



A Report From the American Society of Clinical Oncology 2007 Annual Meeting

Brain Cancer

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Each year, more than 20,000 people in the United States are diagnosed with a cancer that begins in the brain. About 60 percent of these primary brain tumors are glioblastomas, the commonest and most aggressive type. Unlike other cancers, tumors that arise in the brain rarely spread to distant organs.

Only rarely do brain cancers run in families. Most brain tumors happen for no apparent reason. But there are some known risk factors, such as exposure to radiation, which are mostly a result of treatment for other cancers such as childhood leukemia. Exposure to chemicals such as vinyl chloride (used to manufacture plastics) and petroleum products has been linked by some studies to an increased risk for brain cancer.

Targeted Treatments for Brain Cancer

As with other types of cancer, clinical trials are showing the benefits of **targeted treatments** for brain cancer. The results of two recent studies offer hope to people with glioblastomas.

CEDIRANIB (AZD2171) FOR GLIOBLASTOMA

In the first clinical trial, conducted by researchers at the Massachusetts General Hospital Cancer Center in Boston, a new drug called cediranib (AZD2171) was tested in 30 people with recurrent glioblastoma. This drug works by blocking the **receptor** for **vascular endothelial growth factor (VEGF)**, a substance that plays a critical role in the growth of blood vessels that feed cancer tumors. This targeted treatment can be taken by mouth once a day.

Early findings on all 30 people in the clinical trial showed that six months after treatment, more than a quarter of them had survived without further growth of their cancer. More than half of the patients studied had a significant decrease in the size of their tumor. Researchers are encouraged by these results and are planning more clinical trials on cediranib in

combination with chemotherapy, which may be an even better treatment option.

IRINOTECAN (CAMPTOSAR) PLUS BEVACIZUMAB (AVASTIN) FOR MALIGNANT GLIOMA

In the second clinical trial, the combination of irinotecan (Camptosar) and bevacizumab (Avastin) showed what researchers are calling “extraordinary” effectiveness in people with a brain cancer known as malignant glioma. Malignant gliomas have high levels of VEGF receptors, which are associated with a less successful outcome. Because bevacizumab targets VEGF, it was a natural choice for study in these types of brain tumors.



Researchers at Duke University in Durham, North Carolina, treated almost 70 people with recurrent malignant gliomas using this combination of drugs. All the patients had

received previous treatment with radiation and temozolomide (Temodar).

Six months after treatment with irinotecan and bevacizumab, more than 40 percent of those with advanced tumors remained alive without their cancer growing. There was a significant decrease in the size of the tumor in almost 60 percent of the people treated with the combination. At 12 months, almost 40 percent of the patients with advanced cancer and nearly 60 percent of those with less advanced tumors were still alive.

Researchers plan to continue studying this combination treatment. They are also comparing bevacizumab with bevacizumab plus irinotecan in people with recurrent

What's New, What's Important

- A promising new treatment option—cediranib (AZD2171)—may benefit people with recurrent brain tumors.
- The combination of irinotecan (Camptosar) and bevacizumab (Avastin) has also shown promise in people with recurrent brain tumors.
- The combination of temozolomide (Temodar) and vaccine therapy does not appear to harm the immune system of people with the brain tumor glioblastoma and may even increase the number of certain infection-fighting cells.
- A new drug called vorinostat (Zolinza) may benefit people with glioblastoma.

glioblastomas. In addition, researchers hope to include bevacizumab early in the treatment of malignant gliomas.

TEMOZOLOMIDE PLUS VACCINE FOR GLIOBLASTOMA

Other researchers from Duke University reported that people with glioblastoma can be treated with a drug called temozolomide (Temodar) and **vaccination** to boost the immune system, apparently without temozolomide harming their immune system or limiting the effects of the **vaccine**. In fact, this combination approach may even increase **lymphocytes**, one of five types of white blood cells important in the body's disease-fighting immune system.

Two ongoing clinical trials studied the use of temozolomide and vaccines in people with newly diagnosed glioblastoma. In both the ACTIVATE and ACT II trials, participants received radiation and temozolomide followed by vaccine therapy. After the first cycle of temozolomide, significant lymphopenia—a decrease in lymphocytes—occurred in the majority of patients (70 percent). However, this well-known side effect of temozolomide was short-lived, and lymphocyte counts returned to normal after treatment ended.

On the Horizon

VORINOSTAT (ZOLINZA) FOR RECURRENT BRAIN CANCER

A new drug, still in clinical trials, looks promising as a treatment for glioblastoma. Called vorinostat (Zolinza), this drug can make a tumor more likely to be changed or destroyed by radiation. Doctors refer to this type of drug as a radiosensitizer.

In a clinical trial conducted by the North Central Cancer Treatment Group based at the Mayo Clinic in Rochester, Minnesota, 68 people with

recurring glioblastoma were treated with vorinostat.

Some patients received the drug, then had surgery, and then continued drug treatment after they recovered from surgery.

In nine of the 52 patients who were evaluated six months after treatment, the cancer did not grow. Researchers concluded that vorinostat might have cancer-fighting ability and so could be of benefit to people with the rapidly growing glioblastoma tumor.



In the future, vorinostat will be tested in combination with other drugs for both recurring and newly diagnosed brain cancer.

Please note: Although the treatments discussed in this chapter are showing promise, most are still in clinical trials—some in earlier phases of research—and may not be available yet to the general public. Your doctor can help guide you as to which new medications could be right for you and whether you are eligible to take part in the clinical trials of these new treatments.