are lymphatic spread (most common), direct extension from the adjacent viscera, hematogenous spread, and transvenous extension. Transvenous spread of metastasis occurs in the right atrium via the superior/inferior vena cava and in the left atrium via the pulmonary veins. Renal cell carcinoma is most common malignancy extending into the right atrium through the inferior vena cava. Bronchogenic carcinoma and metastases from osteogenic sarcoma extend into the left atrium through the pulmonary veins. In majority (approx. 90%) of the cases, cardiac metastasis is silent and diagnosed only on autopsy.¹⁴

Our case report highlights the rarity of lung cancer metastasis in this unusual location. It is crucial that proper sectioning of heart is important to avoid missing any small focus of tumour metastasis. Cardiac metastasis generally reflects widespread disseminated malignancy and poor prognosis. Involvement of cardiac chambers is

usually due to tumor thrombosis and is through the vena cava or retrograde flow from the lymphatic channels.¹ The malignant cells gets attached to the cardiac endothelial surface and then proliferate.

CONCLUSION

Metastasis to the heart develops very rarely as the initial presentation of a malignancy. Most of the patients have widespread metastasis and cardiac involvement is usually diagnosed at autopsy. Although cardiac metastasis from heart is rare, the possibility of the primary should be considered in the absence of a previous history, symptoms or even a discrete lesion. Careful examination of all organs and extensive sampling during autopsy is recommended in presence of an intra cardiac mass with no clear primary origin.

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