



## **METASTATIC SQUAMOUS CELL CARCINOMA TO THE HEART- A CASE REPORT**

**Vedant Kulshrestha<sup>1</sup>, Munesh Kumar<sup>2</sup>, Sunil Kumar Sharma G.A<sup>3</sup>, Sarvesh Tandon<sup>4</sup>,  
Meetu Aggarwal<sup>5</sup> and Sufian Zaheer<sup>6</sup>**

<sup>1,2,3,4</sup>Department of Forensic Medicine & Toxicology, Vardhman Mahavir Medical College & Safdarjung Hospital, New Delhi

<sup>5,6</sup> Department of Pathology, Vardhman Mahavir Medical College & Safdarjung Hospital, New Delhi

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### **ABSTRACT**

Metastatic (secondary) tumors to the heart occur in about 5% of patients dying of cancer. Due to the silent nature of cardiac metastases, the diagnosis is often missed pre-mortem but rather found on autopsy. The most common malignancies spreading to the heart are cancers of the lung, breast, oesophagus, melanoma, and lymphoma. Head and neck cancers are noted to frequently metastasize to the cervical lymph nodes but are rare to cause distant metastasis, including to the heart. There are few case reports highlighting cardiac metastasis from oral cancers, most of such cases are from squamous cell carcinoma of the tongue and retromolar trigone.

Here we present a case of metastatic squamous cell carcinoma to the heart was diagnosed during autopsy and on histopathological examination in a 30 year old young male who had carcinoma of left buccal mucosa, which was operated about 8 months back. Primary tumor was surgically removed completely, but there was no history of either radiotherapy or chemotherapy given preoperatively or postoperatively. The tumor had metastasized to the heart, lungs, liver and kidneys. It remained silent and caused sudden death of the patient. In the heart, the metastatic growth of squamous cell carcinoma was present on the anterior surface of right ventricle which was extending towards right atrium. On cut section of the growth, it showed firm to hard cavities containing cheesy material extending to the myocardium.

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### **INTRODUCTION**

Any type of abnormal growth in the body is called a tumor, whether it is determined to be cancerous (malignant) or non cancerous (benign). Malignant tumors are fast growing and likely to spread to other parts of the body quickly, while benign tumors are slow growing and often harmless depending on where in the body they are located.

Primary tumors are tumors that originate in the heart and are rare, occurring in one out of 2,000 people. Tumors that originate in another part of the body and then spread to the heart are called secondary tumors.<sup>1</sup> Metastatic (secondary) tumors to the heart occur in about 5% of patients dying of cancer.<sup>2,3</sup> Due to the silent nature of cardiac metastases, the diagnosis is often missed pre-mortem but rather found on autopsy.<sup>4</sup> The most common malignancies spreading to the heart are cancers of the lung, breast, oesophagus, melanoma, and lymphoma.

Head and neck cancers are noted to frequently metastasize to the cervical lymph nodes but are rare to cause distant metastasis, including to the heart.<sup>5</sup>

There are few case reports highlighting cardiac metastasis from oral cancers, most of such cases are from squamous cell carcinoma of the tongue and retromolar trigone.<sup>6,7</sup>

Here we present a case of carcinoma of left buccal mucosa, which was operated about 8 months back. It remained silent and caused sudden death of the patient. During autopsy it was found to cause metastasis in heart, lungs, liver and kidneys, and diagnosed as squamous cell carcinoma on histopathological examination.

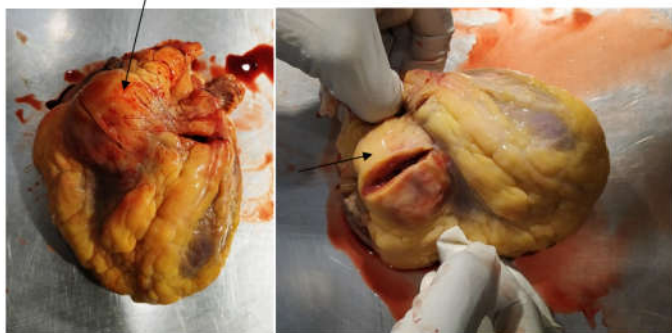
#### **Case report**

A 30 years old male suddenly complained of drowsiness and difficulty in breathing in the morning at home following which he was brought to the casualty of Safdarjung Hospital, New Delhi in unconscious state where he was declared brought dead after examination. Deceased was an old case of carcinoma left buccal mucosa (T4aN2bM0) for which left

\*Corresponding author: **Vedant Kulshrestha**

Department of Forensic Medicine & Toxicology, Vardhman Mahavir Medical College & Safdarjung Hospital, New Delhi

