

Case report

Right Ventricular Metastasis of Uterine Cervical Cancer: A Case Report

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SUMMARY

Introduction. Cardiac metastasis of uterine cervical cancer diagnosed prior to mortality (antemortem) is extremely rare.

Case report. A female patient 49 years old was brought to the Emergency Department of the Institute for Treatment and Rehabilitation Niška Banja in cardiac arrest, without a pulse and blood pressure. An electrocardiogram revealed sustained ventricular tachycardia, which was terminated by two DC shocks (100J + 150J). Anamnesis and medical history revealed that she had had her squamous cell carcinoma of the uterine cervix removed and had subsequently received seven out of ten planned cycles of chemotherapy and twenty-eight cycles of radiotherapy. The patient was then transferred to the Coronary Unit, where cardiac ultrasound was performed. A homogenous mass measuring 31 x 50 mm was found in the right ventricle. In view of this, cardiac magnetic resonance imaging was performed. This confirmed the presence of the tumor mass in the right ventricle. Unfortunately, only a month after being discharged from our Institute, the patient was admitted to the Clinic of Neurology due to a loss of consciousness. Computer tomography of endocranium was performed revealing metastatic brain lesions. The patient succumbed to the disease just a couple of months later.

Conclusion. We presented a rare case of antemortem diagnosed right ventricle metastases in a patient with uterine cervical cancer. Setting the diagnosis in these patients is a challenge in everyday clinical practice since metastases can produce the clinical picture that masks the real etymology of uterine cervical cancer.

Keywords: uterine cervical cancer, cardiac metastases, cardiac

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INTRODUCTION

Cardiac tumors are a heterogeneous group of masses that can affect the endocardium, myocardium, or pericardium. They are divided into primary and secondary (i.e., metastasis to the heart) tumors.

With the prevalence of 0.001 - 0.3%, primary cardiac tumors represents a very rare finding (1). They are further divided into four subgroups: benign tumors, tumor-like lesions, pericardial tumors, and malignant tumors (2). About 75% of primary cardiac tumors are benign and 25% are malignant (1). In the adult population, the most common malignant primary cardiac tumor is sarcoma, and the most common benign is myxoma (3). Sarcoma is usually located in the right atrium and has a scarce prognosis as the median survival in these patients is six months (4). On the other hand, myxoma is usually located in the left atrium and has somewhere better prognosis as surgical removal has good short-, mid- and long-term outcomes. Notably, the recurrence of myxoma after surgical resection is approximately 5% (5).

Secondary cardiac tumors are 20 - 40 times more common than primary ones (1). In fact, cardiac metastases are diagnosed in about 10% of tumor pa-

tients at autopsy (6). They usually arise from lymphomas, melanomas, lung, breast and renal cancer (7). The way of spreading is usually hematogenous or lymphogenous, while the direct invasion is extremely rare (8). The treatment of these patients is complicated as surgical resection is often not possible. This is because metastases are often neither solitary nor confined to the heart (6). Cardiac metastasis of uterine cervical cancer diagnosed prior to mortality (antemortem) is extremely rare (9).

CASE PRESENTATION

A 49-year-old female patient was brought to the Emergency Department of the Institute for Treatment and Rehabilitation Niška Banja in cardiac arrest and without a pulse and blood pressure. An electrocardiogram (ECG) revealed sustained ventricular tachycardia (Figure 1a), which was terminated by two DC shocks (100J + 150J). After cardioversion and hemodynamic stabilisation of the patient, a S1Q3T3 (McGinn-White) sign was noted on ECG alongside the negative T wave in inferior leads and V1 - V4 (Figure 1b).

