EP4_107

Evaluation of the Effectiveness of In-hospital Treatment of Chronic Heart Failure Patients During Exacerbation by Non-invasive Net Lung Impedance Monitoring During Admission

Michael Shochat, Avraham Shotan, Mark Kazatsker, Aya Asif, Ilia Shochat, Iris Dahan, Aaron Frimerman, Lubov Vasilenko, Yaniv Levy, David Blondheim, Elena Noyman, Tatiana Sigalov, Simcha Meisel

Cardiology, Hillel Yaffe Medical Center, Israel

Background:

Prevention of hospitalization for decompensation chronic heart failure (CHF) patients is unresolved issue. The accuracy of implantable and noninvasive devices in predicting deterioration before hospitalization is only 50%.

Aim:

Evaluate the abilitya newnon-invasive method for lung impedance monitoring to predict CHF decompensation.

Methods:

CHF patients were monitored by a device that derives the net lung impedance (LI) from measured trans-thoracic impedance. This device is 25-fold more sensitive than existing ones. A decreasing LI reflects accumulation of lung fluid. Changes in the clinical status of patients and LI were recorded monthly. The optimal LI was calculated for each patient. LI changes from this value are represented as percentage change.

Results:

200 CHF patients (67±11 years-old, male-85%, LVEF- 26±9%) at NYHA II/III/IV (77/90/33) were recruited after hospitalization for acute heart failure (AHF) and followed in an outpatient clinic for 26±22 months. Initial NT-proBNP level was 3771±5185 pg/ml. Patients were treated according to guidelines. 48 patients (24%) died due to AHF. Of study patients, 106 were not hospitalized while the other 94 required 326 re-hospitalizations for AHF. LI decreased progressively before hospitalization. Values of LI at 1 month, 3 weeks, 2 weeks, 1 week, 3 days prior to and at the day of hospitalization decreased by 23.7±11; 24.7±11; 27.8±13.2; 33.1±12.2; 34.1±10.5 and 36.8±10.5% ($p<0.001$) from baseline value. Importantly, in all cases of AHF hospitalizations LI decreased by more than 22% from baseline. In CHF patients who had no hospitalizations for AHF during the monitoring period, LI decreased by 10.2±5.2%.

Conclusions:

Noninvasive LI monitoring is sufficiently sensitive to predict hospitalization for exacerbation of CHF within 30 days before admission. LI decrease by > than 22% from baseline represents a high risk for re-hospitalization for AHF with 100% sensitivity and 90% specificity.ChangesIandntensification of therapy is mandatory when LI < -22%.