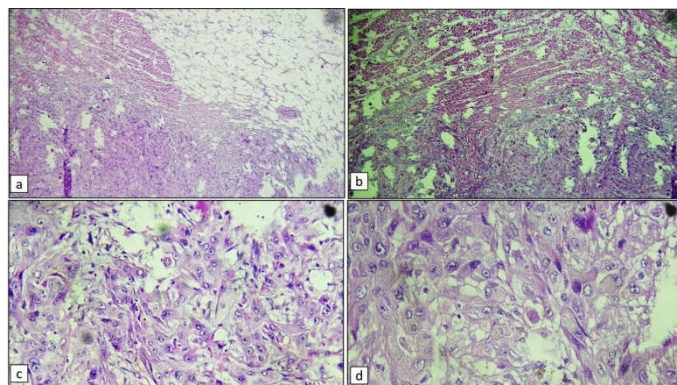
composite resection (wide local excision of left buccal mucosa with overlying skin + marginal mandibulectomy) + left modified neck dissection + ALT free flap reconstruction about 8 months back. There was no history of either radiotherapy or chemotherapy given. Autopsy was conducted at the mortuary of Vardhman Mahavir Medical College and Safdarjung Hospital, New Delhi. On external examination the dead body was moderately built and nourished. Rigor mortis was present over upper limbs of the body. Post mortem staining was seen over the back of the body. Old surgical scar was present over left side of face and neck. There were no fresh antemortem external injuries on the body. On internal examination, Heart weighed 350 gms. A growth of size 5 cm x 3.5 cm was present on upper anterior aspect of right ventricle of heart which was extending towards right atrium. On cut section it showed firm to hard cavities containing cheesy material extending to the myocardium. Parietal pericardium and heart valves were normal. Coronary arteries were patent. Both pleura were adherent to chest wall on both sides. Both lungs were adherent to chest wall on both sides and consolidated. On cut section, multiple nodules of varying sizes were present in all lobes of both lungs which contained white cheese like material. Liver was congested and multiple nodules were present in both lobes of liver which on cut section showed white cheesy material. Both kidneys were congested and multiple cavities were present in both kidneys containing thick fluid. Brain was congested and edematous. Other internal organs were normal. On histopathological examination, it was diagnosed as metastatic squamous cell carcinoma in the heart, lungs, liver and kidneys. It was concluded that the possible cause of death was widespread metastasis of the tumor leading to failure of vital organs like heart and lungs.



**Fig 1** The photographs of the heart showing a growth of size 5 cm x 3.5 cm was present on upper anterior aspect of right ventricle of heart which was extending towards right atrium



**Fig 2** The photographs of the heart in which cut section of the growth showed firm to hard cavities containing cheesy material extending to myocardium



**Fig 3** The photomicrographs showing metastasis of Squamous cell carcinoma to the heart- (a-b) Low power appearance of neoplastic cells infiltrating closely into the cardiac muscle and epicardial fat [H&E,10x], (c-d) Higher magnification showing polygonal nature, nuclear irregularity, hyperchromasia and focal intracellular keratinization in neoplastic cells [H&E, 40x].

## DISCUSSION

Distant metastasis of oral squamous cell carcinoma is not an uncommon event and is widely studied. Various studies have reported lung (55%), bone (12%–37%), and liver (3%–9%) as the most common site of metastasis from oral squamous cell carcinoma. Brain, soft tissues, and skin have also been reported as metastatic sites with lower incidence rates.<sup>8,9</sup> Few individual case reports of cardiac metastasis from oral cancer are available, most of which are postmortem.<sup>10,11</sup>

The most common location of cardiac involvement by secondary tumors is pericardium (69.4%), followed by myocardium (31.8%), and endocardium (5%).<sup>4,11</sup> This is possibly because of the fact that the most common tumors metastasizing to the heart are intrathoracic, which involve the heart by direct extension and therefore invade the pericardium at first.<sup>12</sup> Other modes of tumor spread are either through blood stream or lymphatic system.

