Can the human immune system be harnessed to control brain tumor growth in humans?

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The human immune system is a complex system of cells, proteins and barriers that have evolved to fight off diseases. The initial association that comes to mind is the system’s ability to protect against a wide range of infections, including bacterial, viral, fungal and parasitic. However, equally important is the immune system’s ability to identify and eliminate “mutated human cells” that form the building blocks of cancer. Patients with severe immunodeficiency diseases may develop highly aggressive cancers as a result of the immune system’s inability to scavenge such abnormal cells. A common example of this is the development of brain lymphomas in acquired immunodeficiency syndrome (AIDS) patients.

Glioblastoma is the most common and aggressive of the primary brain tumors. The infiltrative nature of this cancer and its rapid growth rate make treatment extremely difficult. As a result, progress in brain tumor research has been slow. There is an urgent need for new and better therapies than the existing ones. Such therapies must be safe as well as effective.

Glioblastoma is a complex and heterogeneous tumor best known by the full traditional term glioblastoma multiforme. The appearance on neuroimaging studies such as brain MRI and the pathologic inspection of the tumor specimen after surgery speaks to an enormous complexity with areas of necrosis, blood vessel formation and rapid cell division with “cell stacking”. The bewildering genetic and molecular foundations of this appearance are just now being unraveled. Glioblastoma produces genes that create multiple different proteins within the neoplastic cell and on its surface.

Looking for an answer in the body’s immune system for such a therapy certainly seems logical. This system has been...

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“fine tuned” over thousands of years of evolution to recognize foreign and harmful cells or microbes and eliminate them at the lowest possible cost to the human host. How can the human immune system be trained to recognize and eliminate a tumor as complex as glioblastoma? Two upcoming trials at the MUSC Brain & Spine Tumor Program are asking this very question. The first study titled “A Phase II Clinical Trial Evaluating DCVax – Brain, Autologous Dendritic Cells Pulsed with Tumor Lysate Antigen for the Treatment of Glioblastoma Multiforme” proposes to study the potential efficacy of a “vaccine” developed by exposing immune cells obtained from patients with glioblastoma with a lysate from the tumor obtained at surgery for tumor resection. The study will compare the progression free survival of patients treated with the vaccine combined with the current standard of care for glioblastoma with patients receiving standard care treatment alone. Although we normally associate vaccination with prevention rather than treatment, the vaccine used in this trial is similar to traditional vaccines in principle. Cells from the patient’s immune system are exposed to tumor cells and related proteins and then administered to the patient in a series of immunization injections (up to ten immunizations per patient) to stimulate a response against the residual brain tumor.

The second trial titled: “An International Phase 3 Randomized Double-Blind Placebo Controlled Study of Rindopepimut/GM-CSF Versus Placebo Added to Standard of Care Maintenance Temozolomide in Patients With Newly Diagnosed Surgically Resected EGFRVIII-Positive Glioblastoma” is designed to study the effects of an investigational agent vaccine targeting the Epidermal Growth Factor Receptor vIII, a variant of the epidermal growth factor receptor associated with angiogenesis, tumor invasiveness and inhibition of apoptosis. Following surgical resection and chemo radiation, eligible patients for the above mentioned Phase III clinical trial will be randomly assigned (1:1) to receive either investigational agent vaccine admixed with GM-CSF as an immune stimulator OR placebo vaccine on top of temozolomide monotherapy (TMT). In both arms, patients are treated in 28 day cycles. Patients will continue treatment with TMT for a minimum of 6 cycles and up to 12 cycles, in accordance with local standards of care until intolerance or disease progression occurs. The investigational agent or placebo vaccine will be dosed until intolerance or disease progression occurs. The outcomes of the two treatment arms will be compared, including overall survival, progression-free survival, safety and tolerability profiles, and patient reported symptom severity.

The outcome of these two trials is greatly anticipated.

MUSC Brain Tumor Action Month 2012

Brain Tumor Action Month (BTAM) is a month-long series of events hosted by the MUSC Brain & Spine Tumor Program to educate the public about and to increase support for brain tumor research. This initiative will take place in Charleston beginning on April 30 and concluding on May 18, 2012.

Events include a fair with vendors, vigil service, educational displays and lectures, benefit concert with silent auction and awareness night at the Charleston RiverDogs baseball game.

2. A stylized illustration of the MHC receptor, on the dendritic cell, presenting fragments of tumor cell to the t-cell receptor.

