รายงานผู้ป่วย: ภัยร้ายจากยาคุมกำเนิด กรณีศึกษาผู้ป่วยหญิงวัยกลางคนเกิดภาวะหัวใจหยุดเต้นจากลิ่มเลือดอุกกั้นในปอดร่วมกับลิ่มเลือดอุดตันหลอดเลือดหัวใจ

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บทคัดย่อ

ผู้ป่วยหญิงไทยอายุ 33 ปีปฏิเสธประวัติโรคประจำตัว มีประวัติกินยาคุมกำเนิดมา 1 เดือน มีภาวะหัวใจหยุดเต้นอยู่ที่หน้าร้านสะดวกซื้อ ภายหลังจากได้รับการช่วยฟื้นคืนชีพ ผู้ป่วยกลับมามีชีพจร ผลการคลื่นเสียงความถี่สูงหัวใจ (cardia ultrasound) พบว่าหัวใจห้องล่างขวามีขนาดใหญ่ร่วมกับผนังกั้นหัวใจห้องล่างซ้ายมีลักษณะแบนราบ จึงสันนิษฐานว่าผู้ป่วยมีภาวะลิ่มเลือดอุดกั้นในปอดเฉียบพลัน (acute pulmonary embolism) ซึ่งต่อมาได้รับการยืนยันโดยการฉีดสีที่หลอดเลือดปอด และได้รับการรักษาด้วยยาสลายลิ่มเลือดร่วมกับทำการดูดลิ่มเลือดจากหลอดเลือดปอด หลังจากให้การรักษาผู้ป่วยมีสัญญาณชีพดีขึ้นระยะเวลาหนึ่ง แต่ต่อมามีอาการแย่ลง และตรวจคลื่นไฟฟ้าหัวใจพบลักษณะของหลอดเลือดหัวใจอุดตันเฉียบพลัน (ST-Elevation Myocardial Infarction) จึงไปทำการสวนหัวใจและพบว่ามีลิ่มเลือดอุดตันที่เส้นเลือดหัวใจข้างขวา (right coronary artery thrombus) ซึ่งแม้ว่าจะพยายามเจาะเลือดเพิ่มเติมเพื่อหาสาเหตุที่ทำให้เกิดภาวะลิ่มเลือดอุดตัน แต่ไม่พบสาเหตุอื่นๆ ยกเว้นยาคุมกำเนิดที่ผู้ป่วยรับประทานมาเป็นเวลา 1 เดือน

คำสำคัญ

Acute pulmonary embolism, Acute coronary syndrome, sudden cardiac arrest

Oral contraceptive pills - a phantom menace: the case of a healthy young woman who presented with cardiac arrest due to a pulmonary em-bolism and coronary artery thrombus

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Abstract

We encountered a 33-year-old woman, who had taken oral contraceptive pills (OCPs) for a month before she had cardiac arrest. After she had received resuscitation and had returned to spontaneous circulation (ROSC), right ventricular dilatation with LV septal wall flattening was detected by bedside cardiac ultrasound. Acute pulmonary embolism (PE) was initially suspected and was confirmed by Invasive pulmonary angiogram. Unfortunately, after intra-lesional thrombolysis and clot aspiration had been performed, the patient's condition improved, but later on worsened. An electrocardiogram (ECG) showed ST-segment elevation at the inferior wall territory. Coronary angiogram (CAG) was performed and a right coronary artery thrombus was found. Despite thorough blood tests investigations, we did not find any other risk of thrombosis other than OCPs.

Keywords

Acute pulmonary embolism, Acute coronary syndrome, Sudden cardiac arrest

Introduction

Sudden cardiac death (SCD) in young people is a rare but devastating event. The most common cause of SCD were sudden arrhythmic death syndrome and coronary artery disease.[1,2] However, pulmonary embolisms are a worthy cause of sudden cardiac arrest that should be considered in young adult women. However, other differential diagnoses should be made. In a patient in a hyper-coagulable state, however rare, there can be more than one thrombotic event on one occasion. Therefore, an early diagnosis and prompt treatments must be prepared.

