Accepted Manuscript

Changes in cerebellar activation following onabotulinumtoxin A injections for spasticity after chronic stroke: A pilot fMRI study

Chia-Lin Chang, PhD, PT, Douglas J. Weber, PhD, Michael C. Munin, MD

PII: S0003-9993(15)00590-0

DOI: 10.1016/j.apmr.2015.07.007

Reference: YAPMR 56254

To appear in: *ARCHIVES OF PHYSICAL MEDICINE AND REHABILITATION*

Received Date: 24 October 2014

Revised Date: 17 June 2015

Accepted Date: 7 July 2015

Please cite this article as: Chang C-L, Weber DJ, Munin MC, Changes in cerebellar activation following onabotulinumtoxin A injections for spasticity after chronic stroke: A pilot fMRI study, *ARCHIVES OF PHYSICAL MEDICINE AND REHABILITATION* (2015), doi: 10.1016/j.apmr.2015.07.007.

Running Head: fMRI after Stroke

ARTICLE TITLE: **Changes in cerebellar activation following onabotulinumtoxin A injections for spasticity after chronic stroke: A pilot fMRI study**

Chia-Lin Chang [1], PhD, PT, **Douglas J. Weber** [2], PhD, **Michael C. Munin** [3], MD

[1] Department of Kinesiology, University of San Francisco, San Francisco, CA

[2] Defense Advanced Research Projects Agency, Arlington, VA

[3] Department of Physical Medicine & Rehabilitation, University of Pittsburgh, Pittsburgh, PA

Disclosure: This study was funded by University of San Francisco Faculty Development Fund, Brain Imaging Research Center pilot grant, National Institutes of Health Post-Doctoral Training grant (Training Rehabilitation Clinicians for Research Careers) (T32 HD049307), and National Institutes of Health K award (K12 HD055931), as well as financial support from Allergan.

Reprint requests to Chia-Lin Chang, PhD, PT., Harney Science Center 206, 2130 Fulton St. Department of Kinesiology, University of San Francisco, San Francisco, CA, 94117, E-mail: changchialin@gmail.com

ACKNOWLEDGEMENTS

We thank Dr. Peter L. Strick (Neurobiology) and Dr. Michael Boninger (Physical Medicine & Rehabilitation, PM&R) at the University of Pittsburgh (Pitt) for informative discussion and constructive guidance. We thank Dr. Katie Russell (PM&R at Pitt), Dr. Joaquin Anguera (Neurology at the University of California, San Francisco), Dr. Howard J. Aizenstein (Psychiatry at Pitt), and Dr. Joseph H. Ricker (PM&R at Pitt) for their suggestions on biomedical imaging. We thank Dr. Elizabeth R. Skidmore (Occupational Therapy at Pitt) for recommendation of