A high degree of suspicion is required for the diagnosis of cardiac metastasis since patients are often asymptomatic, particularly in the early stages. Symptoms, when present, depend upon the location and size of the mass and usually occur due to the involvement of the pericardium, endocardium, or the intracardiac conduction fibres.<sup>13</sup> As the tumours progress in size within the heart, patients may present with chest pain, valvular abnormalities, heart failure, cardiogenic shock, or tamponade.<sup>7</sup> The involvement of the myocardium may present clinically as arrhythmias and conduction disturbances, depending on the site and size of infiltration within the myocardium. The sudden cardiac death due to massive infiltration of the myocardium has been reported.<sup>14</sup> The prognosis of patients with cardiac metastasis is generally poor, mainly because most of the times it is a part of the widespread dissemination of advanced tumor and treatment options are limited.<sup>12</sup>

In the present case, metastatic squamous cell carcinoma to the heart was diagnosed during autopsy and on histopathological examination in a 30 year old young male who had carcinoma of left buccal mucosa, which was operated about 8 months back. Primary tumor was surgically removed completely, but there was no history of either radiotherapy or chemotherapy given preoperatively or postoperatively. The tumor had metastasized to the heart, lungs, liver and kidneys. It remained silent and caused sudden death of the patient. In the heart, the metastatic growth of squamous cell carcinoma was present on

the anterior surface of right ventricle which was extending towards right atrium. On cut section of the growth, it showed firm to hard cavities containing cheesy material extending to the myocardium.

## CONCLUSION

Metastatic disease to the heart in oral cavity cancer is an uncommon finding. Diagnosis is quite challenging since cardiac metastases are often clinically silent and they are usually diagnosed during autopsy. This case report emphasises that routine imaging techniques such as Echocardiography, cardiac MRI, PET/CT, ECG etc. should be used in oral cancer patients from time to time to confirm the location and extent of the tumor, which may help to guide treatment options and the life of the patient can be saved. It also highlights the role of meticulous autopsy and histopathological examination to detect this condition.

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## References

1. Johns Hopkins medicine. Heart tumors. [Online]. 2021 [cited 2021 May 18]; Available from: URL: [https://www.hopkinsmedicine.org/heart\\_vascular\\_institute/conditions\\_treatments/conditions/heart\\_tumors.html](https://www.hopkinsmedicine.org/heart_vascular_institute/conditions_treatments/conditions/heart_tumors.html)
2. Schoen FJ, Mitchell RN. The heart. In: Kumar V, Abbas AK, Aster JC, editors. Robbins and Cotran pathologic basis of disease. South Asia ed. Elsevier; 2015. p. 575,576. (vol 1).
3. Becker AE. Tumors of the heart/pericardium. In: Fletcher CDM. Diagnostic histopathology of tumors. 2<sup>nd</sup> ed. Churchill Livingstone; p. 6-40. (vol 1).
4. Bussani R, De-Giorgio F, Abbate A, Silvestri F. Cardiac metastases. J Clin Pathol 2007;60:27-34.
5. Browning CM, Craft JF, Renker M, Schoepf UJ, Baumann S. Squamous cell carcinoma of the tongue with metastasis to the right ventricle. Am J Med Sci 2015; 349:461-462.
6. Malekzadeh S, Platon A, Poletti PA. Cardiac metastasis of tongue squamous cell carcinoma complicated by pulmonary embolism: A case report. Medicine (Baltimore) 2017; 96:e7462.
7. Pattni N, Rennie A, Hall T, Norman A. Cardiac metastasis of oral squamous cell carcinoma. BMJ Case Rep 2015;2015:bcr2015211275.
8. Kowalski LP, Carvalho AL, Martins Priante AV, Magrin J. Predictive factors for distant metastasis from oral and oropharyngeal squamous cell carcinoma. Oral Oncol 2005; 41:534-41.
9. Alvarez Marcos CA, Llorente Pendás JL, Franco Gutiérrez V, Hermsen M, Cuesta Albalad MP, Fernández Espina H, *et al.* Distant metastases in head and neck cancer. Acta Otorrinolaringol Esp 2006; 57:369-72.
10. Butany J, Leong SW, Carmichael K, Komeda M. A 30-year analysis of cardiac neoplasms at autopsy. Can J Cardiol 2005; 21:675-80.
11. Lam KY, Dickens P, Chan AC. Tumors of the heart. A 20-year experience with a review of 12,485 consecutive autopsies. Arch Pathol Lab Med 1993;117:1027-31.
12. Gupta A, Dewan K, Dhankar V. Cardiac micrometastasis of maxillary squamous cell carcinoma: A rare postmortem finding. Clin Cancer Investig J 2018;7:152-4.
13. Tandon V, Kethireddy N, Balakumaran K, Kim AS. Metastatic squamous cell carcinoma to the heart: an unusual cause of ST elevation-a case report. European Heart J- Case reports. 2019 Jun;3(2):ytz029.
14. Kim H, Jeon H, Seo J. Death due to cardiac metastasis after treatment of oral squamous cell carcinoma: An autopsy case. Korean J Leg Med 2012;36:115-18.

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