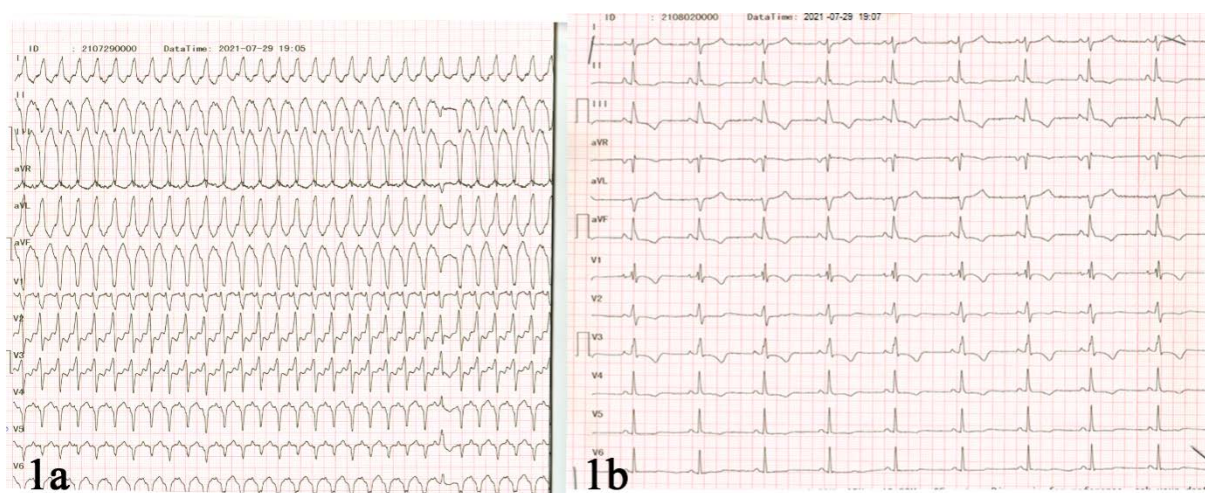


Figure 1. Right ventricular tachycardia in the Emergency Department (1a); ECG after DC shock: right axis deviation, S1Q3T3 (McGinn-White) sign, negative T wave in inferior leads and V1-V4, left posterior fascicular block (1b)

Anamnesis and medical history revealed that she had undergone surgery a year before. She had had her squamous cell carcinoma (SCC) of the uterine cervix (International Federation of Gynecology and Obstetrics stage IIIb) removed and had sub-

sequently received seven out of ten planned cycles of chemotherapy and twenty-eight cycles of radiotherapy. We performed laboratory analysis. Electrolytes were in the normal range but the values of the D dimmer were high above normal (2456 ng/L, re-

ferent range < 500 ng/L). However, computer tomography angiography of pulmonary circulation revealed no embolic involvement. The patient was then transferred to the Coronary Unit of the Institute, where a cardiac ultrasound was performed. A homogenous mass measuring 31×50 mm was found in the right ventricle (Figure 2). Right ventricle contractility was preserved but its volume was significantly reduced by the tumor mass. There was no sign of right ventricle outflow obstruction.

In view of this, cardiac magnetic resonance imaging was performed. This confirmed the presence of the tumor mass in the right ventricle and right atrium (Figure 3). The diameters of tumor mass were $91 \times 37 \times 44$ mm. The size of the right ventricle was normal, but its volume was reduced. Left heart cavities were with normal diameters and preserved contractility. The condition was treated with antiar-

