Intramyocardial metastasis to the left ventricle from renal cell carcinoma

Sol ventrikülde renal hücreli karsinomdan intramiyokardiyal metastaz

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Cardiac metastasis from renal cell carcinoma is very rare. Coronary bypass operation was planned in a 68-year-old male patient with coronary artery disease. The patient underwent a single nephrectomy because of renal cell carcinoma 12 years before, after which he had been asymptomatic until presentation. Coronary angiography showed a large arteriovenous malformation and calcification in the posterobasal segment of the left ventricle. During coronary bypass operation, an intramyocardial firm mass, 6x8 cm in size, was detected that spread through the posterior segment of the left ventricle. Resection of the mass was not performed and a biopsy specimen was taken, which then showed metastasis from renal cell carcinoma. No further treatment for cancer was considered. The patient was asymptomatic at the end of the first postoperative year and laboratory findings were normal for renal and cardiac functions.

Key words: Carcinoma, renal cell/secondary; heart neoplasms/secondary; kidney neoplasms.

Renal hücreli karsinomun kalp metastazı son derece nadirdir. Koroner arter hastalığı nedeniyle 68 yaşındaki bir erkek hastada koroner bypass ameliyatı planlandı. On iki yıl önce renal hücreli karsinom nedeniyle nefrektomi yapılan hasta, başvurusuna kadar olan süreyi asemptomatik geçirmişti. Koroner anjiyografide sol ventrikülün posterobazal segmentinde büyük bir arteriyovenöz malformasyon ve kalsifikasyon gözlendi. Koroner bypass ameliyatı sırasında, sol ventrikülün posterior segmenti boyunca yayılan, 6x8 cm büyüklüğünde sert bir intramiyokardiyal kitle saptandı. Kitle rezeksiyonu uygulanmadı. Lezyondan alınan biyopsi sonucu, kitlenin renal hücreli karsinom metastazı olduğunu gösterdi. Hasta için daha ileri tedavi düşünülmedi. Hasta ameliyat sonrası birinci yılda hala asemptomatik idi; renal ve kardiyak fonksiyonlar yönünden laboratuvar bulguları normal idi.

Anahtar sözcükler: Karsinom, renal hücreli/ikincil; kalp neoplazileri/ikincil; böbrek neoplazileri.

Renal cell carcinoma (hypernephroma) is a disease that is diagnosed either primarily or by means of metastasis, but still cardiac metastasis is extremely rare (<1%). Metastases to the lungs, bones, brain, and skin are diagnosed more often.

Breast and lung cancers, lymphoma, and malignant melanoma are frequent tumors associated with cardiac metastasis.[1] Cardiac metastasis is detected often at autopsy series,[2] which was found 10.7% in autopsies of 1029 cancer patients.[3] Myocardial metastasis is seen in 2% to 20% of all metastatic cancers. The pericardium is the most common metastatic location.

We report a patient in whom a large metastatic intramyocardial hypernephroma was incidentally detected during coronary bypass operation for coronary artery disease. To our knowledge, a large intramyocardial metastatic tumor from renal cell carcinoma that invaded almost completely the posterior segment of the left ventricle has hitherto been unreported.

CASE REPORT

A 68-year-old male patient was first admitted with NYHA class 2 angina pectoris in 1997. Repeated angioplasties did not relieve his complaints, so a coronary bypass operation was planned. He had myocardial infarction in 1991, underwent angioplasties for the left anterior descending (LAD) coronary artery and right coronary artery (RCA) in 1998, and stents were inserted in the LAD, circumflex artery (Cx), and RCA in 2000. He also underwent a single nephrectomy because of hypernephroma 12 years before and had been asymptomatic for renal disease since then. Contralateral renal cortical cystic masses were detected very recently but they were not attributed to hypernephroma. There were no other findings suggestive of

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metastasis. Creatinin clearance was 53 ml/min and renal function tests were normal. Electrocardiography recordings at D_2, D_3 and aVF revealed T-wave inversions and pathological Q-waves suggesting a previous inferior myocardial infarction. Transthoracic echocardiography showed posterobasal akinesia with normal valve functions and normal heart chambers. Coronary angiography showed critical in-stent LAD occlusion and lesions in the RCA and obtuse marginal branch of the Cx. A large arteriovenous malformation and calcification in the posterobasal segment of the left ventricle were also noted (Fig. 1a). The posterobasal segment was hypokinetic.