case presentation

A 33-year-old woman suddenly collapsed while she was walking in a convenient store. A bystander performed basic life support (BLS) at the scene for 7 minutes. The emergency medical service team arrived shortly thereafter. ECG monitoring with defibrillator was carried out. The initial rhythm was asystole. Cardiopulmonary resuscitation (CPR) with mechanical CPR machine (Corpulse CPR®) was continuously conducted. At the scene, the patient was intubated and was brought to the hospital within 20 minutes after cardiac arrest. Initial cardiac rhythm at the emergency department was pulseless electrical activity (PEA). After 4 minutes of CPR with a dose of adrenaline (1:1000, 1 mg intravenous (I.V.), the patient got ROSC. However, five minutes later she underwent cardiac arrest again, the initial rhythm was still PEA. Soon after two minutes of CPR was done with a dose of adrenaline (1:1000, 1 mg I.V.), the patient got ROSC. Unfortunately, 4 minutes after the second ROSC, the patient underwent recurrent cardiac arrest 3 more times. Of all 5 episodes of cardiac arrest, rhythm was entirely PEA. Each time, she got ROSC after a few minutes of CPR.

Her close friend arrived at the hospital later, and more important aspects of the patient's history were communicated. The patient had a history of menorrhagia with one episode of syncope in the last 2 months. She had been to see a gynecologist doctor for a consultation. The gynecologist ultrasound showed myoma uteri. A uterine curettage was done. The pathological results revealed no malignant tissue. She was prescribed oral contraceptive pills (OCP) for her menorrhagia. Two weeks prior to this visit, the patient had experienced left leg pain and her friend said that the patient's leg had been swollen for 3 days.

Investigation

While the CPR was on going, the initial blood tests were obtained in order to investigate any possible causes for the cardiac arrest, including an arterial blood gas (ABG) analysis. The ABG showed severe hypoxemia with acute respiratory acidosis combined with metabolic acidosis (pH 6.8). After the first ROSC, cardiac point of care ultrasound (POCUS) was performed by an emergency cardiologist. Mild right ventricular dilatation was found without left ventricular (LV) septal flattening. Preserved left ventricular systolic function (LVEF) without regional wall motion abnormality (RWMA) and no pericardial effusion were detected. A 12-lead ECG was done simultaneously after first ROSC, which showed a totally irregular rhythm with sawtooth appearance P waves. Also, a rate 120 beats per minute (bpm), ST elevation of lead III, V1, and aVR, and ST depression of lead V2-V6 were detected. (Figure 1)

From examining the evidence, the cardiac etiology that had caused of cardiac arrest, namely acute PE, had most likely been the cause. The intervention cardiologist was immediately notified to carry out an early invasive intervention. The intervention cardiologist arrived after the third ROSC and cardiac POCUS had been