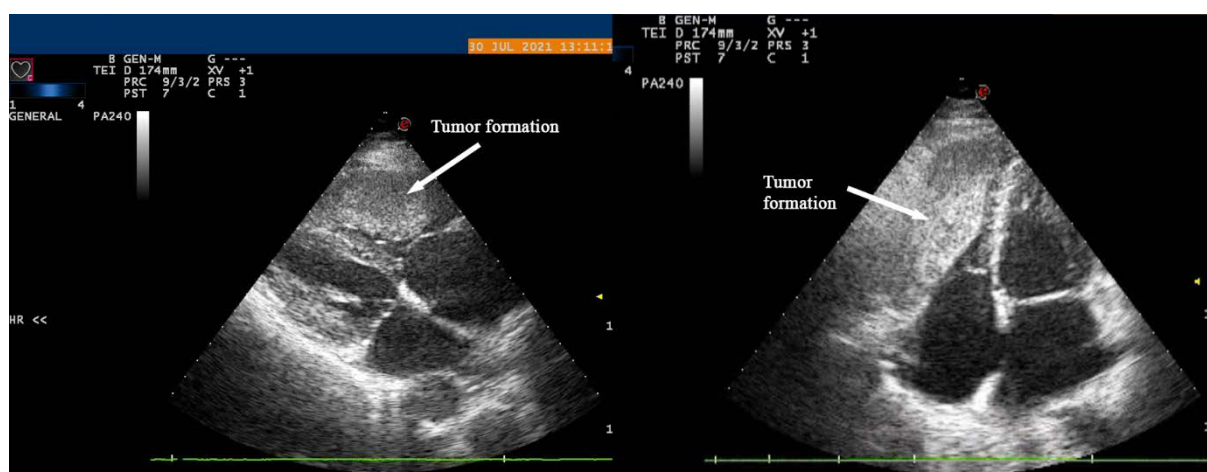


Figure 2. Cardiac ultrasound revealing a tumor formation in the right ventricle (parasternal and four chambers view)

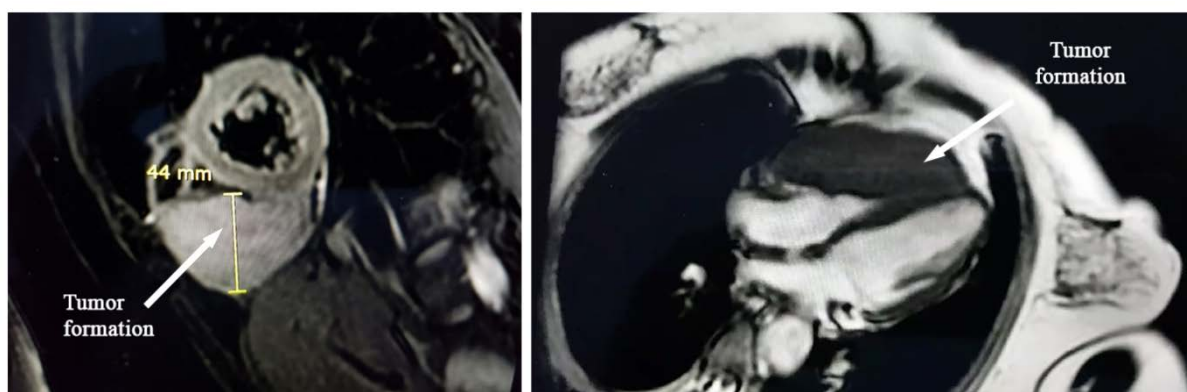


Figure 3. Magnetic resonance revealing a tumor mass in the right ventricle

rhythmic (amiodarone 300 mg i.v, and then 3×200 mg peroral) and parenteral anticoagulant therapy. We chose to introduce anticoagulant therapy due to high embolic risk in our patient. After seven days of therapy, the patient was discharged from the Institute in a rhythmically and hemodynamically stable condition and was advised to remain in consultation with her oncologists.

Unfortunately, only a month after discharge from our Institute, the patient was admitted to the Clinic of Neurology due to a loss of consciousness. Computer tomography of the endocranium was performed revealing metastatic brain lesions. The patient succumbed to the disease just a couple of months later. She was 50 years old.

DISCUSSION

Cardiac metastases occur rarely due to rapid blood flow through the heart and continuous contraction of the myocardium (10). However, cardiac metastasis can often be seen in patients with lymphomas, melanomas, lung, breast and renal cancer (7). Most cardiac metastases are revealed at autopsy. Nonetheless, some metastasis may be diagnosed antemortem. The clinical presentation varies. Pericardial involvement may lead to constrictive pericarditis, chronic pericardial effusion or pericardial tamponade. When the myocardium is affected, conducted disturbances or (life-threatening) arrhythmias can occur (11). If endocardium is involved, the localization and size of the tumor determine clinical manifestations. For example, intracavitary tumor masses may lead to cardiac or valve obstruction leading to left- or right-sided heart failure. Other possible manifestations are embolic complications (11).

Although relatively common, uterine cervical cancer seldom gives cardiac metastases. Actually, the reported incidence of cardiac metastases in cervical cancer is only 0.3% (12). When the heart is involved, pericardium or myocardium are usually affected. The endocardium is involved in only 3 - 5% of cases (13). This is why our case represents a rare finding. Furthermore, cardiac metastases of uterine cervical cancer usually occur within two years after the initial treatment of cervical cancer (9), as was the case with our patient.

