

## QIBA fMRI Biomarker Committee (BC) Call

Wednesday, June 16, 2021, at 11 a.m. (CT)

### Call Summary

#### In attendance

Jay Pillai, MD (Co-chair)

David Soltysik, PhD (Co-chair)

Shruti Agarwal, PhD

Ping Hou, PhD

Ichiro Ikuta, MD, MMSc

Nancy Obuchowski, PhD

James Voyvodic, PhD

Divya Yadav, MD

Francisco Zamorano, PhD

Yuxiang Zhou, PhD, DABR

#### RSNA staff

Joe Koudelik

Susan Stanfa

#### Review of Previous Call Summary

- The 06.02.2021 call summary was approved as presented

#### Discussion on Luna LP, et al. article

- Luna LP, et al. [Can Preoperative Mapping with Functional MRI Reduce Morbidity in Brain Tumor Resection? A Systematic Review and Meta-Analysis of 68 Observational Studies](#). *Radiology*. June 2021.
- The purpose was to assess the overall postoperative morbidity among patients with brain tumors by using preoperative fMRI versus surgery without this tool or with use of standard (nonfunctional) neuronavigation
- Systematic review and meta-analysis of studies across major databases (1946 to June 20, 2020) were conducted
- Inclusion criteria were original studies that (a) included patients with brain tumors, (b) performed preoperative neuroimaging workup with fMRI, (c) investigated the usefulness of a preoperative or intraoperative functional neuroimaging technique and used that technique to resect cerebral tumors, and (d) reported postoperative clinical measures
- The literature search retrieved 1511 records, and 21 additional references were found after review of the reference lists of included articles
- After the removal of duplicates, title and abstract screening, and text assessment, 68 studies fulfilled the inclusion criteria for quantitative meta-analyses, which provided data from 3280 participants
- fMRI BC members pointed out the following issues:
  - Due to improvements in technique and advances in the field, overall results would have been better with newer studies, even without the use of fMRI
  - Elements of selection bias may have existed, e.g., due to the urgency of the condition, there may not be time for high grade glioma patients to undergo fMRI and they often enter the OR without pre-surgical mapping
  - Variability in paradigm selection, use of intraoperative mapping techniques, extent of tumor resection and patient functional status limit the overall impact of the results
- For the studies with a comparison group (surgical procedure without presurgical fMRI), the odds ratio was computed
- The random-effects meta-analysis showed that postsurgical functional deterioration was less likely when presurgical functional fMRI mapping was performed
- Results suggested that tumors lower in volume were associated with a higher rate of postsurgical deficits and a higher frequency of insular tumors was associated with a lower rate of postsurgical deficits
- A higher proportion of tumors located in the frontotemporal regions was associated with a higher rate of unfavorable delayed postsurgical outcomes
- Conclusion: From the currently available data, the benefit of preoperative functional MRI planning for the resection of brain tumors appears to reduce postsurgical morbidity
- There was concern that the study did not include new data and is based on a pool of heterogenous studies, however, it may still be worth citing in the fMRI Profile as it indicates overall value of clinical fMRI and adds to the literature with compelling evidence of the benefit of fMRI

## **fMRI Language-Mapping Profile v2.0**

- Dr. Voyvodic has been comparing different ways of calculating LI in addition to 50% AMPLE weighted
- Discussion re: the values chosen for the Claims, confidence intervals, and whether adjustments are needed
- Claims 1 and 2 need more supporting documentation, and the checklist needs more discussion
- Dr. Voyvodic to incorporate Claim language into papers to be submitted for publication
- Dr. Liu had already completed the framework of the fMRI Language-Mapping Profile in late 2019, with text copied and pasted from the Motor-Mapping Profile v1.0

### **Next Steps:**

- Dr. Voyvodic to circulate papers to be submitted for publication based on the language-mapping reproducibility study; this work is informing the fMRI Language-Mapping Profile v2.0 and will support its Claims
- fMRI Language-Mapping Profile v2.0 items on which consensus is still needed will be discussed during the July 7 meeting

**Next call:** Wednesday, July 7, 2021, at 11 a.m. CT (1<sup>st</sup> & 3<sup>rd</sup> weeks of each month)

---

RSNA Staff attempt to identify and capture all committee members participating on WebEx calls. However, **if multiple callers join simultaneously or call in without logging on to the WebEx, identification is not possible.** Call participants are welcome to contact RSNA staff at [QIBA@RSNA.org](mailto:QIBA@RSNA.org) if their attendance is not reflected on the call summaries.