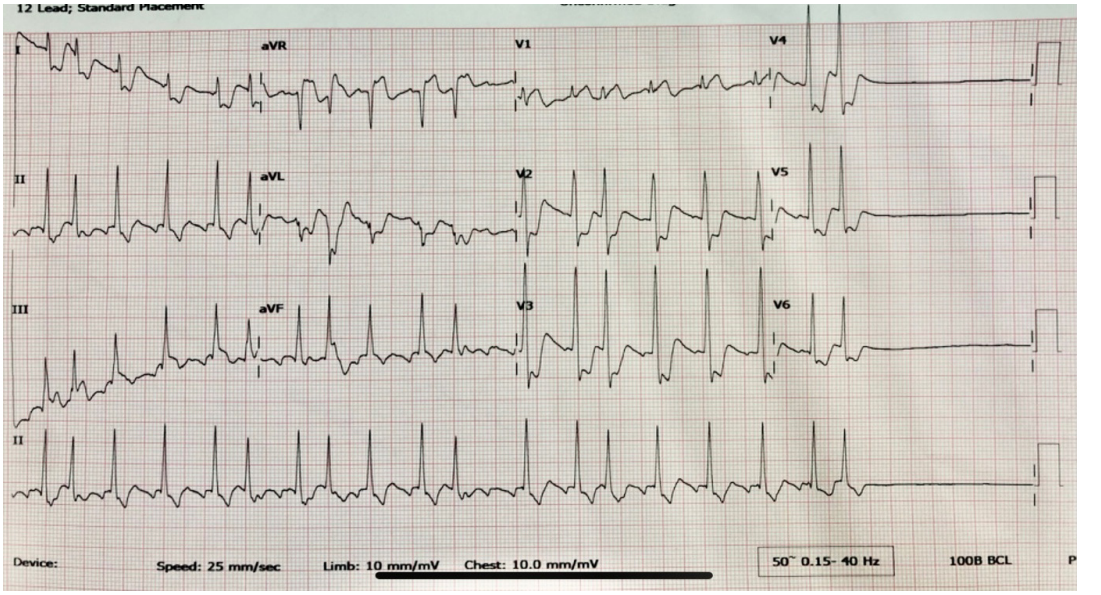

Figure 1 ECG after the first ROSC

performed one more time, which showed an increase in the degree of right ventricular dilatation and a slight increase of LV septal wall flattening, without the detection of wall motion abnormality. Acute pulmonary embolism was presumed to be the cause of the cardiac arrest. The intervention cardiologist immediately decided to perform a right heart catheterization.

Treatment

An hour after cardiac arrest, the patient was transferred to the angiography lab for the right heart catheterization. A pulmonary angiogram was completed. Multiple thrombi at both of the pulmonary artery branches were detected. (Figure 2) Intra-lesional thrombolysis (recombinant tissue plasminogen activator (rtPA), 5 mg) was infused at the right and left pulmonary arteries and thrombus aspiration was done multiple times at both pulmonary branches until the optimal result was achieved.

Despite high doses of an inotropic drug (dobutamine) and a vasopressor (norepinephrine), the patient could not maintain stable hemodynamics one hour after the right heart catheterization. ECG had been done serially, which showed 2:1 AV block with ventricular escape rhythm. An ST elevation of leads III and aVF, and ST depression at V2-V5 with positive R waves were detected. (Figure 3) Cardiac POCUS was done at the Cardiac Intensive Care unit (CCU) and showed a greater degree of inferior wall hypokinesia with neither right

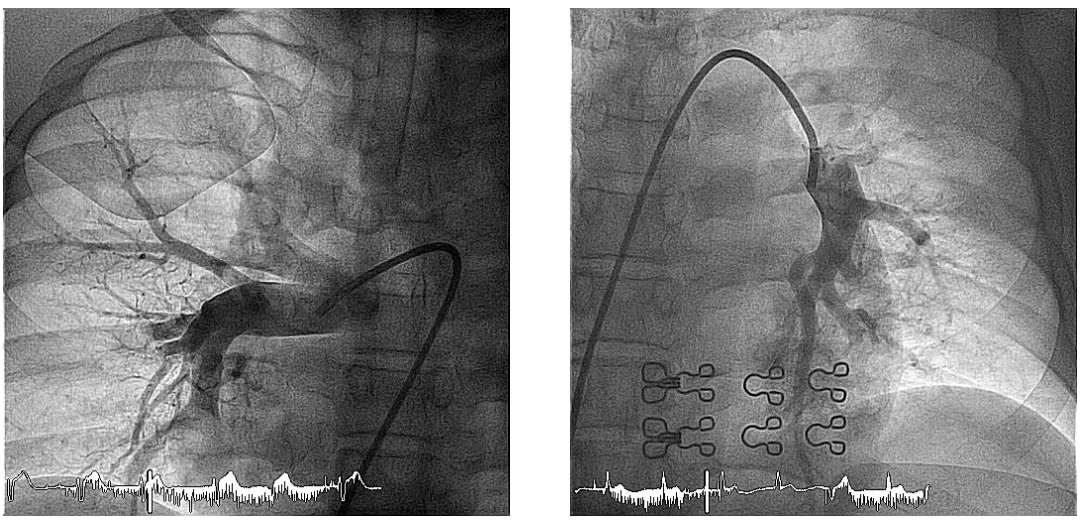

Figure 2 Pulmonary angiogram (2a: right pulmonary artery, 2b: left pulmonary artery)

