

Massive Pulmonary Embolism Following Varicose Vein Surgery Under Spinal Anesthesia

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Background: Venous thromboembolism (VTE) emerges as deep venous thrombosis (DVT) or pulmonary embolism (PE). Pulmonary embolism is responsible for 150,000-200,000 deaths in United States per year and also it's an avoidable cause of hospital deaths (1). In this article, a patient who has developed cardiac arrest due to massive PE following varicose vein surgery under spinal anesthesia will be presented.

Case Report: A 40 years old woman with ASA I physical status was scheduled for elective left leg varicose vein surgery. Surgery was performed under spinal anesthesia with hyperbaric bupivacaine. No complications was observed intraoperatively and after 95 mins of surgery the patient was taken to postanesthesia care unit (PACU) then to cardiovascular surgery ward. Twelve hours later, during mobilization, the patient developed anxiety, dyspnea and chest pain. Hypotension developed, also arterial blood gas analysis revealed deep acidosis (pH: 7.0, pCO₂: 66.6 mmHg, pO₂: 103 mmHg, Hb: 10,8, Hct: 33,2, Na: 154 mmol/l, Ca: 0.99 mmol/l, K: 4,1 mmol/l, lactate: 15 mmol/l, SpO₂: 87,8 %, HCO₃⁻¹: 17,8 mmol/l, BE: -10,9 mmol/l, glucose: 438 mg/dl). Dopamine, dobutamine and norepinephrine infusions were started. Then the patient was intubated. Bedside transthoracic echocardiography revealed extremely wide right ventricular space and interpreted as a positive finding for PE. Chest computed tomography was planned in emergency conditions. She developed sudden cardiac arrest. The patient was revived after 35 mins of CPR. By this period of time extracorporeal membrane oxygenation (ECMO) was started through femoral arterial to femoral vein cannula in emergency conditions with a FIO₂ rate 100%, 6 lt/min flow rate and 3 lt/min cardiac flow. The patient's condition was stabilised with inotropes and ECMO. Then chest CT verified that "left pulmonary artery upper and lower segments were obstructed with a massive emboli, right pulmonary artery was clear". Embolectomy was planned in emergency conditions.

In the cardiac theatre anesthesia was induced with midazolam, fentanyl and rocuronium. Anesthesia was maintained with sevoflurane, fentanyl and rocuronium. Pulmonary embolectomy was performed with a cross-clamp time of 50 mins and perfusion time 120 mins. Weaning from the cardiopulmonary by-pass was successful and after observation of no need for ECMO via blood gas analysis also weaning from ECMO was done immediately. Following decannulation and protamine application, invasive blood pressures remained stable.

After the operation the patient was transferred to ICU, next day extubated and on the second day inotrop infusions were stopped and was mobilized. On the 4th day of surgery discharged from ICU to ward. During this time period, blood samples were taken for the evaluation of Anti-thrombin 3, Protein S, Protein C, Anti-cardiolipin IgM-IgG, Anti-Beta-2 glycoprotein 1 IgM-G, Anti-nuclear antibody and Anti-ds DNA and all the tests were negative except Lupus anticoagulant value was 45,10 secs (31-42).



Discussion: Risk factors for VTE are major medical illness, obesity, previous VTE, cancer, age over 60 years, prolonged immobilization, lower limb paralysis, use of oral contraceptives or hormone replacement therapies, stroke, congestive heart failure, recent myocardial infarction. Also acquired or inherited hematological abnormalities may lead to VTE. Antithrombin, protein C or protein S, activated protein C resistance, which usually is caused by the Factor V (Leiden) mutation, and the prothrombin gene mutation are inherited abnormalities. Acquired abnormalities include antiphospholipid antibody syndrome, myeloproliferative disorders, particularly essential thrombocythemia and polycythemia rubra vera and paroxysmal nocturnal hemoglobinuria (2). Also varicose veins are accepted as a risk factor for VTE but varicose veins as an independent risk factor for VTE is controversial. On balance, varicose veins are a weak risk factor for VTE (3). Additionally, spinal anesthesia increases the VTE risk (4).

Conclusion: In patients presented for varicose vein surgery and who has not been scanned for possible risk factors it must be kept in mind spinal anesthesia may be a contributing factor by delaying the mobilization. In our patient risk factors were female gender, positive lupus anticoagulant test, immobilization and type of surgery.

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