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SIMULTANEOUS PRESENTATION OF A PATIENT WITH ACUTE CORONARY SYNDROME, ACUTE LIMB ISCHEMIA AND DEEP VEIN THROMBOSIS COMPLICATED BY PULMONARY EMBOLISM IN EMERGENCY ROOM: A CASE REPORT

Muhammad Asif Iqbal✉, Noor Faraz

Department of Cardiology, Lady Reading Hospital, Medical Teaching Institute, Peshawar – Pakistan.

Address for correspondence:
Muhammad Asif Iqbal
Department of Cardiology, Lady Reading Hospital, Medical Teaching Institute, Peshawar – Pakistan.

E-mail:
drasifiqbal_175@yahoo.com

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ABSTRACT

Deep Venous Thrombosis (DVT) develops in chronic diseases and prolonged immobilization. DVT is usually complicated by pulmonary embolism (PE). Common presentation of pulmonary embolism is chest pain and dyspnea. Similar is the presentation in patients with acute coronary syndrome (ACS). However, a patient who present with ACS and acute limb Ischemia and later on develop DVT complicated by PE simultaneously, is a very rare phenomenon. Such coexistence developed by chance or a common pathophysiological process, remains unclear. Again, it is very difficult to ascertain, what was the initial event and what was the sequence of events. Management of such patients is also challenging, as priority of treatment has to be decided. ACS and acute limb ischemia, if not intervened well on time, usually end up in acute myocardial infarction or death and gangrenous limb or amputation, respectively. We received a patient in emergency room with ACS, acute limb ischemia, DVT and PE. This case report was a diagnostic and management dilemma. Such a coincidence is very unusual and therefore this case is presented.

Key Words: Ischemia; Deep venous thrombosis; Pulmonary embolism

INTRODUCTION

Coronary heart disease (CHD) is claiming 2,300 lives each day in the United States making it the number one cause of death with one coronary artery related event every 25 seconds and out of these, 34% die within the same year.¹ On average, one American dies of Coronary artery disease (CAD) every minute.¹ One, out of six deaths is because of CAD and about 406,351 Americans died because of CHD in 2007.² With the advent of invasive and newer pharmacological options, prognosis has improved significantly. In the United States³, about 6.2 million people with cardiovascular diseases, 730,000 cerebrovascular accidents hospital admissions, and 7.2 million interventions are done for these diseases every year.⁴ Prevalence of CAD is almost the same throughout the world.^{5,6}

Similar to CAD, peripheral arterial disease (PAD) has markedly increased, including its severe form of critical limb ischemia (CLI). In Germany, a 21% increase in PAD has been observed in 5 years and increase of CLI raised from 40.6 to 43.5%.⁷ Patients with symptomatic PAD and CLI are at increased risk of limb loss, cardiovascular events and death. The reason for this poor outcome is

that probably PAD and CLI remain underdiagnosed and undertreated many a times. Prognosis of these patients remains high despite education, newer tools for early detection of PAD, the increase in therapeutic procedures and drugs and technical advancement.⁸

Deep Venous Thrombosis (DVT) and Pulmonary Embolism (PE) are among the three leading cardiovascular diseases. PE is a deadly disease and its mortality is higher than myocardial infarction, because the later can be treated more easily than PE. Those who survive the acute event of PE, face many complications after wards. Chronic thromboembolic pulmonary hypertension occurs in 2–4% patients and post-thrombotic syndrome of the legs in 50% of DVT or PE. DVT and PE have similar risk factors and pathophysiology that leads to athero-thrombosis and CAD.⁸ Risk factors for arterial and venous thrombosis are similar and pathophysiological process arises from the triad of inflammation, hypercoagulability and endothelial injury.⁹ Since both arterial and venous thromboembolism share common risk factors and have similar pathophysiological processes, there should be an association between the two thrombotic conditions.¹⁰

We are presenting a case report in which a patient presented with ACS and was additionally diagnosed as

acute limb ischemia and DVT complicated by PE.

■ CASE REPORT

A 65 year old Afghan lady presented to the emergency department with 04 hours duration of chest pain. The pain was sudden in onset, continuous and diffuse in the chest with 7/10 severity on pain scale score. Chest pain was associated with New York Heart Association class IV Dyspnea. Pain was not related to posture or respiration. There was no history of cough, hemoptysis or fever. Past history of the patient was unremarkable.

On clinical examination, she was ill looking, tachypneic and in distress. Heart rate was 120 beats per minute, regular and blood pressure was 110/70mm Hg. JVP was raised. Her oxygen saturation at room air was 80%. Limbs examination revealed left lower limb swelling up to the knee joint. It was cold and tender to touch with patchy bluish discoloration. Popliteal and lower down pulses were absent distal to the knee joint on left side.

Her cardiovascular examination was significant for tachycardia of 120/min, left parasternal heave and loud pulmonary component of second heart sound. There were no added sounds. Examination of the respiratory, gastrointestinal and central nervous system was unremarkable.