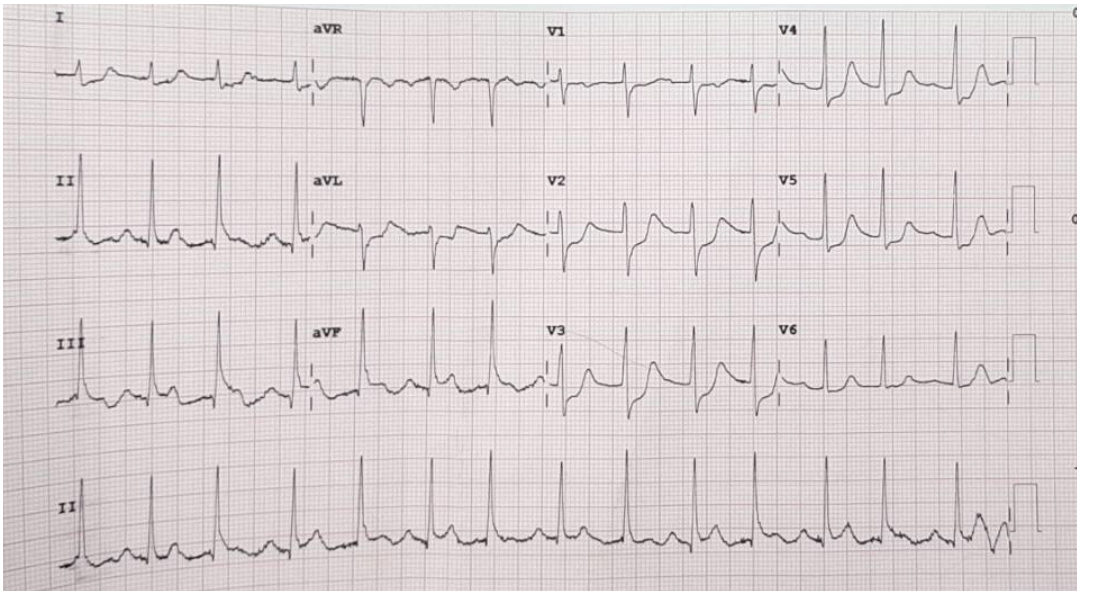

Figure 3 ECG after right heart catheterization had been performed

ventricular nor right atrial enlargement. An infero-posterior wall myocardial infarction was suspected. The intervention cardiologist performed CAG in a timely manner. The results showed a massive thrombus *in situ* from the proximal to the distal right coronary artery (RCA). An aspiration thrombectomy was successfully carried out, which improved distal flow and an intra-aortic balloon pump (IABP) was implanted at the end of the procedure.

Given the large amount of clot burden (acute PE and massive thrombus at RCA), the intervention cardiologist suspected a secondary cause of thrombophilia, such as catastrophic Anti-phopholipid syndrome, rather than only OCPs. Therefore, a hematologist was consulted. The hematologist then ordered blood tests for Lupus anti-coagulant, anti-cardiolipin antibody, beta-2 glycoprotein antibody, protein C levels, protein S levels, anti-thrombin III, ANA, and anti-dsDNA. All of the investigations were found to be within normal limits.

Outcome and follow-up

After CAG, she went into hemorrhagic shock from upper gastrointestinal bleeding, and simultaneously, there was also

