Nutritional screening a potential tool for determining heart attack, angina prognosis

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In a study published today in the *Journal of the American College of Cardiology* of more than 5,000 acute coronary syndromes (ACS) patients, 71.8% were considered malnourished by at least one nutrition screening test, and worsening malnutrition status was associated with higher mortality and major adverse cardiovascular events (MACE), such as another heart attack or stroke.

"Screening for malnutrition scores may be an easy way to determine which ACS patients are at high risk of adverse outcomes and has the added benefit of being a very simple calculation, as many of the variables are taken through routine testing in the emergency setting," said Sergio Raposeiras Roubín, MD, Ph.D., a clinical cardiologist at University Hospital Álvaro Cunqueiro and researcher at the Centro Nacional de Investigaciones Cardiovasculares in Spain. "Malnutrition is also a potentially modifiable risk factor for these patients, as clinicians could start nutritional interventions during hospitalization and continue after discharge by coordinating with rehabilitation centers and programs."

In this retrospective study, researchers used the Registry of Acute Coronary Syndrome from University Hospital of Vigo to identify 6,023 patients with ACS admitted between January 2010 and September 2017. ACS is an umbrella term for medical conditions impacting blood flow to the heart muscle, including heart attacks—both non ST-segment Elevation Myocardial Infarction (NSTEMI) and ST-segment Elevation Myocardial Infarction (STEMI)—and unstable angina or chest pain. Patients with incomplete data for admissions or follow-up and patients diagnosed with leukemia or lymphoma were excluded. The final study cohort included 5,062 patients who were 74.5% men, all white race and had a median age of 66.2 years. Among the enrolled patients 10.6% had unstable angina, 49% had NSTEMI and 40.4% had STEMI.

Patients were classified as underweight, normal weight, overweight or obese, according to body mass index. All patients were screened for malnutrition using three calculators:

- The Controlling Nutritional Status score (CONUT)
- The Nutritional Risk Index (NRI)
- The Prognostic Nutritional Index score (PNI)

Malnutrition ranged from 8.9% with the PNI, 49.8% with the CONUT and 59.5% with the NRI score, while 38.5% (CONUT) and 20% (NRI) had mild malnutrition, which PNI does not calculate. Moderate to severe malnutrition was calculated in 11.2% (CONUT), 39.5% (NRI) and 8.9% (PNI) of patients. Using any degree of malnutrition, 8.9% were classified as malnourished by all three scores and 28.2% were not malnourished by any score.

Patients with malnutrition, as measured by any of the three scores were older, more likely to be women, and more likely to have atrial fibrillation, anemia and reduced left ventricular ejection fraction. The highest prevalence of malnutrition was found in patients with a body mass index considered underweight or normal weight. However, a significant proportion of patients considered overweight or obese were malnourished.

Over 3.6 years of follow-up, 16.4% of patients died and 20.7% had MACE, which includes cardiovascular mortality, another heart attack or stroke. The researchers found worsening malnutrition status was associated with increased risk of poor outcomes regardless of the malnutrition score used. While the CONUT and PNI outperformed the NRI at predicting mortality and MACE, the CONUT had higher success than the PNI for both outcomes.

"Many clinical cardiologists are not aware of the prevalence of malnutrition, leading it to go unrecognized and untreated," Raposeiras said.

"Our study demonstrates the importance in screening for [malnutrition](#) in all patients admitted for ACS regardless of body mass index. By doing so we may be able to improve risk assessment in these patients and subsequent interventions for secondary prevention."

In an accompanying editorial, Andrew M. Freeman, MD, of National Jewish Health in Denver, said, "It's time for the CVD professional to arm itself with the most cost-effective and powerful tool in the battle against CVD: nutrition and lifestyle medicine."

Study limitations include the single-center retrospective nature, as well as the lack of comparison of the prognostic value of nutritional screening tools with more complex comprehensive nutritional assessments such as questionnaires or food diaries.

More information: *Journal of the American College of Cardiology* (2020). [DOI: 10.1016/j.jacc.2020.06.058](#)

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