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Complications of Cancer and Cancer Treatment

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INTRODUCTION

Patients with cancer can experience various complications as a direct result of their disease or its treatment. Cancer complications can be localized or systemic (Table 61-1). Cancer treatments, especially chemotherapy and radiation therapy, have potentially significant side effects and complications; most are temporary, but some, such as peripheral neuropathy, can become permanent (Table 61-2). The significance of complications of cancer and its treatment goes beyond quality of life; cancer outcomes can be affected by resulting treatment delay or cessation, dose reduction, and hospitalization. Frequently, the management of cancer complications requires a multidisciplinary approach. This chapter highlights some important complications of cancer and its treatment.

CANCER-ASSOCIATED THROMBOSIS

Epidemiology

Patients with cancer are at increased risk for both venous and arterial thromboembolism; thromboembolic events are the second leading cause of death among patients with cancer.

TABLE 61-1 COMPLICATIONS OF CANCER

LOCALIZED	SYSTEMIC
Brain metastases	Anorexia/cachexia
Cancer-related pain	Cancer-associated thrombosis
Cord compression/cauda equina syndrome	Cancer-related anemia
Malignant effusions	Cancer-related fatigue
Pathologic fractures	Hypercalcemia
Superior vena cava syndrome	Paraneoplastic syndromes
Visceral obstruction	Tumor lysis syndrome

TABLE 61-2 COMPLICATIONS OF CANCER TREATMENT

Alopecia
Central line thrombosis/infections
Cytopenias
Febrile neutropenia
Hot flashes
Hypertension
Nausea and vomiting
Peripheral neuropathy
Secondary malignancies
Skin toxicity
Stomatitis
Tumor lysis syndrome

Pathology

The hypercoagulable state in patients with cancer is a result of activation of the coagulation system by neoplastic cells. Certain cancers such as pancreas, stomach, lung, lymphoma, and brain are particularly associated with venous thromboembolism. Cancer treatments including chemotherapy, anti-angiogenic agents, and hormonal therapy further increase the risk. Other risk factors include central venous catheters, obesity, and prior history of thrombosis and use of erythropoiesis-stimulating agents. Biomarkers, including elevated platelet and leukocyte counts, have also been shown to be predictive. However, risk cannot be determined on the basis of single risk factors alone, because the etiology is multifactorial. The Khorana Score is a validated risk that incorporates five simple clinical and laboratory variables has been endorsed by various guidelines for risk assessment.

Clinical Presentation

Clinical suspicion should be high in cancer patients whose presenting symptoms include dyspnea, cough, wheezing, chest pain, tachycardia, upper abdominal pain, or extremity swelling. Thrombosis remains a consideration even in ambulatory patients and those already receiving adequate anticoagulation. Incidental pulmonary embolisms may be identified on imaging studies conducted for staging of cancer; they are also associated with adverse outcomes and should be treated appropriately.

Treatment

Venous thromboembolism can be prevented with the use of prophylaxis in hospitalized cancer patients. Unfractionated heparin, low-molecular-weight heparins (LMWHs), and fondaparinux are safe and effective. Prophylaxis is being investigated in the ambulatory setting and appears to be beneficial in highly selected patients.

Established thrombosis should be treated with anticoagulation. Oral anticoagulation with warfarin is frequently complicated by interactions with chemotherapeutic agents, variable nutritional status, and relative resistance. In a randomized clinical trial, the LMWH dalteparin, given for up to 6 months, was more effective than warfarin in preventing recurrent thrombosis, and this class of anticoagulants is preferred for first-line therapy.

Vena caval interruption using filters should be considered only if anticoagulation is clearly contraindicated (e.g., in the presence