

A RARE CASE OF CHRONIC AORTIC DISSECTION AND PULMONARY THROMBOEMBOLISM

AUTHORS

Dalila Šaćić¹, Jelena Petrović¹, prof. Branislava Ivanović¹
¹University Clinical Center of Serbia, Clinic for cardiology, Belgrade, Serbia

KORRESPONDENT

dr Dalila Šaćić
University Clinical Center of Serbia
Clinic for cardiology, Belgrade
dalilasacic91@hotmail.com

SUMMARY

Introduction: Aortic dissection (AD) and pulmonary embolism (PE) are both serious and life-threatening conditions that rarely occur concomitantly. We report a case of a male patient with chronic aortic dissection, pulmonary embolism and decompensated cardiomyopathy with focus on the usage of computed tomography (CT) to ensure timely diagnosis and improve patient management.

Case report: Aortic dissection (AD) and pulmonary embolism (PE) are both serious and life-threatening conditions that rarely occur concomitantly. We report a case of a 55-year-old man who was admitted to Coronary care unit due to pulmonary embolism and aortic dissection of abdominal aorta.

Conclusion: This case highlights the importance of correct aortic dissection diagnosis and management, as well as the rare but possible association between aortic dissection and pulmonary embolism.

Key words: aortic dissection, pulmonary embolism, atrial fibrillation

SRPSKI

REDAK SLUČAJ HRONIČNE DISEKCIJE AORTE I PLUĆNE TROMBOEMBOLIJE

Dalila Šaćić¹, Jelena Petrović¹, prof. Branislava Ivanović¹
¹Univerzitetski klinički centar Srbije, Klinika za kardiologiju, Beograd, Srbija

SAŽETAK

Uvod: Aortna disekcija (AD) i plućna embolija (PE) su ozbiljna i po život opasna stanja koja se retko javljaju istovremeno. Prikazali smo slučaj muškarca sa hroničnom aortnom disekcijom, plućnom embolijom i dekompenzovanom kardiomiopatijom sa fokusom na upotrebu kompjuterizovane tomografije (CT) kako bi se obezbedila pravovremena dijagnoza i poboljšalo lečenje pacijenta.

Prikaz slučaja: Aortna disekcija (AD) i plućna embolija (PE) su ozbiljna i po život opasna stanja koja se retko javljaju istovremeno. Prikazali smo slučaj muškarca starosti 55 godina koji je primljen u Koronarnu jedinicu zbog plućne embolije i disekcije abdominalne aorte. Prema mišljenju vaskularnog hirurga, pacijent je lečen konzervativno i otpušten bez simptoma uz dugotrajnu antikoagulantnu terapiju.

Zaključak: Ovaj slučaj naglašava važnost ispravne dijagnoze i lečenja disekcije aorte, kao i retku, ali moguću povezanost između disekcije aorte i plućne embolije.

Glavne reči: aortna disekcija, plućna embolija, atrijska fibrilacija

INTRODUCTION

Aortic dissection is defined as the separation of the layers of the aortic wall by extraluminal blood that enters it, almost invariably through a luminal tear (1). Tears are seen at areas of high stress, the most common being in the anterior aortic wall just above the aortic valve (66%), and the posterior wall of the proximal descending aorta (33%) (2) as it was in our patient. The incidence of aortic dissection is 5 to 30 cases per million per year (3) and presents a life-threatening condition with high mortality in the acute stage that is further accentuated by misdiagnosis and mishandling (4).

Aortic dissection (AD) and pulmonary embolism (PE) are both serious and life-threatening conditions that rarely occur concomitantly. In the last decades, an increased incidence of AD has been observed. (5, 6).

CASE REPORT

A 55-year-old male was admitted to the coronary care unit due to shortness of breath and swelling of the right leg and right foot. Physical examination revealed normal findings, eith heart rate of 95bpm, and blood pressure of 120/70mmHg.

Electrocardiogram (ECG) was immediately recorded and showed sinus rhythm, QR and flattened T in leads D3, and aVF, and biphasic T wave in V4-V6.



Additional imaging study was performed: Multislice computed tomography (MSCT) angiography of pulmonary artery aorta was performed.

