



Pediatric Low-Grade Glioma Research Proposals

Pediatric low-grade glioma (pLGG) is the most common brain tumor in children, accounting for approximately one-third of childhood brain tumors diagnosed annually in the United States. Today, more than 90% of patients with pLGG will become long-term survivors, but nearly a quarter (24%) will suffer from a severe or disabling chronic medical condition as a result of their tumor and its treatment. My research attempts to reduce the impact of this disease while improving treatments. Below are two trials currently being conducted to help achieve those goals.

Prospective DTI Study

Optic pathway gliomas are pLGG that occur in the visual pathways of the brain. They can cause uncorrectable, permanent vision loss in up to half of affected children, but many children may not need any therapy. Doctors are often left wondering who will have vision loss and when is the best time to treat. This is especially challenging for very young children who can't undergo a typical vision test. Our study uses a non-invasive brain imaging technique (diffusion tensor imaging, DTI) to measure the effect of these tumors on brain circuits critical to vision. DTI is added as part of a child's routine MRI, and visual pathways are analyzed to look for early signs of damage. Our preliminary data has shown that DTI can measure visual acuity loss and predict when it will occur. We are now conducting a study to show that DTI can help identify children at highest risk of vision loss. If oncologists know who may soon develop vision loss, they can intervene earlier with therapy to preserve vision. If the study is a success, we hope that this same technique may be applied to other pathways in the brain to help predict problems with movement and cognition. Support for the Prospective DTI Study would help us conduct the study, analyze the data, report the results, and support future trials in DTI.

Investigating Patient Function, Cognition and Quality of Life in pLGG

The best therapy for pLGG is not just the one that will make the tumor stop growing, but also the one that will improve patients' lives. The combination of carboplatin and vincristine is one of the oldest and most frequently used regimens to treat pLGG. However, this therapy requires a central venous line, can cause immune suppression or other adverse effects, and require frequent clinic visits. A new therapy, selumetinib, is an oral medicine that has been effective in pLGG in early trials and avoids many of these same problems. We are conducting a study comparing carboplatin/vincristine with selumetinib in children with newly-diagnosed pLGG. In addition to measuring how each therapy controls tumors, the study will also measure the effect of each therapy on patient's function (vision and motor function), cognition (executive function and behavior) and quality of life. If the two therapies are equally able to control tumor growth, then this additional information may help patients and families decide which therapy is better for them and their goals of treatment. This phase 3 study is being conducted through the Children's Oncology Group. Funding support for this trial would help provide time and effort for the study chair (Peter de Blank) to conduct this study.

Thank you for your consideration. If you have any questions about my research or the trials discussed, please let me know.

Sincerely,

Peter de Blank, MD, MSCE
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