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Hypertension Associated With Bevacizumab

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As an advanced practice nurse, you care for patients who have a variety of chronic conditions, and you are expected to handle them all. How do you keep up with all of the advances in cardiology, endocrinology, gastroenterology, and infectious disease? You read this column, dedicated to managing a variety of primary care disorders in conjunction with cancer treatment. If you have developed expertise in management of one or more chronic diseases, consider writing for this column. Contact Associate Editor Joyce Marrs, MS, APRN-BC, OCN®, AOCNP, via e-mail at joycemrn@sbcglobal.net.

Case Study

Mr. B is a 49-year-old man who was diagnosed with stage III colon cancer in 2001. He initially underwent a right hemicolectomy followed by adjuvant 5-fluorouracil (5-FU) and leucovorin (LV). He did well until fall 2003, at which time progressive disease was noted in his lungs on a computed tomography (CT) scan, although he was asymptomatic. The decision was made to watch for disease progression or development of symptoms before initiation of first-line treatment for metastatic disease.

Mr. B did well until May 2004, when a CT scan showed that his lung metastases slowly had increased in size. The decision was made to begin chemotherapy along with a newly approved monoclonal antibody.

Treatment of Metastatic Colon Cancer

In February 2004, bevacizumab (Avastin™, Genentech, Inc., South San Francisco, CA) was approved by the U.S. Food and Drug Administration for use in first-line treatment, in combination with IV 5-FU-based regimens, for metastatic colorectal cancer based on the results of a phase III study by Hurwitz et al. (2004). Bevacizumab is a recombinant humanized monoclonal antibody that targets and inhibits vascular endothelial growth factor (VEGF) responsible for stimulating angiogenesis. Angiogenesis is the formation of new blood vessels (Franson & Lapka, 2005). Without the formation of new vascular growth, tumors are unable to increase in size by more than 1–2 mm from their blood supply (Berlin, 2002; Fernando & Hurwitz, 2004). Bevacizumab is theorized to prevent cancer from spreading by blocking the attachment of VEGF to endothelial cells, thereby stopping the signal to stimulate growth of new vessels necessary for cell proliferation and spread of the tumor (Fernando & Hurwitz; Wilkes, 2005). Rather than directly destroying cells to reduce tumor burden as conventional chemotherapy does, this drug prevents the growth and spread of cancer cells (Fernando & Hurwitz; Hurwitz et al.). In addition, bevacizumab may have an effect on remodeling existing tumor vasculature to improve drug penetration, thereby enhancing antitumor efficacy of chemotherapeutic agents (Hicklin & Ellis, 2005).

Adverse effects associated with bevacizumab therapy are increased incidences of hypertension, thrombosis, bleeding, proteinuria, and diarrhea. Although rare, a "black box warning" for gastrointestinal perforation has been indicated on bevacizumab's package insert (Hurwitz et al., 2004). Kabbinavar et al. (2003) also reported fever, headache, rash, epistaxis, and chills in association with bevacizumab.

In June 2004, Mr. B's medical oncologist started him on a combination treatment of LV 500 mg/m^2 by two-hour weekly IV infusion at six times per eight-week cycle, 5-FU 500 mg/m^2 by IV bolus one hour after initiation of each LV infusion, and bevacizumab 5 mg/kg over 90 minutes IV infusion every two weeks (Kabbinavar et al., 2003). Prior to the start of treatment, Mr. B's Eastern Cooperative Oncology Group performance status was 0, and he had no significant comorbidities. He was 6' 1", weighed 205 lbs, and had a body mass index (BMI) of 27.1. Baseline blood pressure (BP) was elevated at 142/86 mmHg. Complete blood count and renal and liver function tests were within normal ranges. Dipstick urinalysis was negative for protein. He was on no medications other than a daily multivitamin.

Hypertension Associated With Bevacizumab

Hypertension is defined as consistent elevation of systemic arterial BP (McCance & Huether, 2002). In 2003, the seventh report of the Joint National Committee (JNC 7)

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