

Cerebral Vasoregulation in Elderly with Stroke-Protocol

Day 1

24-hour beat-to-beat blood pressure monitoring (ABPM): 24-hour beat-to-beat heart rate and BP monitoring using Dynapulse. BP was measured at 20 min intervals during daytime and at 30 min intervals at night.

Raw file: SxxxxA.R

Validated file: SxxxxA.V

Sit-to-stand test

Heart rate, BP and BFV in the middle cerebral artery measured by Doppler ultrasound during 5 min sitting and after 1 and 3 minutes of standing using Labview at 500 Hz. Only the first sit-to-stand test was recorded on Labview (xxxx.a.dat files), the sit-to-stand tests performed in the afternoon were only recorded on 24 hour BP monitoring and ECG 24 hour monitoring (Me6000).

Labview: S####A.dat

Windaq: S####A.wdq

24 hour ECG and EMG monitoring

24-hour ECG and EMG monitoring using ME6000 device.

(ECG, EMG for 24 hours during sleep and daily activities during the protocol sit-to-stand test, walking) ME6000 directory and files) were sampled at 1000 Hz.

Sxxxx_xxxxxxx.markers

Sxxxx_xxxxxxx.tff

Sxxxx_xxxxxxx.txt

Sxxxx_xxxxxxx.nite

Sxxxx-1_c1.dat

Sxxxx-1_c2.dat

12 min-hallway walking: The subject walked in a circular hallway for 12 minutes. Level of exertion, walking distance and speed were measured.

Me6000: EMG, ECG and walk characteristics using foot switches was measured using ME6000 device and signals were capture at 1000Hz.

Pedar Mobile: Foot pressure distribution and step characteristics were measured using Pedar Mobile device. ji4

SxxxxS-1.asc

SxxxxA-1.asc

Beat-to-beat BP monitoring: Beat-to-beat BP was using the Portapress–2 device. File directory (portapress, beatscope-program, portapres- new)

Sxxxxsabeat1-x.dat

Sxxxxsa1-x.dat

Sxxxxsb1-x.dat

Cognitive and executive function neuropsychological testing:

Battery of measures assessing executive function, attention, learning and memory, mood, and activities of daily living.

Day 2

Head-up tilt, vasoreactivity and balance measurements

Instrumentation: Heart rate was measured using a 3-lead electrocardiogram. Beat-to-beat arterial pressure was measured using Portapress-2 device. Respiration was measured using a nasal thermistor.

A transcranial Doppler ultrasonography system was used to monitor BFV in both MCAs. Balance was measured using center of pressure displacement using the force platform,. Cardiovascular, respiratory and TCD signals during the tilt were recorded on Labview at 500Hz(labview, TCD directory ,xxx b.dat files) and cardiovascular,respiratory, TCD signals and balance measures were recorded at 1000 Hz (labview sit-to-stand directory). All analog signals will be recorded at 500 Hz using Labview NIDAQ (National Instruments Data Acquisition System 64 Channel/100 Ks/s, Labview 6i, Austin, TX).

Valsalva maneuver: After rest for 5 minutes in the supine position, the subject took a breath and expire forcefully through a mouthpiece that has a small air-leak, maintaining a pressure at 40 mm Hg on a pressure gauge connected to the mouthpiece for 15 seconds.

Hyperventilation and CO₂ re-breathing: The subject hyperventilated to reduce CO₂ to 25 mm Hg for 3 minutes. The subject was breathing a mixture of 5% CO₂ and 95% air from a re-breather bag to increase CO₂ above baseline to 45 mm Hg for 3 minutes, followed by a 5 minute rest to equilibrate CO₂.

Head-up tilt: Table was tilted to 80° for 10 minutes after supine.

S####B.dat

S####B.wdq

Sit-to-stand test: Subjects will stand for 5 minutes with continuous signal acquisition. Arm BP using a standard blood pressure cuff will be acquired at minute 1, 3 and 5.

S####c.dat

S####c.wdq

SxxxxSc_ch1-10.dat

SxxxxSc_ch1-10.wdq

SxxxSc.xls

SxxxxSC_Stand EO.dat

SxxxxSC_Stand EO.txt

SxxxxSC_Stand EO_B.dat

SxxxxSC_Stand EO_B.txt

SxxxxSC_Stand EO_COPx.dat

SxxxxSC_Stand EO_COPx.txt

SxxxxSC_Stand EO_COPy.dat

SxxxxSC_Stand EO_COPy.txt

SxxxxSC_Stand EC.dat

SxxxxSC_Stand EC.txt

SxxxxSC_Stand EC_B.dat

SxxxxSC_Stand EC_B.txt

SxxxxSC_Stand EC_COPx.dat

SxxxxSC_Stand EC_COPx.txt

SxxxxSC_Stand EC_COPy.dat

SxxxxSC_Stand EC_COPy.txt

MRI

Arterial Spin Labeling at 3T MRI: The subject lie down on the imaging table and the head will be stabilized within the head coil using foam padding to restrict motion artifacts. A mask placed on the subject's face will be connected to the CO₂ rebreathing circuit and the CO₂ monitor.

T1 and T2-weighted imaging: All subjects will have routine T1-weighted (spin echo) and T2-weighted fast spin echo (FSE) and Fluid-attenuation inversion recovery (FLAIR).

Continuous Arterial Spin Labeling (CASL): CASL images will be obtained every 8 seconds and averaged over baseline, hyperventilation and CO₂ rebreathing. Flow images (with spin labeling) and control images (without spin labeling) will be then collected during baseline, hyperventilation and CO₂ rebreathing (10 minutes). Finally, a regional T1-weighted map is obtained using a modification of the spin labeling sequence (5 minutes).

Hyperventilation and CO₂ rebreathing: The subject will hyperventilate to reduce CO₂ to 25 mm Hg for 3 minutes. Then the subject will breathe a mixture of 5% CO₂ and 95% air from the rebreathing bag to increase CO₂ above baseline to 45 mm Hg for 3 minutes.

