Letters to the Editor

Reverse epidemiology of systolic blood pressure levels on admission with the mortality risk in heart failure: Is it a matter of obesity paradox?

To the Editor:

We read with interest the work by Lee et al. [1], which reported that in a pooled cohort consisting of 3538 Korean patients with heart failure, those with increased systolic blood pressure levels on admission had lower risk of overall mortality during an average 1-year follow-up period. However, those with pre-existing hypertension had a similar risk of all-cause mortality as compared with those without hypertension. The reverse epidemiology of the association between pre-existing hypertension and overall mortality has been well recognized in not only Western heart failure cohorts but also in East Asian cohorts, which contradicts the findings of the present study and this needs further interpretation [2].

In their multivariable analysis for comparing the risk of overall mortality between the hypertension vs. the non-hypertension group, systolic blood pressure levels on admission were controlled as well. However, this may result in an over-adjustment if there was a strong correlation between pre-existing hypertension and systolic blood pressure levels on admission. In addition, obesity or body mass index was not adjusted in their model.

As we know, increased body mass index values were inversely associated with all-cause mortality in patients with established cardiovascular disease, including heart failure [2,3]. Since obesity is usually clustered with hypertension and elevated blood pressure, the model should include the variable to be adjusted. Hothi et al. demonstrated that obese patients with heart failure had higher levels of blood pressure, cardiac output, cardiac power output, and O2 consumption, as well as circulatory power at rest and at peak exercise [4]. Cardiac power output defined as the product of cardiac output and mean blood pressure at peak exercise or in critical illness is a powerful predictor of mortality [5]. Physiologically, obesity might be related to increased cardiac output and blood pressure at rest. Therefore, obese patients may have higher baseline circulatory power than non-obese ones in the same stage of heart failure. These findings could explain why higher systolic blood pressure levels on admission, frequently along with obesity, were associated with better survival outcome in patients with heart failure in the present study.

In our opinion, the authors should highlight the interplay between obesity, hypertension, and systolic blood pressure levels on admission and add the variable of body mass index into the model if they have a strong relationship to see whether there was any change in the association with overall mortality.

Conflict of interest

The authors declare no conflict of interest.

Funding

The authors declare no financial support from any institute.

References


Yen-Po Lin (MD)
Emergency Department, Tzu-Chi General Hospital, Taipei Branch,
New Taipei City, Taiwan

Chih-Lu Han (MD, PhD)
Department of Medicine, Taipei Veterans General Hospital,
Taipei, Taiwan

Gen-Min Lin (MD, MPH)a,b, Gen
Department of Medicine, Hualien Armed Forces General Hospital,
Hualien, Taiwan
Division of Cardiology, Department of Internal Medicine, Tri-Service General Hospital, National Defense Medical Center, Taipei, Taiwan

aCorresponding author at: Department of Medicine, Hualien Armed Forces General Hospital, No. 163, Jiali Rd., Xincheng Township, Hualien County 97144, Taiwan.
Tel.: +886 3 826 0601; fax: +886 3 826 1370
E-mail address: farmer507@yahoo.com.tw (G.-M. Lin).

Received 2 March 2016
Available online 16 June 2016

http://dx.doi.org/10.1016/j.jcc.2016.04.019