Diagnosing, Treating, and Preventing Venous Thromboembolism in Patients With Cancer

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Patient Description

Mr. L, a 48-year-old African American with metastatic non-small cell lung cancer, presented to the clinic with complaints of increased dyspnea for the previous 48 hours. Medical history was remarkable for arterial hypertension, coronary atherosclerotic disease successfully treated with percutaneous coronary intervention without stent insertion three years earlier, and left upper-lobe lung adenocarcinoma associated with bilateral lung and multiple liver metastases. Therapy included ramipril, aspirin, and an erythropoiesis-stimulating agent. Mr. L also had been given first-line chemotherapy with carboplatin, paclitaxel, and bevacizumab and recently had completed his third treatment cycle.

Physical examination showed a mildly obese man with no respiratory distress. Vital signs included a pulse of 115 beats per minute, blood pressure of 135/85, a respiratory rate at 24 breaths per minute, temperature of 37.6°C, and oxygen saturation of 82% in ambient air corrected by oxygen supplementation of 2 L per minute with nasal prongs. No central vein catheter or jugular vein distension was present. Heart and lung sounds and the abdominal examination were normal. No extremity swelling or discomfort was noted.

Diagnostic Evaluation

Mr. L was sent for blood sampling and to radiology for a pulmonary angioscan for possible pulmonary embolism, progressive disease, infection, or drug-induced pneumonitis. Blood work showed a normal coagulation profile, hemoglobin at 11 g/l, white blood cell count at 3.0 x 10^9/L, absolute neutrophil count at 1.1 x 10^9/L, platelet count of 245 x 10^9/L, normal creatitine levels, normal liver function tests, and reduced magnesium at 0.50 mmol/l. After normal renal function was confirmed, a pulmonary angioscan showed a 30%–50% decrease in size compared to the previously documented lung lesions and the presence of bilateral pulmonary emboli in the lobar and segmental pulmonary arteries. No sign of infection or interstitial disease was noted.

Treating Acute Venous Thromboembolism

Mr. L was hospitalized because of his decreased peripheral oxygen saturation and started on a therapeutic dose of a low-molecular-weight heparin (LMWH) administered subcutaneously once daily. The erythropoiesis-stimulating agent was discontinued, cardiology was consulted, and a decision was made to maintain concurrent aspirin therapy with the planned course of long-term LMWH therapy. Mr. L was encouraged to become mobile and instructed on self-administration of subcutaneous LMWH. Oxygen saturation resolved to healthy levels after 48 hours of hospital surveillance, and Mr. L was discharged with a long-term prescription of the LMWH. Chemotherapy was continued as planned.

Approaches for the prevention and treatment of venous thromboembolism (VTE) (see Figure 1) in patients with cancer are similar to those used in patients without cancer. Nursing interventions that can help reduce the risk of VTE include encouraging patients to be mobile when possible and encouraging early ambulation of patients after surgery. Nurses should monitor the fluid intake of their patients to prevent dehydration, which can increase blood viscosity. Physical approaches to thromboprophylaxis generally undertaken by nurses include the use of intermittent pneumatic compression devices or graduated compression stockings that can help reduce the risk of VTE, particularly after surgery. Physical measures generally are used in conjunction with pharmacologic thromboprophylaxis and are used alone only in the presence of contraindications to antithrombotic drugs.

Long-Term Prophylaxis

Mr. L was continued on daily LMWH therapy after confirmation that the episode of VTE had resolved. The oncologist planned for a six-month period of anticoagulation with the LMWH and

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