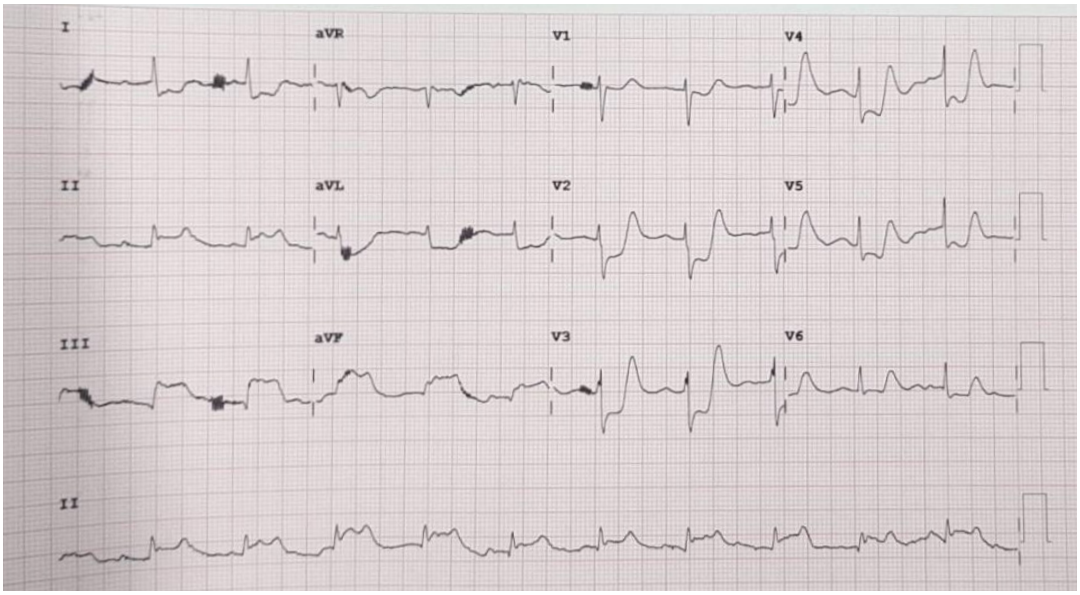

Figure 4 ECG at 12 hours after cardiac arrest while the patient was having worsening hemodynamics.

active vaginal bleeding. Her coagulogram showed a prolonged prothrombin time (PT) and an activated partial thromboplastin time (aPTT) (initial blood test revealed normal coagulogram). Her hematocrit decreased from 32% to 18%. Leukocyte poor packed red cells were given to correct the hemorrhagic shock, and a gynecologist was consulted to evaluate and to manage the vaginal bleeding. A trans-vaginal ultrasound was completed, which showed adenomyosis with myoma uteri. However, the major cause of bleeding was systemic bleeding disorder based on the blood thinner that was given to treat acute PE and RCA thrombosis. The gynecologist decided not to do surgical intervention. Given the high clot burden, the coagulopathy could not be corrected at that time when weighting risk and benefit. Only the leukocyte poor packed red cells were given. Later, both vaginal and gastrointestinal bleeding stopped spontaneously.

Unfortunately, 12 hours after cardiac arrest, the patient could not maintain stable hemodynamics despite the full support of a vasopressor, inotropic drugs, and IABP. Her ECG showed complete AV block with ST elevation at lead II, III, and aVF. In addition, there was persistent ST

depression at V2-V5. An infero-posterior wall myocardial infarction with right ventricular infarction was suspected to be unresolved. However, her family decided not to continue with any further invasive intervention. Finally, the patient passed away at 14 hours after the first cardiac arrest.

Discussion

Although pulmonary embolism is a rare cause of cardiac arrest (about 4%)[1,3], it is one of the major causes of sudden cardiac arrest in women of reproductive age.[4] OCPs are the most frequent venous thromboembolism risk factor and maybe the sole risk factor responsible for acute thrombotic events in selected patients especially combined oral contraceptives. (5) The other possible cause of the thrombotic event in this patient is pelvic mass that compresses inferior vena cava (IVC) causing the decrease of blood flow and finally thrombosis.

A hypercoagulable state might cause thrombosis in more than one of the vascular systems. In this patient, we try to find out the secondary cause of thrombophilia but the result shown negative. The other possible cause of RCA thrombosis in this patient might be the patent foramen ovale that causing the passage of thrombus to RCA.

Learning point/ Take home massage

- The point to be learned from this case is the recognition of the risks of thrombotic events in young adults. Some risk factors are usually forgotten. In women of reproductive age, it must be remembered that OCPs offer a potential risk for thrombotic events.
- Pulmonary embolisms are a worthy cause of sudden cardiac arrest that should be considered in young adult women.
- Other differential diagnoses should be made. In a patient in a hypercoagulable state, however rare, there can be more than one thrombotic event on one occasion. Therefore, an early diagnosis and prompt treatments must be prepared.

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