DEVELOPMENT AND VALIDATION OF AN OBESITY RISK SCORE TO PREDICT MORTALITY IN PATIENTS WITH CORONARY ARTERY DISEASE

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Background: Among patients with CAD, body mass index (BMI) and waist-hip ratio (WHR) have divergent associations with mortality. We hypothesized that a risk score combining BMI and WHR would improve adiposity-related mortality prediction in CAD patients.

Methods: We included data from 5 studies enrolling 15,923 CAD patients across 3 continents. The sample was randomly divided into two parts: 67% (n=10682) for development and 33% (n=5241) for validation. Beta coefficients based on Cox-proportional hazards model (adjusted for age, sex, smoking, hypertension, diabetes, heart failure and MI) were used to create the risk score in development set. Following points were assigned proportional to their regression coefficients to the BMI [obese=0 (reference); normal=3; underweight=6; overweight=1] and WHR [low=0 (ref); intermediate=2; high=4] categories. This score was applied to the validation set.

Results: Figure outlines the Kaplan-Meier curves and hazard ratios for obesity scores in all patients (top) in the validation set. The association of obesity risk scores with mortality was more prominent in women than men (bottom). The mortality risk associated with a “very high risk” score (HR, 95% CI: 4.3, 3.3-5.7) was higher than the highest risk categories of BMI (underweight: 3.2, 2.4-4.2) or WHR (high: 2.3, 1.9-2.6) alone.

Conclusion: A prediction score using both BMI and WHR discriminated risk very well in CAD patients and can be applied as a clinical tool for stratifying mortality risk based on adiposity.