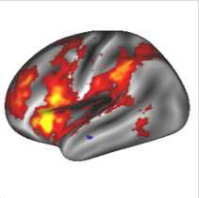

Apr 11, 2022

Resting-state Functional Magnetic Resonance Imaging Under Fast and Fed States in Healthy Human Subjects and Gastroparetic Patients

Kun-Han Lu[1], Kristine Mosier[2], John Wo[2], Terry Powley[1]

[1]Purdue University; [2]Indiana University School of Medicine

dx.doi.org/10.17504/protocols.io.bp2l6bw9rgqe/v1

SPARC
Tech. support email: **info@neuinfo.org**

Kun-Han Lu

This protocol described the steps to acquire and analyze resting-state functional magnetic resonance imaging data under fast and fed states in healthy human subjects and patients with gastroparesis.

DOI

dx.doi.org/10.17504/protocols.io.bp2l6bw9rgqe/v1

Kun-Han Lu, Kristine Mosier, John Wo, Terry Powley 2022. Resting-state Functional Magnetic Resonance Imaging Under Fast and Fed States in Healthy Human Subjects and Gastroparetic Patients. **protocols.io** https://dx.doi.org/10.17504/protocols.io.bp2l6bw9rgqe/v1

NIH SPARC
Grant ID: OT2OD023847

fMRI, human, resting-state, gastroparesis

protocol ,

Jul 29, 2021

Apr 11, 2022

51972

Subjects

1 Twenty healthy subjects (14 females; 6 males) and 15 gastroparetic patients (11 females; 4 males) participated in this study under research protocols approved by the Institutional Review Board at Purdue University and Indiana University School of Medicine. All healthy subjects did not have a prior diagnosis of neurological, psychiatric, or gastrointestinal (GI) disorders. All gastroparetic patients had documented delayed gastric emptying by a standardized 4-h gastric emptying scintigraphy test (Tougas et al., 2000). Written informed consent was obtained from all participants. Standard MRI exclusion criteria were applied.

Experiment design

2 Subjects were studied using a 3T Siemens Prisma MRI scanner in the morning after a 12-h overnight fast. During the fast, subjects were asked to avoid any alcohol, caffeine, or medication that could affect GI function. Every subject underwent 3 fMRI sessions. Every subject first had a 5-min, eyes-closed, resting-state fMRI scan under a fast state. Then, the subject was instructed to consume a 350g meal consisting of blended natural ingredients (128g firm tofu, 95g pineapple chunks, 57g pineapple juice, 32g blueberry, and 38g banana). Immediately after the meal, every subject had another 5-min, eyes-closed, resting-state fMRI scan under a fed state. About 1-hour post-meal, every subject had another 5-min, eyes-closed, resting-state fMRI scan under a fed state.

MRI acquisition

3 T1 and T2-weighted MRI and fMRI data were acquired in a 3T MRI system (Siemens, Magnetom Prisma, Germany) with a 64-channel receive-only phased-array head/neck coil. The fMRI data were acquired with 2 mm isotropic spatial resolution and 1s temporal resolution by using a gradient-recalled echo-planar imaging sequence (multiband = 8, 72 interleaved axial slices, TR = 1000 ms, TE = 31 ms, flip angle = 52°, field-of-view = 21 cm × 21 cm). MRI/fMRI images were preprocessed using a similar pipeline as in the Human Connectome Project (Glasser et al., 2013). Briefly, all fMRI images were corrected for motion and slice timing, aligned to structural images, and normalized to the Montreal Neurological Institute (MNI) space.

Citation: Kun-Han Lu, Kristine Mosier, John Wo, Terry Powley Resting-state Functional Magnetic Resonance Imaging Under Fast and Fed States in Healthy Human Subjects and Gastroparetic Patients https://dx.doi.org/10.17504/protocols.io.bp2l6bw9rgqe/v1