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Complex relationship among obesity, acute kidney injury, and long-term mortality in coronary artery bypass grafting

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Objectives : Obesity is an important health concern and related with several comorbidities and mortality. However, its relationship with acute kidney injury (AKI) and long-term mortality remains unresolved, particularly in Korean patients undergoing coronary artery bypass grafting (CABG).

Methods : A total of 1,899 patients (aged ≥18 years) were retrospectively reviewed from two tertiary referral centers between 2004 and 2010. Obesity was defined using body mass index (BMI), according to the World Health Organization recommendation. The odds ratios (ORs) and hazard ratios (HRs) for post-surgical AKI and all-cause mortality were calculated after adjusting for multiple covariates. Patients were followed for 86 ± 37.3 months (maximum 12 years).

Results : The proportions of normal weight, underweight, overweight, pre-obese, and obese status were 32.0%, 2.2%, 27.1%, 35.2%, and 3.6%, respectively. Post-surgical AKI developed in 633 patients (33.4%). The obese group had a higher OR of AKI [2.67 (1.538-4.618)] than the normal weight group (P<0.001), whereas other groups with abnormal weight status did not confer the higher risk of AKI than the normal weight group. This result suggest that obesity was an indicator of the AKI risk in the CABG subset. However, the relationship trend with mortality was different from the above one. During the follow-up period, 556 patients (29.3%) died. The group with underweight status had a higher HR of mortality [1.91 (1.250-2.907)] than the normal weight group, whereas the groups with overweight and pre-obese status had lower HRs than the normal weight group, as follows: 0.68 (0.546-0.858) and 0.82 (0.669-1.009) in overweight and pre-obese groups, respectively. The obese group had a similar mortality rate to the normal weight group. These results suggest that normal weight status did not guarantee the lowest mortality in the CABG subset.

Conclusions : Obesity is related with AKI, but not with high mortality in Korean patients undergoing CABG. This complex relationship should be monitored in clinical practice, based on the consideration for several confounding factors.

Keywords : Obesity, AKI, mortality ; Korean patients undergoing CABG