Jun 18, 2020

Noninvasive investigation of the cardiodynamic response to 6MWT in people with stroke using impedance cardiography

PLOS One

Alice Jones[1], Fang Liu[2], Raymond CC Tsang[3], Yao Wang[2,4], Jing Zhou[2], Mingchao Zhou[2], Yulong Wang[2]

[1]The University of Queensland, The University of Sydney;

[2]1The First Affiliated Hospital of Shenzhen University, Shenzhen Second People's Hospital, Shenzhen, China;

[3]4MacLehose Medical Rehabilitation Centre, Department of Physiotherapy, Hong Kong;

[4]5Shenzhen Dapeng New District Nan'ao People's Hospital, Shenzhen, China

1 Works for me dx.doi.org/10.17504/protocols.io.6s2hege

Alice Jones
The University of Queensland, The University of Sydney

ABSTRACT

This protocol describes the procedures adopted in a study which aimed to investigate cardiodynamic response (HR, SV, CO, CI) to a 6MWT using impedance cardiography in a cohort of people with stroke.

Title of this study: **Noninvasive investigation of the cardiodynamic response to 6MWT in people with stroke using impedance cardiography**

Fang Liu[1], Alice YM Jones[2,3], Raymond CC Tsang[4], Yao Wang[1,5], Jing Zhou[1], Mingchao Zhou[1], Yulong Wang[1]

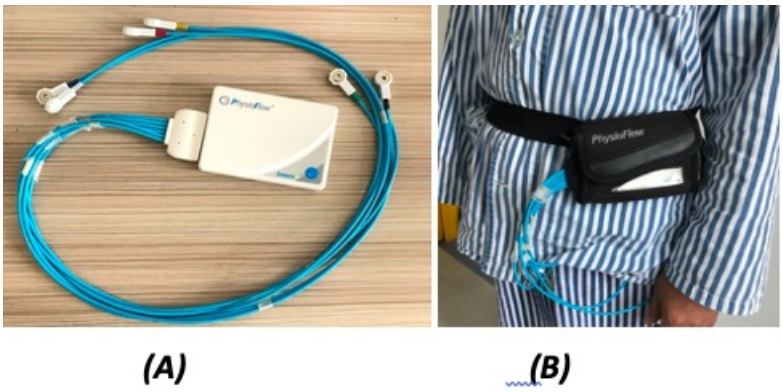

Figure 1. The PhysioFlow®PF07 Enduro™ (A) attached to a patient's waist (B) during the 6MWT

Citation: Alice Jones, Fang Liu, Raymond CC Tsang, Yao Wang, Jing Zhou, Mingchao Zhou, Yulong Wang (06/18/2020). Noninvasive investigation of the cardiodynamic response to 6MWT in people with stroke using impedance cardiography. https://dx.doi.org/10.17504/protocols.io.6s2hege

Figure2 The placement of the electrodes

EXTERNAL LINK

https://doi.org/10.1371/journal.pone.0233000

THIS PROTOCOL ACCOMPANIES THE FOLLOWING PUBLICATION

Liu F, Jones AYM, Tsang RCC, Wang Y, Zhou J, Zhou M, Wang Y (2020) Noninvasive investigation of the cardiodynamic response to 6MWT in people after stroke using impedance cardiography. PLoS ONE 15(6): e0233000. doi: 10.1371/journal.pone.0233000

DOI

dx.doi.org/10.17504/protocols.io.6s2hege

PROTOCOL CITATION

Alice Jones, Fang Liu, Raymond CC Tsang, Yao Wang, Jing Zhou, Mingchao Zhou, Yulong Wang 2020. Noninvasive investigation of the cardiodynamic response to 6MWT in people with stroke using impedance cardiography. **protocols.io** dx.doi.org/10.17504/protocols.io.6s2hege

MANUSCRIPT CITATION please remember to cite the following publication along with this protocol

Liu F, Jones AYM, Tsang RCC, Wang Y, Zhou J, Zhou M, Wang Y (2020) Noninvasive investigation of the cardiodynamic response to 6MWT in people after stroke using impedance cardiography. PLoS ONE 15(6): e0233000. doi: 10.1371/journal.pone.0233000

EXTERNAL LINK

https://doi.org/10.1371/journal.pone.0233000

KEYWORDS

impedance cardiography, 6MWT, stroke

LICENSE

CREATED

Aug 24, 2019

Citation: Alice Jones, Fang Liu, Raymond CC Tsang, Yao Wang, Jing Zhou, Mingchao Zhou, Yulong Wang (06/18/2020). Noninvasive investigation of the cardiodynamic response to 6MWT in people with stroke using impedance cardiography. https://dx.doi.org/10.17504/protocols.io.6s2hege

LAST MODIFIED

Jun 18, 2020

PROTOCOL INTEGER ID

27194

1 Objectives and procedures of the study were explained to the participants who met the inclusion criteria and written informed consent obtained.

2 Demographic data of each participant including age, gender, height, weight, body mass index and lean body mass were recorded.

3 The time elapsed since diagnosis of stroke, medical history, the National Institutes of Health Stroke Scale (NIHSS) and Modified Rivermead Mobility Index (MRMI) were recorded from the patient's medical records.

4 Participants were invited to complete a 6-minute walk test (6MWT) following the American Thoracic Society Guideline on 2 consecutive days.

5 Preparation for measurement of cardiodynamic variables (heart rate HR, stroke volume SV, cardiac output CO, cardiac index CI) by Impedance Cardiography (PhysioFlow®PF07 EnduroTM, Figure 1A) (data collected every second)

6 Electrode placement

6.1 Skin resistance over the neck and thorax region was lowered with NuPrep gel and 70% isopropyl alcohol.

6.2 Pregelled Ag/AgCl electrodes, (Skintact model FS-TB wet-gel; Leonhard Lang Gmbh, Austria) were placed on the left base of the neck above the supraclavicular fossa, the sternal angle, the V6 position and along the left paraspinal region at the xiphoid level (Figure 2).

6.3 Electrodes were then connected to the Enduro^{TM}which was placed in a belt pouch to maintain its stability during the walk (Figure1 B).

7 Oxygen saturation (measured by Heal Force pulse oximeter, POD-3, China) was measured immediately before the 6MWT, at each minute during the 6MWT, and at the end of the 6MWT.

8 Blood pressure (OMRON electronic blood pressure monitor, U30, China) was measured at rest, immediately after, and at 2-minute intervals after the 6MWT.

9 Prior to the 6MWT, each participant was asked to rest in a sitting position for 10 minutes during which baseline

Citation: Alice Jones, Fang Liu, Raymond CC Tsang, Yao Wang, Jing Zhou, Mingchao Zhou, Yulong Wang (06/18/2020). Noninvasive investigation of the cardiodynamic response to 6MWT in people with stroke using impedance cardiography. https://dx.doi.org/10.17504/protocols.io.6s2hege

parameters were measured.

10 Data analysis – HR, SV, CO, CI data were averaged every 10 seconds and data at rest, at every 30th second during the 6 MWT and at every 30th second for 10 minutes after the 6MWT, were subjected to analysis.

11 Data were analyzed using the IBM SPSS Statistics for Windows, Version 23.0 (Armonk, NY: IBM Corp).

Citation: Alice Jones, Fang Liu, Raymond CC Tsang, Yao Wang, Jing Zhou, Mingchao Zhou, Yulong Wang (06/18/2020). Noninvasive investigation of the cardiodynamic response to 6MWT in people with stroke using impedance cardiography. https://dx.doi.org/10.17504/protocols.io.6s2hege