Standard MRI a Useful Biomarker Early on in Treatment with Bevacizumab for Recurrent Glioblastoma Multiforme

Chicago, IL [November 26, 2012]: Research results announced today demonstrate that changes in tumor enhancement on post-gadolinium (Gd) T1-weighted magnetic resonance imaging (MRI) are highly predictive of which patients with recurrent glioblastoma multiforme (GBM) brain tumors will benefit from second-line therapy that includes the antiangiogenic drug bevacizumab. Assessing whether a tumor is responding to a therapeutic regimen with bevacizumab has presented MRI interpretation challenges due to the drug’s potential for decreasing tumor enhancement independent of decreasing tumor burden.

Clinical and image data were collected as part of RTOG 0625/ACRIN 6677, a multicenter randomized phase 2 trial of bevacizumab with irinotecan or temozolomide in patients with recurrent GBM conducted jointly by the Radiation Therapy Oncology Group (RTOG) and the American College of Radiology Imaging Network (ACRIN). ACRIN’s oncology program is now part of the ECOG-ACRIN Cancer Research Group.

“We sought to determine if disease progression, as seen on MRI using post-Gd 2D- or 3D-T1 or FLAIR sequences, can reliably predict patient outcome,” said Principal Investigator of the ACRIN 6677 trial Jerrold Boxerman, MD, PhD, and Assistant Professor at the Warren Alpert Medical School of Brown University (Providence, RI), who presented the results at the 98th Annual Meeting of the Radiological Society of North America. “Our results demonstrate that even though tumor enhancement may diminish with the use of bevacizumab, a finding of progressive enhancement on the T1-weighted images highly correlates with worse patient outcome. Knowing that a patient is not benefitting from a treatment could permit a timely switch to a clinical trial evaluating an alternate therapeutic strategy,” said Boxerman, who also reported that a similar correlation was not found between patient outcome and either improved enhancement on T1-weighted images or tumor progression on 3D fluid-attenuated inversion-recovery (FLAIR) hyperintensity images.

In a central review of 123 cases carried out at the ACR Imaging Core Laboratory, two radiologists with a Certificate of Additional Qualification (CAQ) in neuroradiology serially measured bi-dimensional (2D) and volumetric (3D) enhancement on post-Gd T1-weighted images and 3D FLAIR hyperintensity images. The progression status of all post-treatment MRIs was determined using MacDonald criteria. A third CAQ-credentialed neuroradiologist adjudicated interpretation discrepancies.
Median overall survival at 8 or 16 weeks in patients whose tumor had progressed was significantly less than that in patients whose tumor had not progressed on 2D-T1 images (114 vs. 278 days and 214 vs. 426 days) and 3D-T1 images (117 vs. 306 days and 223 vs. 448 days), but not 3D FLAIR hyperintensity images (201 vs. 276 days and 303 vs. 321 days).

“Given the widespread use of bevacizumab for treating recurrent GBM, establishing a highly predictive marker of treatment response would be extremely valuable for patient care. These study results suggest that the standard imaging techniques employed in the joint RTOG-ACRIN trial can provide important clinical information,” said Daniel Barboriak, MD, Co-Chair of the ECOG-ACRIN Brain Tumor Working Group and Professor of Radiology at Duke University Medical Center (Durham, NC). “Working in tandem with a treatment group proved very helpful for addressing questions of mutual interest to oncologists and radiologists and holds much promise for the science to be carried out within the future National Clinical Trials Network,” added Barboriak.

Funding for imaging research conducted by ECOG-ACRIN is provided by the National Cancer Institute through grants U01 CA079778 and U01 CA080098.

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**About ECOG-ACRIN**
The ECOG-ACRIN Cancer Research Group designs and conducts biomarker-driven cancer research involving adults who have or are at risk of developing cancer. ECOG-ACRIN was formed in May 2012 by the merger of two highly respected cancer cooperative groups: the Eastern Cooperative Oncology Group (ECOG) and the oncology program of the American College of Radiology Imaging Network (ACRIN). ECOG-ACRIN has integrated therapeutic and diagnostic imaging-based research disciplines with the latest bioinformatics technologies into a single scientific organization. With its capacity to explore integral biomarkers, including imaging markers of response and prognosis, ECOG-ACRIN is poised to achieve patient-centered research breakthroughs across the cancer care continuum, from prevention and screening through the treatment of metastatic disease. For more information, visit [www.ecog-acrin.org](http://www.ecog-acrin.org).