

Cardiac metastasis of renal cell carcinoma without inferior vena cava involvement: case report

Renal hücre karsinomunun inferiyor vena kava tutulumu olmadan kardiyak metastazı: Olgu sunumu

Melih Topçuoğlu, M.D., Yakup Yeşilkaya, M.D., Abidin Kılınçer, M.D.

Department of Radiology, Hacettepe University Faculty of Medicine, Ankara

Summary– We report the case of a 51-year-old man with advanced renal cell carcinoma (RCC), without inferior vena cava (IVC) involvement, who was treated with chemotherapy. Computed tomography of the thorax and abdomen revealed metastatic invasion of the liver, mediastinal lymph nodes, right adrenal gland, and the head of pancreas. Heart involvement via the IVC is a well-known pattern of metastasis during RCC progression. There are very few cases worldwide that have reported RCC with cardiac metastasis without IVC involvement.

Özet– Bu yazıda, 51 yaşında inferiyor vena kava tutulumu olmadan kardiyak metastaz yapan kemoterapiyle tedavi edilen renal hücre karsinomu olgusu sunuldu. Toraks ve karın bilgisayarlı tomografi incelemesinde kitlenin karaciğer, mediastinel lenf nodları, sağ adrenal gland ve pankreas başına yayıldığı izlendi. Renal hücre karsinomunda ilerleyen dönemlerde inferiyor vena kava yoluyla kalbe direkt invazyon bilinen bir durumdur. İinferiyor vena kava tutulumu olmadan renal hücreli karsinom kardiyak metastazı literatürde oldukça nadir bildirilmektedir.

Renal cell carcinoma (RCC) represents 3% of all malignant tumors. About 1/3 of RCC patients develop metastasis, and the prognosis is poor with a median survival of 6-12 months and a 5-year survival rate of less than 10%.^[1] Common sites of RCC metastasis are lung, liver, bone and adrenal glands as well as lymph nodes. Extension of RCC into the right atrium via the inferior vena cava (IVC) is a well-known pattern of metastasis, occurring in 5%-15% of patients.^[2] When the IVC is not involved, the clinical diagnosis of cardiac metastasis is an exceptional event with only a few cases reported in the literature.

CASE REPORT

A 51-year-old man was referred to our clinic for a left renal mass incidentally found during an investigation of a rib fracture occurring after a traffic

accident one year ago. Computed tomography of the abdomen and thorax revealed a left renal mass that was 10x6 cm in size and multiple metastasis within the lungs, mediastinal lymph nodes, liver, right adrenal gland and head of the pancreas. Additionally, within the left atrioventricular field and the apical myocardium there were metastatic invasive foci (Fig. 1). Interestingly, the renal mass did not extend into the IVC. A tru-cut biopsy specimen of the renal mass was sent for immunohistochemistry and a histologic diagnosis of conventional clear cell carcinoma grade 3-4 was made according to the Fuhrman classification. Chemotherapy was begun and during the follow-up, parenchymal metastasis outside of the myocardium had progressed and the myocardial metastasis had remained static.

Abbreviations:

IVC Inferior vena cava
RCC Renal cell carcinoma

Received: January 24, 2012 Accepted: July 05, 2012

Correspondence: Dr. Yakup Yeşilkaya. Yeni Elif Sitesi, A1 Blok No: 16/32 Etlük, Ankara.

