Background:
The six-minute walk test (6MWT) has been used as a primary outcome measure in studies of pulmonary arterial hypertension (PAH). Correlations of 6MWT variables and right heart catheterization (RHC), a standard gold of PAH diagnosis, have not been examined in SSc patients.

Purpose:
To determine the correlations between the 6MWT and RHC variables in SSc patients.

Methods and Patients:
41 SSc patients with 1 test set of RHC, 6MWT and PFT within 12 weeks of the corresponding RHC were retrospectively identified. Data included clinical characteristics, RHC variables: right atrial pressure (RAP), mean pulmonary arterial pressure (mPAP), pulmonary capillary wedge pressure (PCWP), pulmonary vascular resistance (PVR), mixed venous O2 saturation (SvO2), cardiac output (CO); 6MWT variables: 6MWT distance, SpO2 (rest, nadir), Δ SpO2 (SpO2 rest-nadir), heart rate (HR rest, peak), HR change (Δ HR, HR peak-rest), Borg Dyspnea Index (BDI rest, peak), Borg Fatigue Index (BFI rest, peak); and PFT variables: FVC and DLCO (% predicted). Forehead probe pulse oximeter was used to measure SpO2.

Results:
PAH was defined as mPAP > 25 mmHg at rest and PCWP ≤ 15 mmHg. Interstitial lung disease (ILD) was defined as % FVC < 85. PAH was defined as mPAP > 25 mmHg at rest and PCWP ≤ 15 mmHg. Interstitial lung disease (ILD) was defined as % FVC < 85.

Conclusions:
- Correlations of 6MWT variables and right heart catheterization (RHC), a standard gold of pulmonary hypertension diagnosis, have not been examined in SSc patients.
- Correlations of 6MWT variables and right heart catheterization (RHC), a standard gold of pulmonary hypertension diagnosis, have not been examined in SSc patients.
- Further study is needed to validate HR response as an outcome measure of SSc-PAH.

Abstract

The 6-minute walk test (6MWT) is a standardized measure of submaximal exercise capacity which has been served as a primary outcome measure of idiopathic pulmonary hypertension. Although not fully validated, it has been used as an outcome measure in clinical trials of pulmonary arterial hypertension in SSc (PAH-SSc).

Correlations of 6MWT variables with right heart catheterization (RHC), a standard gold of pulmonary hypertension diagnosis, have not been examined in SSc patients.

Purpose:
To determine the correlations between the 6MWT and RHC variables in a sample of SSc patients.

Methods

Subjects:
- 41 SSc patients attending at University of Michigan between June 2005 and May 2008 with one test set of RHC, 6MWT and PFT within 12 weeks of the corresponding RHC were retrospectively identified.

Data:
1. Clinical characteristics
2. RHC variables
   - Right atrial pressure (RAP)
   - Mean pulmonary arterial pressure (mPAP)
   - Pulmonary capillary wedge pressure (PCWP)
   - Pulmonary vascular resistance (PVR)
   - Mixed venous O2 saturation (SvO2)
   - Cardiac output (CO)
3. 6MWT variables
   - % predicted FVC, DLCO
4. Echocardiography
   - 6MWT distance (6MWD)
5. Pulmonary Function Test
   - FVC, %DLCO

Conclusions:
- 6MWD and heart rate change show statistically significant low to moderate correlation with the RHC variables.
- Correlations between RHC variables and HR peak, SpO2 rest, BDI, and BFI peak, if significant, are low to moderate. HR rest, SpO2 rest, and BDI peak, if significant, reveal no significant correlations with RHC variables.
- Further study is needed to validate HR response as an outcome measure of SSc-PAH.