

## QIBA Dynamic Contrast-Enhanced (DCE) MRI Biomarker Committee (BC) Call

Monday, June 14, 2021, at 11 a.m. (CT)

### Call Summary

#### In attendance

Hendrik Laue, PhD (Co-Chair)

Cristina Lavini, PhD

Nancy Obuchowski, PhD

James O'Connor, MBBS, PhD

#### RSNA staff

Joe Koudelik

Susan Stanfa

#### Discussion re: Published Repeatability Data

- The following key DCE anti-vascular agent study was reviewed and discussed: Batchelor TT, et al. [AZD2171, a pan-VEGF receptor tyrosine kinase inhibitor, normalizes tumor vasculature and alleviates edema in glioblastoma patients](#). *Cancer Cell*. 2007; 11(1): 83–95.
- DCE repeatability data on 16 patients were acquired but not discussed in the publication; it is uncertain whether any repeatability values were cited
- Recommendation to request the data from the authors of the study, as the DCE-MRI Profile is currently based on only a single study with a sample size of 11 patients
  - Dr. Laue to request Dr. Amita Dave contact the authors
- Dr. O'Connor's group in Manchester possesses the following published DCE-MRI repeatability data for 129 patients as follows (a mixture of study phase and cancer types included):
  - Colorectal cancer liver metastases N=71 (including studies containing [4](#), [7](#), [9](#), and [51](#) subjects)
  - Colorectal cancer non-liver metastases N=16 (including studies containing [1](#) and [15](#) subjects)
  - NSCLC primary/nodal lesions N=15 (including studies containing [10](#) subjects and 5 subjects [data under review but yet to be published])
  - Ovarian metastases N=13 (including studies containing [3](#) and [10](#) subjects)
  - Mixed solid (non-CRC and non-ovarian) in abdomen and pelvis N=14 ([all from a single study](#))
- In addition, over the next two years, Dr. O'Connor's group will complete:
  - H&N cancer primary/nodal lesions N<40 pending (10 already scanned from unpublished study A [likely to finish in 2022] and up to 30 from unpublished study B [recruiting began recently])
- In each case, the patients had the same research protocols performed (i.e., non-standard of care protocols) using the same 1.5T Philips system, with protocols varying by body site
- In all studies the repeatability was a footnote and in some, the data were confined to the supplementary material
- There is potential for a comprehensive, combined review, though perhaps not quite a meta-analysis
- Dr. O'Connor is interested in compiling his data and presenting them with a combined analysis, and offered to provide a platform to include data from outside Manchester, e.g., the DCE-MRI Profile data, [Batchelor study](#) data, as well as a handful of other studies he has found
  - Including data from outside his lab would require consent and cooperation from other data owners
- The [QIN GBM Treatment Response collection](#) statistics from The Cancer Imaging Archive was referenced
  - Consisted of 54 Participants, 106 studies, 1,942 series, and 589,314 images
  - This collection contained "double baseline" multi-parametric MRI images collected from patients with newly diagnosed glioblastoma
  - The value of this collection is to provide clinical image data to establish the test-retest characteristics of parameters calculated from DWI-MRI, DCE-MRI, and DSC-MRI such as ADC,  $K^{trans}$ , and rCBV

### Discussion on Plans for Future Study Led by Dr. O'Connor

- Dr. O'Connor to seek QIBA member collaboration for this data analysis effort to assess overall repeatability
- At the recommendation of Dr. Obuchowski, who agreed to serve in an advisory role, Dr. O'Connor will draft an outline containing study objectives and a strategy for SME feedback and guidance, including:
  - Method for measuring repeatability
  - Data analysis
  - An approach for colorectal patients with multiple lesions
- Discussion will continue during an upcoming DCE-MRI BC meeting; key QIBA members to be invited to participate in a discussion of technical details (Drs. Chung, Laue, Lavini, Obuchowski, Sourbron plus 1-2 more SMEs)
- An additional ad hoc meeting will also be considered

**Next call:** Monday, June 28, 2021, at 11 a.m. (CT) [2<sup>nd</sup> & 4<sup>th</sup> Mondays of each month]

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