Tel: +90 312 - 305 10 80 e-mail: dryakup23@hotmail.com

© 2013 Turkish Society of Cardiology



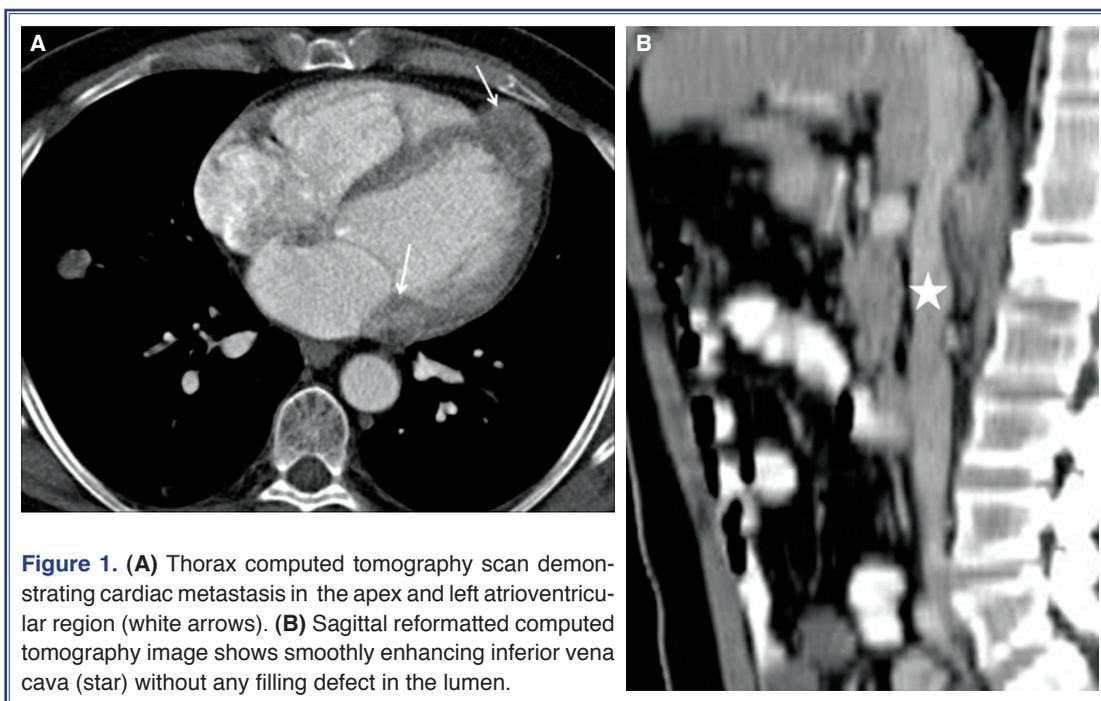


Figure 1. (A) Thorax computed tomography scan demonstrating cardiac metastasis in the apex and left atrioventricular region (white arrows). (B) Sagittal reformatted computed tomography image shows smoothly enhancing inferior vena cava (star) without any filling defect in the lumen.

DISCUSSION

Tumors that involve the heart are more likely to represent metastatic disease than a primary cardiac neoplasm.^[1] The prevalence of primary cardiac tumors in general autopsies is less than one in 3500.^[2] The most common primary cardiac neoplasm is a myxoma, usually arising from the left atrium. Other rare benign tumors include fibromas, lipomas and rhabdomyomas. Examples of less common malignant primary cardiac tumors include mesotheliomas, angiosarcomas and rhabdomyosarcoma. Lung and breast cancer are considered to be the most common causes of cardiac metastases. There are three general mechanisms of cardiac involvement: direct extrinsic compression by a tumor mass, diffuse intramyocardial infiltration and extension either as a consequence of local tumor growth or venous extension.^[3,4] Approximately 45% of patients with RCC present with localized tumors, 25% of patients present with locally advanced disease, and approximately 30% of patients have metastases at the time of diagnosis. The most common metastatic sites are the lungs, bones, soft tissues, liver and central nervous system. Cardiac metastasis was shown to be present in 11% of patients who died of RCC.^[2]

Without involvement of the IVC, the mechanism

explaining the cardiac extension of the RCC could involve RCC cells reaching the heart via microscopic hematogenous dissemination from the IVC or via pulmonary metastatic disease that spreads via lymphatic pulmonary drainage through the carinal nodes and then through reversed lymphatic flow caused by node metastasis causing the tumor to reach the pericardium and the left myocardium.^[5] On reviewing the literature, the present case report is one of the few cases that describe a solitary, left ventricular, metastatic tumor arising from RCC without involvement of the IVC. Cardiac metastasis without IVC involvement from RCC should be kept in mind.

Conflict-of-interest issues regarding the authorship or article: None declared.

REFERENCES

1. 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.
2. Roberts WC. Primary and secondary neoplasms of the heart. *Am J Cardiol* 1997;80:671-82.
3. Mukai K, Shinkai T, Tominaga K, Shimosato Y. The incidence of secondary tumors of the heart and pericardium: a 10-year study. *Jpn J Clin Oncol* 1988;18:195-201.
4. Nakayama R, Yoneyama T, Takatani O, Kimura K. A study of metastatic tumors to the heart, pericardium and great vessels.

- I. Incidences of metastases to the heart, pericardium and great vessels. Jpn Heart J 1966;7:227-34.
5. Zustovich F, Gottardo F, De Zorzi L, Cecchetto A, Dal Bianco M, Mauro E, et al. Cardiac metastasis from renal cell carcinoma without inferior vena involvement: a review of the literature based on a case report. Two different patterns of spread?

Int J Clin Oncol 2008;13:271-4.

Key words: Carcinoma, renal cell; heart neoplasms/diagnosis; vena cava, inferior.

Anahtar sözcükler: Karsinom, renal hücreli; kalp neoplazileri/tanı; vena kava, inferiyor.