ECG was showing a heart rate of 120 beat per minute. There were ST and T changes in the anterior chest leads. Her troponin I was positive. Her typical chest pain and ECG changes along with positive troponin were typical of Acute Coronary Syndrome (ACS). She was diagnosed as ACS and treated as non ST elevation myocardial infarction (NSTEMI). However, her left leg swelling was not consistent with the diagnosis of ACS, and for additional diagnosis duplex ultrasound was advised. It revealed absent flow of the left lower limb up to the femoral veins along with absent arterial blood flow, suggestive of DVT and acute limb ischemia respectively. Her D-dimers was reported 1600, highly positive. Echocardiography was showing dilated right ventricle and right ventricular systolic pressure of 45 mm of Hg with ejection fraction of 69%, suggestive of PE. Trans-esophageal echo was performed to look for patent foramen or atrial septal defect and was reported normal. CT angiography was showing left and right pulmonary artery clots (figure1)

Patient was on parenteral anticoagulation along with oral vitamin K antagonist and dual anti platelets. However, to get a final diagnosis of the whole scenario an angiogram was planned for coronary, peripheral and pulmonary vessels. Invasive angiogram was planned with the intent to fix the possible lesions in the coronary vessels. Coronary angiogram was showing significant CAD disease with 90% stenosis in in the mid LAD and 80% stenosis

in the distal circumflex artery (figure 2). Her peripheral angiography was showing stenosis of left superficial femoral artery and her pulmonary angiogram was showing clots in her left pulmonary artery (figure 3). Such coexistence of coronary, peripheral and pulmonary obstruction simultaneously is a very rare phenomenon. She was treated with anticoagulation for acute coronary syndrome, DVT and acute limb ischemia. For CAD, PAD and PE, she was treated with medications and later on was shifted to vascular surgeon for embolectomy. Embolectomy was performed and patients recovered uneventful. Since she was stable and pain free with medical treatment, she was continued on medical treatment. For DVT and pulmonary embolism, she was continued on oral anticoagulation for three months. Her antiphospholipid syndrome and other tests were not performed because of the critical nature of the patient and less possibility of coagulation disease at this stage.

Follow up after three months showed patent deep veins on duplex ultrasound and warm normal caliber femoral arteries and asymptomatic CAD on optimal medical therapy. PCI to LAD and circumflex artery was left for future if her symptoms could not be controlled with medical treatment.

■ DISCUSSION

This case report highlights the possibility of a common pathophysiological process in

Figure 1: Computed Tomography (CT) Angiography



Figure 2: Coronary Angiogram



Figure 3: Pulmonary Angiogram



the etiology of different vascular pathologies that leads to arterial and venous occlusive disease. There is possibility of association between Venous thromboembolism (VTE) and atherosclerosis. Studies have shown an increased risk of subsequent symptomatic atherosclerosis and arterial cardiovascular events in patients with previous history of VTE especially in patients with apparently unprovoked VTE episode and those who have residual thrombus on ultrasound scan in their next visits.¹¹ Sorensen et al found that cardiac patients are at increased short-term risk of venous thromboembolism.¹²

Acute arterial ischemia is another vascular occlusive disease that carries high rates of morbidity and mortality. One survey reported 25% mortality for acute arterial ischemia and they concluded that ischemia of the limbs releases different toxins and pro coagulants that cause generalized clotting.¹³ Thrombolytic therapy is used to treat acute limb ischemia and it increase survival and prevent cardiopulmonary complications.¹⁴ Jivegard et al in their study concluded that various factors determining the mortality after arterial thrombo embolctomy in patients with acute arterial ischemia include advanced age, recent myocardial infarction and proximal occlusions. Surgery performed 13-24 hours after the onset of ischemia, arteriosclerosis in the occluded artery and poor distal back bleeding after completion of thrombo embolctomy are also associated with an increased mortality rate.¹⁵

Management of coronary, lower limb and venous thrombosis is on the same three principles; percutaneous intervention or thrombolytic therapy to open the occluded vessel, surgical thrombo-embolctomy or bypass procedure to correct or bypass underlying arterial lesions, and anticoagulation with continued observation.¹⁶

To sum up, patients with coronary, lower limbs arteries and venous occlusions share common risk factors, similar pathophysiological processes and respond to similar management principles. Control or prevention of these diseases is based on control of risk factors responsible for atherosclerosis or clot formation.

Our case report is peculiar that not only the disease process was present in three

different vascular beds but its simultaneous presentation in a patient during the same admission, give further clue to the same inciting agent. Patients with Deep Venous Thrombosis (DVT), Pulmonary Embolism (PE) and atherosclerotic arterial disease need further research to determine possible new risk factors in addition to these conditions and its possible preventive strategies.

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Author's Contribution

MAI Conceived the idea, wrote initial manuscript, searched literature and wrote references. NF Assisted in manuscript writing, introduction and discussion sections and finalized the manuscript. Authors agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

Conflict of Interest

Authors declared no conflict of interest

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None

Data Sharing Statement

The data that support the findings of this study are available from the corresponding author upon reasonable request.