MSCT pulmonary angiography showed subocclusive peripheral defects in contrast filling which suggested thromboembolism in segmental branches for the lower right and right pleural effusion (59mm). At the border of the superior and posterior basal segment of the left lower lobe, the oval consolidation mass of about 3cm was noticed, which was suspicious for the neoplastic process. (Figure 1). MSCT of the aorta revealed a thrombosed aneurysm 48 mm wide, located 63 mm behind the origin of the left subclavian artery. Abdominal aorta also showed aneurysm which was 177 mm long, starting from thoracoabdominal line. Intimal flap and spiral dissection o the whole aorta was observed. (Figure 1).

The described aortic dissection had the angiographic characteristics of a chronic dissection or recanalized thrombosed aortic aneurysm. Vascular surgeon was consulted, who proposed conservative management because there were no signs of vessel rupture, visceral or spinal malperfusion, and lower limb ischemia. Special emphasis was put on hypertension control and use of anticoagulant therapy.

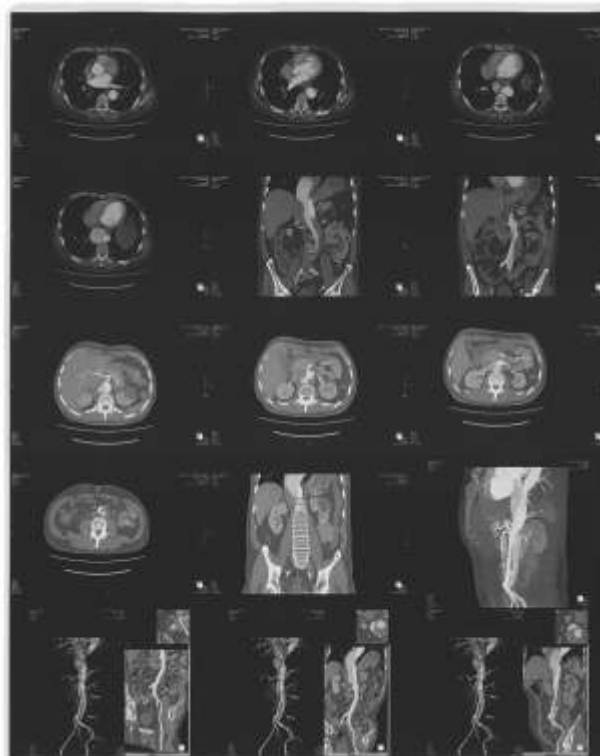


Figure 1. MSCT Scan of the aorta

Echocardiographic examination showed the descending thoracic aorta was dilated (4.3cm), with chronic dissection of the abdominal segment. Left ventricle was enlarged (EDD 6.4cm, ESD 5.2cm) with akinesia of the baseline half of the lower wall, with reduced global systolic function (ischemic cardiomyopathy with LVEF around 30%) and slow relaxation, 2+ mitral and 1+ tricuspid regurgitation, and normal left atrium (3.5cm).

Laboratory results showed elevated values of D-dimer (9300 ng/ml), fibrinogen (6,0 g/L), NT-proBNP (3047 pg/ml), AFP (8.4 ug/L), CA125 (124 kU/L), C4 component of complement (0.487 g/L), IgG (18.62 g/L), IgA (5.16 g/L). Protein electrophoresis was also performed, and the results were as follows: Alpha 1-globulin (6.6%), Alpha2-globulin (13.8%), Beta2-globulin (7.8%), Gamma globulin (22.8%). The results were slightly suspicious for the presence of paraprotein. Antithrombin, proteins C and S were in the reference range.

Color Doppler Scan of the right leg veins showed organized thrombotic mass in the soleal sinus MSCT of the abdomen showed that, from the level of the distal parts of the abdomen showed that, from the level of the distal parts of the descending aorta, there was a dissected abdominal aortic aneurysm that prolonged to the left common iliac artery. The visceral branches of the aorta and renal arteries appeared to originate from the true lumen.