During coronary bypass operation for the LAD, Cx, and RCA, an intramyocardial mass was observed that spread through the posterior segment of the left ventricle. The mass was very stiff and 6x8 cm in size, causing an upward shift in the acute margin of the right ventricle. It was difficult to distinguish its margins from the normal myocardial tissue. Resection of the mass was not performed and a biopsy specimen was taken, which then showed metastasis from hypernephroma. He was weaned from cardiopulmonary bypass easily and was discharged on the ninth postoperative day. No further treatment for cancer was considered. The patient was asymptomatic within the first postoperative year, and laboratory findings were normal for renal and cardiac functions. Thorax computed tomography showed a right pleural effusion and small-sized lung metastasis in the second postoperative year, but no further cardiac metastasis could be determined other than the preexisting large mass and collateral arteriovenous malformation detected by angiography (Fig. 1b).

DISCUSSION

Cardiac metastasis from hypernephroma was incidentally detected in our patient during coronary bypass operation. Renal cell carcinoma mostly invades the renal vein and even extend into the inferior vena cava and presents as a pulmonary embolus and a mass in the right atrium. Although similar cases have been reported, asymptomatic intramyocardial late cardiac metastasis from renal cell carcinoma is very rare in the literature. Bradley and Bolling[4] reported a case with renal cell carcinoma metastasis to the left ventricular outflow tract. However, a large metastatic mass from renal cell carcinoma invading almost completely the posterior segment of the left ventricle has not been reported.

There are no specific clinical symptoms and laboratory findings for cardiac metastases in cancer patients. Electrocardiographic changes are nonspecific; arrhythmias, low voltage complexes, nonspecific ST-T-segment modifications may occur. Occasionally, cardiac metastasis may imitate myocardial infarction with ST-segment elevation.[5,6] The incidence of supraventricular arrhythmias is higher in cancer patients with cardiac metastasis.[2] The onset of a murmur, pericardial pain or rub, effusion, arrhythmia, or ECG changes in a patient with a previous diagnosis of a malignancy should arouse suspicion of a cardiac metastasis. The tumor was unresectable in our case, but fortunately the patient was asymptomatic and could be weaned from coronary bypass operation.

Cardiac metastasis can affect the surgical approach, technique, and the extensiveness of surgery. These metastatic masses may be resected by cardiopulmonary bypass to prevent pulmonary emboli and circulatory dis-

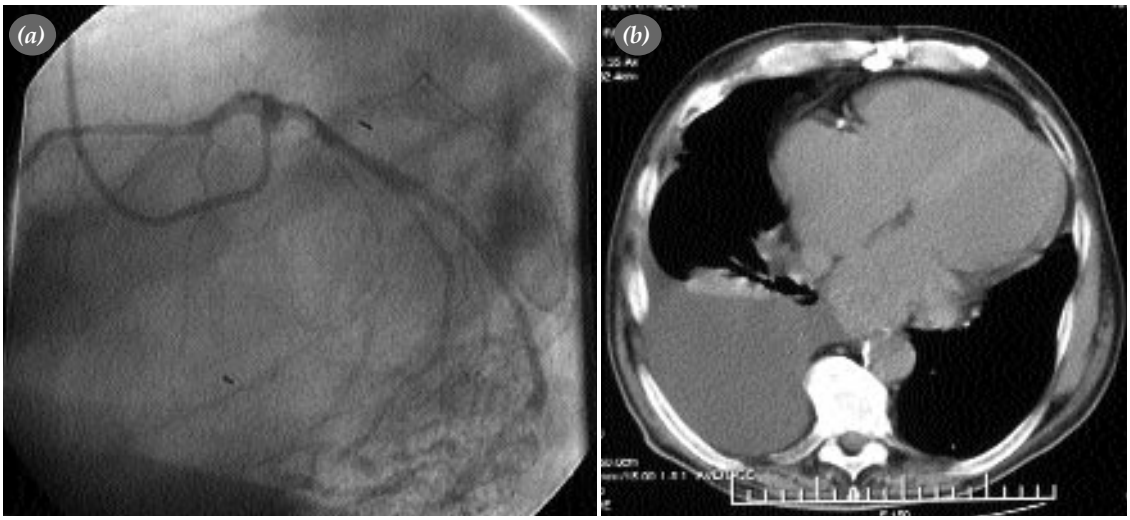

Fig. 1. (a) Coronary angiogram showing a large arteriovenous malformation in the posterobasal segment of the left ventricle. **(b)** No further cardiac metastasis could be determined by thorax computed tomography in the second postoperative year.

turbances. However, the effect of cardiopulmonary bypass on tumor extension and the outcome is not known. Polascik et al.[7] showed that five-year survival rates were nearly the same in cases of hypernephroma with only intracaval extension or right atrial invasion, both being below 5%. In case of disseminated metastatic disease involving the heart and great vessels, coronary artery revascularization methods may be modified. A high risk for mortality may exclude surgical revascularization and nonsurgical myocardial revascularization techniques can be used. Thorax computed tomography may not be helpful to determine metastasis from hypernephroma.

Asymptomatic patients with a diagnosis of a previous malignancy should be investigated more extensively with respect to metastasis to the heart and other vital organs.

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