

Functional Evaluation of Beta-Blocking Treatment in Hypertensive Patients with and without Left Ventricular Dysfunction

Eliezer Klainman^{1,2,3}, Avi Caspi², Rafi Vishnizer³, Ilanit Moshe³, Alex Yarmulovsky³, Gershon Fink³

¹ Cardiac Health Center, Rehabilitation & Preventive Cardiology, Gefen, Givatayim, Israel,

² Cardiology Institute, Rehovot, ³ Pulmonary Institute, Exercise Physiology Unit, Kaplan MC, Rehovot, Israel

Objective: To evaluate the physiological effect of beta-blockers in hypertensive patients(pts) with and without LV dysfunction compared to lone hypertensive pts treated with vasodilators by cardiopulmonary exercise test(CPET).

Design and Methods: 63 pts, 42 males and 21 females, were studied. They were divided into three groups:

A)16 lone hypertensive pts treated only with vasodilator agents.

B)26 lone hypertensive pts treated only with beta-blocking agents.

C)21 hypertensive pts with LV dysfunction treated with beta-blockers along with other medications.

A CPET was performed in all the pts while taking their medications, including beta-blockers. The following indices were monitored and measured breath by breath during exercise: HR, BP, O₂-consumption(VO₂), O₂-pulse(O₂P), Ventilatory anaerobic threshold(VAT), and Respiratory exchange ratio(RER).

Maximal exercise capacity was considered when RER reached value of 1.15 or more.

Peak values of the cardiopulmonary indices were compared among the three groups, for each index separately, and P values less than 0.05 were considered statistically significant.

Results: The following table summarized the results:

Group	N	age	peak-HR*	peak-VO ₂ *	peak-O ₂ P*	VAT(%VO ₂ -max)	peak-RER
A	16	58+/-13	90+/-8#	96+/-9#	108+/-13#	55+/-8#	1.17+/-0.12
B	26	59+/-10	69+/-12&	69+/-11&	102+/-33#	43+/-9&	1.17+/-0.1
C	21	53+/-8	72+/-8&	57+/-10s	79+/-14&	34+/-5s	1.18+/-0.09

*Expressed by % related to normal predicted values.

Statistically significant (referred to each column separately): # vs & or \$; & vs \$.

The indices "age" and "peak-RER" show no differences among the three groups.

Conclusions: Beta-blocking treatment demonstrates a significant physiological disadvantage compared to vasodilators in pts with lone hypertension. The physiological function in hypertensive pts with LV dysfunction is worse, and it is still to determine the balance between the benefit and the disadvantage of beta-blockers in these patients.