During hospitalization, the patient had no chest pain, was cardiopulmonary compensated, with strict regulation of arterial blood pressure. On the third day of hospitalization, the atrial fibrillation with fast ventricular rate was registered and converted to sinus rhythm (amiodarone, bisoprolol) On the day 10 of the hospitalization, another paroxysm of atrial fibrillation with spontaneous conversion into the sinus rhythm was registered, with no further recurrence of the arrhythmia until discharge. Due to positive inflammatory parameters and radiographically verified inflammatory changes in lungs (paracardial right), treatment with antibiotics was started

from the admission in the hospital, which led to regression of inflammation. Because of changes in the lungs that were suspicious for the neoplastic process, a pulmonologist suggested the control MSCT of the chest and upper abdomen in a month.

Since there were no signs of rupture of the aortic aneurysm, and no signs of visceral or spinal malperfusion and lower limb ischemia, the patient was discharged with the following medical treatment: warfarin, beta blocker, ACE inhibitor, eplerenone, SGLT2 inhibitor, loop diuretic. It was deemed necessary for the patient to periodically control the level of serum potassium and we scheduled a follow-up visit in a month after discharge.

DISCUSSION

There are numerous reasons why the diagnosis of aortic dissection is complex. People usually do not seek medical attention and very often the aortic dissection has a nonspecific presentation with erroneous first diagnosis at initial assessment (7). Common symptoms and signs include abrupt onset of chest and/or back pain with radiation to the shoulders or neck that is typically described as tearing/sharp (8). A painless presentation is also observed in approximately 4-5% of patients and is associated with a worse prognosis, perhaps related to a delay in diagnosis (10). On the other hand, the most common symptoms and signs of PE are shortness of breath, chest pain, swelling of a leg, much more sweating than usual (9).

The patient presented here also had paroxysms of atrial fibrillation which was described in the literature in few cases (11, 12). Our patient had swelling of his leg, so the initial suspicion of pulmonary embolism led also to the diagnosis of aortic dissection.

According to Erbel et al, the goals of aortic imaging are to establish the diagnosis, to localize the intimal flap, to determine the extent of dissection, and to assess the indicators of pending emergency (8). The modalities available for definitive imaging include computerized tomography angiography (CTA), magnetic resonance imaging (MRI), transesophageal echocardiography (TEE), and aortography (7,8). Currently, there is no clinically available biochemical assay specific for aortic dissection (13)

The diagnostic pathway of acute PE includes a combination of different diagnostic tests. The diagnoses of PE are based on the signs and symptoms, ECG and a chest x-ray, presence of D-Dimer, computerized tomography pulmonary angiography (CTPA), and ventilation-perfusion scan that can show the parts of lungs with no blood supply. (9)

When the diagnosis of AD is confirmed by using a CT scan or trans-oesophageal echocardiography, the risk assessment of impending rupture allows a decision about the urgency and type of necessary operation (2). Regarding the previously mentioned aortic dissection management, it could be said that the dissection in our patient was diagnosed on time by using MDCT of the aorta as well as contrast enhanced MPR.

When the diagnosis of deep venous thrombosis and/or PE is confirmed, anticoagulant therapy is the mainstay of the treatment. Supportive treatments, such as oxygen or analgesia, may be required. Unfractionated heparin or low molecular weight heparin (LMWH) are administered initially, while warfarin, acenocoumarol, or phenprocoumon therapy is initiated in parallel with the previous one until the INR is in the range of 2-2.5. After discharge from the hospital, oral anticoagulant therapy should be continued (14).

CONCLUSION

In conclusion, this case highlights the importance of correct aortic dissection diagnosis and management, as well as the rare but possible association between aortic dissection and pulmonary embolism. It also emphasizes that non-invasive diagnostic methods such as CTPA and MDCT of the aorta should be performed promptly to rule out AD and PE, which are very severe life-threatening conditions. Despite optimal medical and surgical approaches and remarkable advances in the diagnosis, the most important factor for success is a high clinical suspicion for these conditions raised by the examining physician. Physician should always be aware of possible aortic dissection in the presence of symptoms of sudden onset of back/chest pain, while pulmonary thromboembolism and atrial fibrillation may sometimes be important comorbidities in these patients, prompting adequate diagnostic procedures and treatment strategies.

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