

Lung Impedance-Guided Preemptive Treatment of Chronic Heart Failure Patients in Outpatient Clinic

Shochat, Michael; Shotan, Avraham; Kazatsker, Mark; Asif, Aya; Levy, Yaniv; Dahan, Iris; Blondheim, David; Meisel, Simcha

Hillel Yaffe Medical Center, Cardiology, Hadera, Israel

Background: Decreasing re-hospitalizations for Acute Heart Failure (AHF) in patients with chronic heart failure (CHF) is an important medical and economic goal.

Aim: We evaluated the feasibility that the policy of Lung Impedance (LI) guided preemptive therapy in CHF patients followed in the outpatient clinic may decrease re-admissions for AHF and improve survival. Methods: LI was measured by a new noninvasive device based on transverse distribution of electromagnetic energy through the chest. LI decrease reflects increase in pulmonary congestion. Changes in the clinical status of patients and LI were concurrently recorded at each outpatient heart failure clinic visit (29±19 days).

Results: 163 CHF patients (72±10 years) at NYHA II/III/IV (60/73/30) were randomized to LI-guided preemptive treatment (Group 1, n=82) or to conventional therapy administered by clinical evaluation (Group 2, n=81) according to current guidelines. A LI decrease >15% from baseline was used to initiate early preventive therapy since it has been shown previously that decompensation begins at this level of LI decrease. LVEF and NT-proBNP in groups 1 and 2 at study onset were 22±7%, 5714±2421 pg/ml, and 22±6% and 5752±2501 pg/ml, respectively (p=NS). Rate of re-hospitalizations was lower in group 1 (0.57 vs. 1.02/per patients per year, p<0.01). More patients in group 2 were hospitalized for AHF during the follow up period than in group 1 (45 vs. 32%, p=0.08). During follow up period cardiovascular mortality in group 1 was lower than in group 2 (11 vs. 24, p<0.01, respectively). As a result of the higher mortality in group 2, follow up time was longer in group 1 (30.7±25.5 vs. 20.7±14.7 months, p<0.01).

Conclusions: Noninvasive lung impedance-guided preemptive treatment of CHF patients in an outpatient clinic resulted in fewer hospitalizations for AHF and improved survival.