PHARMACY CORNER

Bevacizumab Approved for Use in Renal Cell Carcinoma

Bevacizumab (Avastin®, Genentech, Inc.), a vascular endothelial growth factor receptor inhibitor, has been granted U.S. Food and Drug Administration (FDA) approval for use in combination with interferon alpha therapy for the treatment of metastatic renal cell carcinoma. Approval was based on the results of a randomized, double-blind, placebo-controlled trial of patients with metastatic renal cell carcinoma (N = 649). Patients in the bevacizumab plus interferon arm (n = 327) demonstrated a significant improvement in progression-free survival (10.2 months versus 5.4 months) compared to patients receiving interferon plus placebo (n = 322, $p < 0.0001$). However, no significant improvement was seen in overall survival.

Serious adverse events were more common in the bevacizumab arm (31% versus 19%). Bleeding, hypertension, proteinuria, and thrombosis were among the symptoms attributed to the addition of bevacizumab. Fatal hemorrhaging, gastric perforations, and complications with wound healing have all occurred with the use of bevacizumab. When possible, bevacizumab therapy should not be initiated within 28 days of surgical procedures.

For more information, visit www.fda.gov/AboutFDA/CentersOffices/CDER/ucm176025.htm.

Thalidomide Disappointing in Small Cell Lung Cancer Test

As reported by Lee et al. (2009), thalidomide failed to show a survival benefit when added to chemotherapy in treating small cell lung cancer (SCLC). All patients (N = 724) in the phase III trial received standard chemotherapy of carboplatin and etoposide every three weeks for up to six cycles. Patients also were randomized to receive either placebo or thalidomide 100–200 mg daily for up to two years. SCLC is a very vascular disease, and it had been hoped that the antiangiogenic agent thalidomide would be a beneficial addition to standard therapy. Use of thalidomide was associated with an increased incidence of thrombotic events compared to placebo (19% versus 10%, $p < 0.001$).

Lee, S.M., Woll, P.J., Rudd, R., Ferry, D., O'Brien, M., Middleton, G., et al. (2009). Anti-angiogenic therapy using thalidomide combined with chemotherapy in small cell lung cancer: A randomized, double-blind, placebo-controlled trial. *Journal of the National Cancer Institute, 101*(15), 1049–1057.

Cetuximab and Panitumumab Labeling Undergoes Changes

Research regarding *K-ras* mutations has provided insight into why some patients with tumors overexpressing epidermal growth factor receptor (EGFR) have failed to respond to anti-EGFR therapy. Labeling of both cetuximab (Erbitux®, Imclone Systems) and panitumumab (Vectibix®, Amgen, Inc.) has changed to reflect the lack of benefit in treating colorectal tumors demonstrating *K-ras* mutations in codon 12 or 13. Both cetuximab and panitumumab are EGFR antagonist monoclonal antibody drugs.

For more information, visit www.fda.gov/AboutFDA/CentersOffices/CDER/ucm172905.htm.

Pemetrexed Receives Approval as a Maintenance Therapy

Pemetrexed (Alimta®, Eli Lilly & Co.) has received FDA approval as maintenance therapy in the treatment of stage IIIb/IV non-squamous non-small cell lung cancer that has not progressed after completion of four cycles of standard platinum-based chemotherapy regimens. Approval was based on a demonstrated improvement in overall survival of patients treated with pemetrexed (n = 441) versus placebo (n = 222). Patients with non-squamous cell histologies showed a median overall survival of 15.5 months compared to 10.3 months in the placebo arm. However, patients with squamous cell histologies fared worse when treated with pemetrexed. These patients had a median overall survival of 9.9 months compared to 10.8 months in the placebo arm.

Pemetrexed was dosed at 500 mg/m^2 IV over 10 minutes in 21 day cycles until disease progression. Patients were supported with folic acid, vitamin B_{12}, and corticosteroid therapy to minimize the toxicities of pemetrexed.

For more information, visit www.fda.gov/AboutFDA/CentersOffices/CDER/ucm170660.htm.

Fentanyl Buccal Film Now Used to Treat Breakthrough Pain

A buccal film formulation of fentanyl (Onsolis®, Meda Pharmaceuticals) has received FDA approval as an opioid analgesic for breakthrough pain in patients who are already receiving around-the-clock opioid therapy and who also are opioid-tolerant.

Currently only available by prescription through a restricted distribution program, the FDA is requiring continued evaluation of Onsolis to ensure that benefits outweigh the risks associated with use of Onsolis. The drug comes as a small film that dissolves in 15–30 seconds when placed along the mucosal lining of the cheek. It is available in doses from 200–1,200 mcg.

For more information, visit www.fda.gov/NewsEvents/Newsroom/PressAnnouncements/ucm172366.htm.

SAFETY UPDATE

Electronic Cigarettes Draw Criticism, Concern

The FDA has expressed concern regarding the safety of electronic cigarettes, or e-cigarettes. These battery operated nicotine-delivery products, available in flavors such as chocolate, strawberry, and mint, are seen by some as being marketed to children. The products do not require the same kinds of warning labels as traditional tobacco products