Effect of Six-Minute Walk Test on Pro-BNP Levels in Patients with Pulmonary Arterial Hypertension

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**Background:** Plasma pro-BNP levels are often elevated in response to right ventricular (RV) volume and pressure overload, parameters potentially affected by exercise. Plasma pro-BNP levels change in association with long-term changes in pulmonary hemodynamics, thereby serving as a potential biomarker in pulmonary arterial hypertension (PAH). The 6 Minute Walk Test (6MWT) and Pro-BNP level are often checked in a single office visit. There is no universal standard for measuring Pro-BNP levels relative to the timing of the 6MWT. Based on the studies in normal subjects indicating that pro-BNP levels changes after exercise; we hypothesized that the pro-BNP might rise after the 6MWT, potentially impacting clinical decisions.

**Methods:** This is an interim analysis of a single-center study. Patients with WHO Group 1 PAH on active therapy at a stable dose for 30 days or more were enrolled. After resting the patient for 30 minutes, blood was drawn for baseline pro-BNP and a 6MWT was performed. Pro-BNP levels were drawn immediately after the 6MWT and 1 and 2 hours later. Pro-BNP was measured using a commercially available ELISA kit. The levels before exercise and after exercise were compared using student’s paired t tests.

**Results:** There were 11 female and 3 male subjects. The mean age was 51.5 years +/- 10. Six patients had SLE related PAH, 4 had idiopathic PAH, 3 had portopulmonary hypertension, and 1 had HIV-related PAH. The mean PA pressure was 52 mmHg +/- 16 with a mean pulmonary vascular resistance of 10 wood units +/- 4. The majority of the patients were on multimodality PAH therapy, including parenteral prostacyclins. Mean 6MWT distance was 409 meters +/- 128. In 10/14 patients the pro-BNP level increased immediately after the 6MWT; in 12/14 patients the pro-BNP level was elevated at 1 hour post exercise. In the majority of the patients the pro-BNP fell to baseline 2 hours post 6MWT.

**Conclusion:** There appears to be a trend of pro-BNP level increasing immediately after exercise and continuing to be elevated at one hour. Pro-BNP levels then return to baseline at 2 hours post 6MWT. We are continuing to enroll patients in this study and hope to be able to draw more definitive conclusions as we continue beyond this small interim analysis.

**Type:** Clinical science