SUPPLEMENTAL MATERIALS

Comparative associations of NAFLD and MAFLD with coronary artery calcification: a cross-sectional and longitudinal cohort study

Short title: MAFLD and coronary artery calcification

Ki-Chul Sung1†*, M.D., Ph.D., Tae Kyung Yoo[2]†, M.D., MS; Mi Yeon Lee[3], Ph.D.; Christopher D Byrne[4], M.B. B.Ch., Ph.D., Ming-Hua Zheng[5,6,7,8], M.D., Ph.D.; Giovanni Targher[9], M.D.

†These two authors (Doctors. Sung and Yoo) contributed equally to the study

[1]Division of Cardiology, Department of Internal Medicine, Kangbuk Samsung Hospital, Sungkyunkwan University School of Medicine, Seoul, Republic of Korea

[2]Department of Medicine, MetroWest Medical Center, Framingham, MA, USA

[3]Division of Biostatistics, Department of R&D Management, Kangbuk Samsung Hospital, Sungkyunkwan University School of Medicine, Seoul, Republic of Korea

[4]Nutrition and Metabolism, Faculty of Medicine, University of Southampton, Southampton, UK; Southampton National Institute for Health and Care Research, Biomedical Research Centre, University Hospital Southampton, UK

[5]MAFLD Research Center, Department of Hepatology, The First Affiliated Hospital of Wenzhou Medical University, Wenzhou, China

[6]Wenzhou Key Laboratory of Hepatology, Wenzhou, China

[7]Institute of Hepatology, Wenzhou Medical University, Wenzhou, China

[8]Key Laboratory of Diagnosis and Treatment for The Development of Chronic Liver Disease

in Zhejiang Province, Wenzhou, China

[9]Section of Endocrinology, Diabetes and Metabolism, Department of Medicine, University

and Azienda Ospedaliera Universitaria Integrata of Verona, Verona, Italy

*Corresponding author: Ki-Chul Sung, M.D., Ph.D.

Division of Cardiology, Department of Internal Medicine, Kangbuk Samsung Hospital,

Sungkyunkwan University School of Medicine, Seoul, Republic of Korea

#108, Pyung Dong, Jongro-Ku, Seoul 110-746, Republic of Korea

Phone: +82-2001-2804

Fax: +82-2001-2799

E-mail: kcmd.sung@samsung.com

Table S1. Baseline characteristics of participants who were CACs=0 at baseline and remained CACs=0 or who developed CACs>0 at follow-up (in longitudinal analyses).

|	Overall	CACs = 0 (at follow up)	CACs > 0 (at follow up)	*P*-value
Number	41,341	34,233	7,108	
Age, years	41.88±12.57	38.97±10.64	55.89±11.68	<0.001
Male sex, %	29766 (72)	24336 (71.09)	5430 (76.39)	<0.001
Current smoker, %	8530 (20.63)	6953 (20.31)	1577 (22.19)	<0.001
High alcohol intake, %	7260 (17.56)	5802 (16.95)	1458 (20.51)	<0.001
Higher education, %	27098 (65.55)	23597 (68.93)	3501 (49.25)	<0.001
BMI, kg/m^2	24.54±3.5	24.42±3.55	25.1±3.18	<0.001
Waist circumference, cm	85±9.69	84.5±9.85	87.27±8.59	<0.001
Systolic BP, mmHg	114.56±12.92	113.63±12.64	119.04±13.29	<0.001
Diastolic BP, mmHg	72.9±9.73	72.28±9.63	75.87±9.64	<0.001
Fasting glucose, mg/dL	98.06±18.43	96.26±15.57	106.74±26.78	<0.001
Hemoglobin A1c, %	5.66±0.66	5.59±0.56	6.0±0.94	<0.001
HOMA-IR score	1.44 (0.93 - 2.18)	1.41 (0.92 - 2.14)	1.58 (1.01 - 2.45)	<0.001
ALT, U/L	22 (16 - 33)	22 (15 - 33)	24 (18 - 35)	<0.001
AST, U/L	21 (18 - 27)	21 (17 - 27)	24 (20 - 30)	<0.001
GGT, U/L	26 (17 - 43)	25 (16 - 42)	30 (20 - 51)	<0.001
Triglycerides, mg/dL	105 (73 - 155)	102 (71 - 151)	119 (85 - 173)	<0.001
HDL-cholesterol, mg/dL	55.58±14.75	56.2±14.86	52.62±13.85	<0.001
LDL-cholesterol, mg/dL	128.36±34.32	127.65±33.39	131.79±38.31	<0.001

