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Clinical association between epicardial fat thickness and dietary macronutrients with metabolic syndrome in Korean men

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Statement of the Problem: Visceral fat, including the epicardial fat is known to be an independent risk factor of Metabolic Syndrome (MS), diabetes, and cardiovascular diseases. However, many researchers have focused only on visceral fat accumulation in the abdomen. They have not been interested in visceral fat accumulated on the surface of the heart or other organs. Low Dose Chest Computed Tomography (LDCT) is a useful tool for lung cancer screening. However, many physicians seem to be focusing only on the lung lesions and atherosclerosis of the aorta and coronary arteries.

Materials and Methods: Epicardial fat thickness was measured in the left main coronary artery fat tissue (LMCA-fat) by LDCT scans in 1,027 Korean men. We conducted the dietary surveys to investigate the relationship between LMCA-fat and the nutritional status of the population.

Findings: Of the total 1,027 participants, 34.8% (N=357) of men confirmed having MS. As expected, participants with higher LMCA-fat thickness were older ($P<0.001$). Moreover, body mass index, waist circumference, blood pressure, total cholesterol and LDL-cholesterol of the participants tended to increase according to LMCA-fat thickness. Among participants with the highest tertile of LMCA-fat, the odds ratio (OR) of MS was found to increase in the high fat consumption group (1.259, 95% CI, 1.037–1.720) and increase in the high carbohydrate consumption group (1.217, 95% CI, 1.604–1.987).

Conclusion & Significance: The epicardial fat thickness measured by LDCT is significantly associated with the prevalence of MS in Korean men. High fat and high carbohydrate consumption were also confirmed to be associated with the risk of MS in the highest epicardial fat thickness group. In addition, there is a possibility that the association between epicardial fat thickness and MS risk may be potentially changed depending on dietary fat and carbohydrate intake.

Biography

Hyejin Chun has her expertise in evaluation, and passion for improving metabolic health and wellbeing. She has been studying and educating Nutrition, Obesity, Metabolic Syndrome, and Diabetes for many years in both hospitals and educational institutions. She has also been working in health checkup centers for more than 10 years to build and implement a nutritional health promotion model. In addition, she has been conducting various research and academic activities at the Korean Society of Obesity, Korean Family Medicine Society, and Korean Medical Association.

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