To learn more about these events, please contact:
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or visit: MUSC.edu/neurosciences/BTAM
Creating a Legacy of Love

Winston Churchill once said, “We make a living by what we get; we make a life by what we give.” From our earliest days as a nation, Americans have demonstrated a remarkable spirit of generosity. Each year Americans give more than any other country in the world.

Philanthropy has built remarkable educational institutions, cured deadly diseases and continues to fund research and facilities dedicated to our health. Our generosity also funds religious, environmental and social efforts from sea to shining sea. Yet, the vast majority of Americans are not able to give as much as they would like.

The truth is that while many are limited by the realities of a day-to-day budget, a little careful planning today makes it possible for almost anyone to do more in the future to help those you love including family, friends and charity.

The most frequent gifts made in a will or trust includes:
• A Fixed Bequest: This is the gift of a fixed dollar amount to a family member, friend, or charity.
• A Specified Percentage: Many people divide their estate by percentages, leaving a specific percentage such as 10% or 20% to be divided among a named list.
• A Gift of a Specific Asset: On some occasions, gifts of a parcel of real estate or a block of stock help fulfill a desired objective to give to family, friends or charity.
• A Residual Gift: Specific bequests are often given to family members and the remainder of the estate is divided equally among a variety of charitable causes.
• Gift in Trust: There are a number of appropriate ways to leave a gift in trust. For example, a trust can provide a surviving family with income for life with the remainder going to charity after the death of the survivor. Alternatively, a trust may provide income to charity for a prescribed number of years with the remainder ultimately going to a family member.

Winston Churchill left us with a legacy for life that has brought enormous benefit to future generations. For more information on how you can leave a lasting legacy, please contact our Office of Gift Planning at 800-810-6872 or visit our website at MUSCgiving.org.

10 Tips for Family Caregivers

• Caregiving is a job and respite is your earned right. Reward yourself with respite breaks often.
• Watch out for signs of depression, and don’t delay in getting professional help when you need it.
• When people offer to help, accept the offer and suggest specific things that they can do.
• Educate yourself about your loved one’s condition and how to communicate effectively with doctors.
• There’s a difference between caring and doing. Be open to technologies and ideas that promote your loved one’s independence.
• Trust your instincts. Most of the time they’ll lead you in the right direction.
• Caregivers often do a lot of lifting, pushing, and pulling. Be good to your back.
• Grieve for your losses, and then allow yourself to dream new dreams.
• Seek support from other caregivers. There is great strength in knowing you are not alone.
• Stand up for your rights as a caregiver and a citizen.

- National Family Caregiver’s Association

MUSC Brain Tumor Support Group meets the second Wednesday of every month. For more information contact Christa Lizzi at 843-792-1524.

MUSCherealth.com/braincancer
Clinical Trials

CONTACT MICHELLE DE CANDIO, RN 843-792-9015 OR DECANDIO@MUSC.EDU

- A Phase II Clinical Trial Evaluating DCVax®-Brain, Autologous Dendritic Cells Pulsed with Tumor Lysate Antigen for the Treatment of Glioblastoma Multiforme.

- The Efficacy of PF-02341066, (Crizotinib) a Dual ALK/c-Met Inhibitor in Inhibiting Growth of Glioblastoma.

- The Effect of Garlic Compounds on Fresh Human Glioma Biopsies.

CONTACT JOHN KELLER 843-792-1286 OR KELLERJ@MUSC.EDU

- Imaging Biomarkers of Tissue Microstructure and Vasculature as Predictors of Glioblastoma Multiforme Response to Treatment with Bevacizumab for Progressive Disease.

- Phase III Trial on concurrent and adjuvant temozolomide chemotherapy in Non-1p/19q deleted anaplastic glioma.

- Phase III Intergroup Study of Radiotherapy versus Temozolomide Alone versus Radiotherapy with Concomitant and Adjuvant Temozolomide for Patients with 1p/19q Codeleted Anaplastic Glioma

- Phase III Study of Radiation Therapy With or Without Temozolomide for Symptomatic or Progressive Low-Grade Gliomas.

- Glioblastoma, Adjuvant: CTO: 101481 RTOG 0837: Randomized, Phase II, Double-Blind, Placebo-Controlled trial of conventional chemoradiation and adjuvant temozolomide plus cediranib versus conventional chemoradiation and adjuvant temozolomide plus placebo in patients with newly diagnosed glioblastoma.

To find out more about MUSC’s clinical trials visit: MUSC.edu/tru or call 843-792-6592