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Side Effects of Bevacizumab: Who's at Risk and How to Manage

Vascular endothelial growth factor (VEGF) is a relatively new target in cancer treatments. VEGF stimulates new blood vessels to grow in and around tumors, and when tumors have an increased blood supply, they can grow larger and faster. By blocking the action of VEGF, doctors can reduce blood supply to tumors and slow their growth.

Bevacizumab (Avastin) is a drug that blocks the activity of VEGF and ultimately prevents new blood vessels from forming in tumor cells. This interferes with the growth of tumors. The drug is primarily used to treat metastatic colorectal cancer (MCRC), metastatic non–small-cell lung cancer (NSCLC), renal cell cancer, and breast cancer.

Like all cancer drugs, bevacizumab causes a number of side effects. A recent review article described bevacizumab's many adverse effects and identified specific groups of patients who need to be especially careful when taking the drug.

FOR MORE INFORMATION

American Cancer Society
www.cancer.org/docroot/CRI/content/CRI_2_8_Making_Treatment_Decisions_Colon_and_Rectum_Cancer.asp?sitearea=

Medline Plus
www.nlm.nih.gov/medlineplus/druginfo/meds/a607001.html

National Cancer Institute
www.cancer.gov/cancertopics/factsheet/AvastinFactSheet

Bevacizumab has been shown to increase the risk of serious and possibly life-threatening bleeding. Patients who take other medications that increase the risk of bleeding (such as "blood thinners" or aspirin) should be closely monitored when taking bevacizumab. Patients with NSCLC, individuals with a history of coughing up blood, or patients whose cancer has spread to the brain are also especially prone to bleeding complications.

Similarly, bevacizumab may interfere with wound healing, since formation of new blood vessels is important in the wound healing process. Wound healing complications are most common in patients who have had abdominal surgery, who have an infection, or who have a history of diabetes or obesity. Wound healing complications are preventable. Patients should stop taking bevacizumab at least 60 days before surgery and should not restart the drug for at least 28 days after surgery.

Tearing (perforation) of the digestive tract is another serious, but fortunately uncommon, ad-

Based on "Management of Bevacizumab-Induced Toxicities" by Sarah M Gressett and Sachin R Shah, ***The Annals of Pharmacotherapy***, **March 2009**, http://dx.doi.org/10.1345/aph.1L426. **For Our Patients** is provided by ***The Annals*** to help explain the latest research and information relating to your medications. These summaries are for informational purposes only and are not a substitute for professional advice from your personal medical provider. If you have questions about this material, you should discuss it with your physician or pharmacist.
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verse effect of bevacizumab. Risk factors for developing perforations while being treated with bevacizumab include intestinal inflammation, prior radiation, intestinal obstruction, cancer that has spread throughout the body, and treatments with other drugs that increase the risk of gastrointestinal bleeding. These drugs include some antiinflammatory pain relievers (eg, ibuprofen [Motrin] or steroids such as prednisone) and anticoagulants (eg, aspirin or clopidogrel [Plavix]). Patients with these risk factors should avoid taking bevacizumab if possible, and patients who do take the drug should be closely monitored for gastrointestinal complications.

Patients who take bevacizumab also have an increased risk for blood clots, especially individuals with a history of arterial blood clots or who are older than 65 years of age. Taking bevacizumab also increases the risk of developing heart failure, particularly for patients who have previously received chemotherapies known to damage heart muscle, patients who have had chest radiation treatments, or patients with a prior history of heart disease.

High blood pressure is the most common side effect of bevacizumab and may occur in as many as 67% of people who take the drug. High blood pressure is most likely to occur in patients who take high doses of bevacizumab, but all patients are at an increased risk, regardless of the dose they are taking. At greatest risk are people over 75 years of age, individuals of African American ethnicity, and patients being treated for renal cell carcinoma. High blood pressure is a manageable side effect and prescription medications can be used to lower it.

Kidney damage has also occurred in some patients who take bevacizumab. Protein in the urine (an indicator of kidney damage) is found in 21–41% of patients taking bevacizumab. There are no symptoms associated with having protein in the urine and it can be detected only through laboratory tests. Frequent urine testing is recommended because kidney damage may not be reversible. People with diabetes or renal cell carcinoma are at the greatest risk for kidney damage and should be monitored closely while taking bevacizumab.

A number of other toxic effects have also been observed with bevacizumab, including blood vessel problems in the brain, headaches, diarrhea, and dehydration. Although these other side effects can be very serious, they are not as common as the toxicities already mentioned.

Despite the number of serious and even fatal toxicities that have been associated with bevacizumab, the drug is an excellent agent for treating a number of cancers. Patients can be monitored for many of the side effects associated with bevacizumab, and these effects are often preventable or manageable. Patients with high blood pressure, a history of blood clots, bleeding complications, heart disease, or kidney problems should be monitored especially closely because bevacizumab may worsen these conditions.