Seldom cardiac metastases are the first and the only manifestation of uterine cervical cancer. More often, it stays silent and unrecognized until the autopsy. When symptoms do occur, they are unspecific and depend on the localization and size of metastatic lesions. Usually, patients with cardiac metastases complain on dyspnoea and chest pain (14). Other possible manifestations include fever, malaise, cough, purpura, epigastric discomfort, and palpitations (9). In our patients, cardiac arrest was the first manifestation of cardiac metastases as the patient did not have any cardiac symptoms until she was admitted to our facility in an unconscious state, without pulse and pressure.

Pathological changes on ECG are usually present but also unspecific and depend on tumor mass

localization. If the myocardium is involved, we may expect conduction disturbances or arrhythmias, while the involvement of the pericardium may cause ST-segment elevation (9). Sometimes low-voltage amplitudes and T-wave inversion in precordial leads can appear (9). In our patient, ventricular tachycardia was noted, followed by a McGinn-White sign. This led us to suspect that the patient suffered from pulmonary embolism (PE). PE is often seen in patients with right ventricle metastases (14, 15). However, multislice computer tomography revealed no embolic events in the pulmonary circulation.

Finally, we performed an echocardiography examination which revealed a tumor mass in the right ventricle. This is in concordance with literature as the right side of the heart is far more frequently affected by cardiac metastases than the left side in patients with cervical cancer (14, 16). The most likely route of spread for cervical cancers is hematogenous - through the cervical venous plexus, into the inferior vena cava and right atrium and finally to the right ventricle (15).

The treatment of patients with cervical cancer and cardiac metastases is very difficult and needs to be considered on case-by-case bases. If metastasis is solitary, then surgical resection may be considered alongside chemotherapy and radiation. However, the aggressive treatment and surgical resection of metastases is controversial. Although it may prolong patients' life up to 13 months (14), in most cases surgical treatment is not curative but palliative (16). In patients with systemic metastases, as was the case with our patient, surgical intervention is contraindicated (9).

CONCLUSION

We presented a rare case of antemortem diagnosed right ventricle metastases in a patient with uterine cervical cancer. Setting the diagnosis in these patients is a challenge in everyday clinical practice since metastases can produce the clinical picture that masks the real etymology of uterine cervical cancer.

Conflict of interest

Nothing to declare.

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Prikaz bolesnice sa rakom grlića materice i metastazama u desnoj komori

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SAŽETAK

Uvod. Metastaze na srcu karcinoma grlića materice dijagnostikovane pre smrti (*ante mortem*) izuzetno su retke.

Prikaz bolesnika. Bolesnica stara 49 godina je u besvesnom stanju, bez pulsa i krvnog pritiska, dovezena u Prijemnu ambulantu Instituta za lečenje i rehabilitaciju „Niška Banja“. Elektrokardiogram je otkrio održivu ventrikularnu tahikardiju (Slika 1a), koja je prekinuta primenom dva DC šoka (100J + 150J). Anamneza i medicinska dokumentacija otkrile su da joj je uklonjen skvamozni karcinom grlića materice i da je nakon toga primila sedam od planiranih deset ciklusa hemoterapije i dvadeset osam ciklusa radioterapije. Bolesnica je potom premeštena u Koronarnu jedinicu, gde je urađen ultrazvuk srca. U desnoj komori nađena je homogena masa dimenzija 31 x 50 mm. Urađena je magnetna rezonanca srca koja je potvrdila prisustvo tumorske mase u desnoj komori. Nažalost, samo mesec dana nakon otpusta iz našeg Instituta bolesnica je primljena na Kliniku za neurologiju zbog gubitka svesti. Urađena je kompjuterska tomografija endokranijuma koja je otkrila metastatske lezije na mozgu. Bolesnica je podlegla bolesti samo nekoliko meseci kasnije.

Zaključak. Prikazali smo redak slučaj *ante mortem* dijagnostikovanih metastaza u desnoj komori kod bolesnice sa karcinomom grlića materice. Postavljanje dijagnoze kod ovih bolesnika predstavlja izazov u kliničkoj praksi s obzirom na to da metastaze mogu dati kliničku sliku koja skriva pravu etimologiju karcinoma grlića materice.

Ključne reči: metastaze na srcu, rak grlića materice, srčani zastoj