Total cholesterol, mg/dL	196.53±36.53	196.28±35.36	197.72±41.72	0.006
Lipid-lowering medications, %	2767 (6.69)	1401 (4.09)	1366 (19.22)	<0.001
NAFLD, %	12873 (34.11)	10146 (32.2)	2727 (43.77)	<0.001
MAFLD, %	15681 (37.93)	12164 (35.53)	3517 (49.48)	<0.001
hs-CRP, mg/dL	0.05 (0.03 - 0.11)	0.05 (0.03 - 0.1)	0.06 (0.03 - 0.12)	<0.001
Type 2 diabetes, %	3247 (7.85)	1639 (4.79)	1608 (22.62)	<0.001
Hypertension, %	8814 (21.35)	5365 (15.69)	3449 (48.56)	<0.001
History of CAD, %	582 (1.41)	280 (0.82)	302 (4.25)	<0.001
History of dyslipidemia%	8963 (21.68)	6124 (17.89)	2839 (39.94)	<0.001
Regular exercise, %	6080 (14.71)	4769 (13.93)	1311 (18.44)	<0.001
Metabolic risk abnormalities				
1) Waist ≥90/80 cm	14624 (37.48)	11330 (35.33)	3294 (47.44)	<0.001
2) BP ≥130/85/drugs	10516 (25.44)	6884 (20.11)	3632 (51.1)	<0.001
3) TG ≥150 mg/dL	11151 (26.97)	8774 (25.63)	2377 (33.44)	<0.001
4) HDL ≤40/50 mg/dL	6174 (15.82)	4756 (14.83)	1418 (20.42)	<0.001
5) Prediabetes status	18188 (44.01)	13972 (40.82)	4216 (59.33)	<0.001
6) HOMA-IR score ≥2.5	7688 (18.68)	5998 (17.57)	1690 (24.08)	<0.001
7) hs-CRP ≥0.2 mg/dL	4650 (12.58)	3859 (12.37)	791 (13.73)	0.004

Values are expressed as means ± standard deviations, medians (interquartile ranges), or percentages.

High alcohol intake was defined as >30g/day in men and >20g/day in women.

Abbreviations: NAFLD, non-alcoholic fatty liver disease; MAFLD, metabolic dysfunction-associated fatty liver disease; BMI, body mass index; BP, blood pressure; HOMA-IR, Homeostatic model assessment of insulin resistance; AST, aspartate aminotransferase; ALT, alanine aminotransferase; GGT, gamma-glutamyltransferase; HDL, high-density lipoprotein; LDL, low-density lipoprotein; hs-CRP, highly sensitive C-reactive protein; CAD, coronary artery disease; BP, blood pressure; TG, triglycerides.

Figure S1. Distribution of CAC scores among the included participants.

Histogram of the CAC score. X axis = Coronary Artery Calcium Score, AU; Y axis = Density.
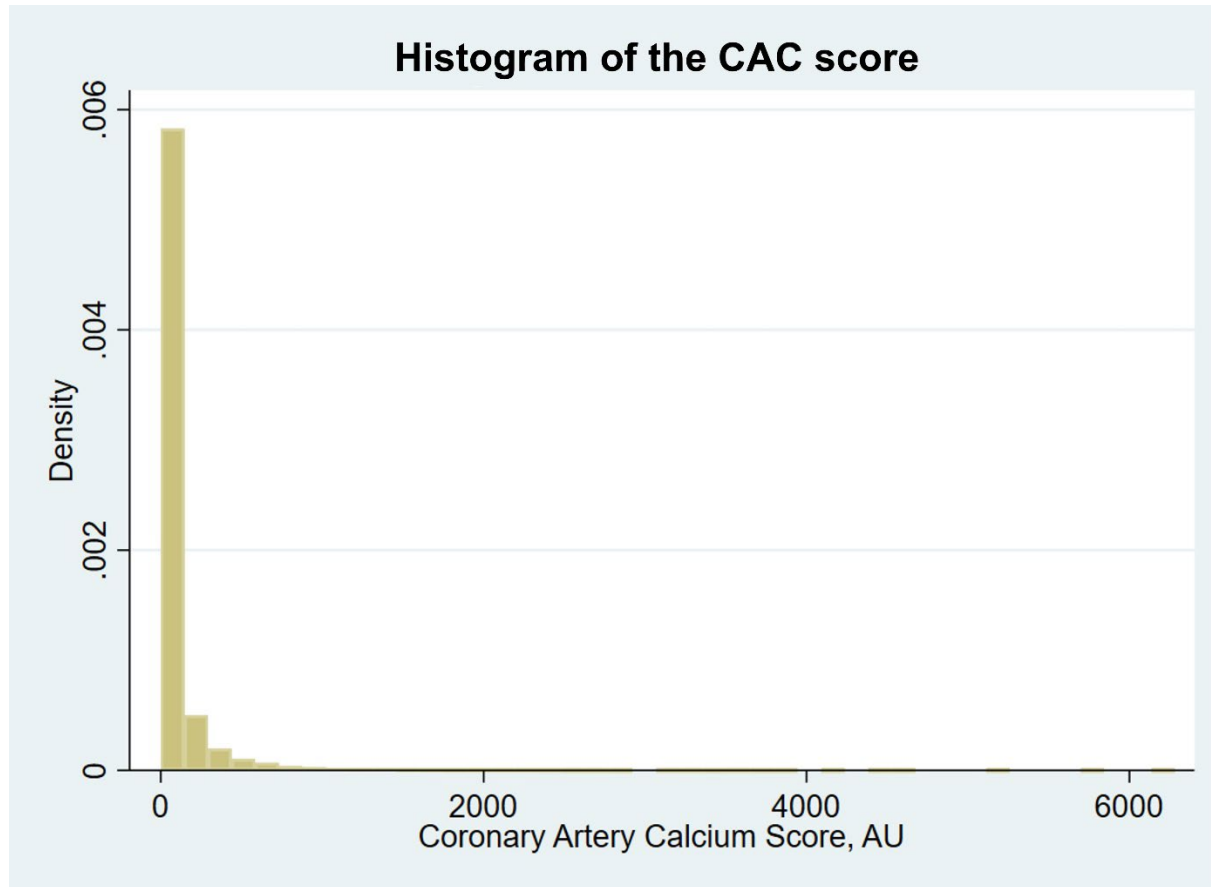
X axis=Coronary Artery Calcium Score; Y axis=probability density

Abbreviations: CAC, coronary artery calcification