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The natural history of premature coronary artery disease over 20 years: the AFIJI registry

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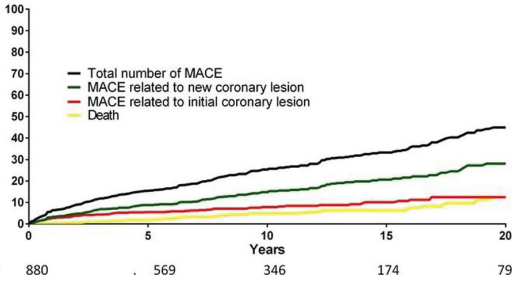
Background: The long-term natural history of premature coronary artery disease (CAD), defined as ischemic heart disease before 45 year-old, is unknown.
Purpose: The primary objective was to describe the evolution of premature CAD over 20 years of follow-up and determine the risk of recurrent major adverse cardiovascular events (MACE) defined as death, MI, ischemic stroke and revascularization. The second objective was to assess the independent correlates of this primary endpoint.
Methods: The multicenter prospective AFIJI (Appraisal of risk Factors in young Ischemic patients Justifying aggressive Intervention) registry was started in January 1996 enrolling all consecutive patients presenting with angiographically established CAD before the age 45. The last follow-up was obtained in January 2017.
Results: A total of 880 patients were enrolled and followed up on average for 9.6 years (IQR). Patients were mainly males (88%) active smokers (77%) aged 41 years (36–43) presenting with an acute MI (79%) due to single vessel CAD (60%). Family history of CAD (40%) and hypercholesterolemia (51%) were common while diabetes (11%) and systemic inflammatory disease (10%) were less frequent. The vast majority of patients (97%) underwent coronary revascularization predominantly with drug-eluting stents (51%). One out of three patients (n=263, 29.9%) presented a recurrent event (total number of MACE= 398). Myocardial infarction (n=209, 23.8%) and coronary revascularization (n=126, 14.3%) were the most frequent events predominantly related to the occurrence of new coronary atherothrombotic lesions (15.4% vs 7.5%, p<0.001, HR=2.1, 95% CI [1.5- 2.6] for new versus initial lesion, respectively) (Figure). All-cause death (n=55, 6.3%) occurred within a median time of 8.4±years while ischemic stroke (n=9, 0.9%) was less frequent. Independent correlates of MACE were smoking continuation, the presence of a concomitant chronic inflammatory disease, a multi-vessel CAD status and diabetes.

Figure : Time-to-Event Curves for Major Adverse Cardiovascular Events



Conclusion: Premature coronary artery disease is an aggressive and chronic disease with a high rate of recurrences and a frequent evolution towards multivessel disease.

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Impact of international guidelines' differing approaches to the risk stratification of patients with suspected stable angina: Insights form PROMISE and SCOT-HEART

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Background: Despite consensus that non-invasive testing is of limited utility in low-risk individuals with stable angina, international guidelines have adopted differing approaches to defining this cohort.
Purpose: We compared the efficiency and safety of major guidelines for the assessment of stable angina due to coronary artery disease (CAD) including risk-based (American College of Cardiology/American Heart Association [ACC/AHA] and European Society of Cardiology [ESC]) and symptom-focused (National Institute for Health and Care Excellence [NICE]) strategies.
Methods: Patient-level data was obtained from the Prospective Multicentre Imaging Study for Evaluation of Chest Pain (PROMISE) and Scottish Computed Tomography of the Heart (SCOT-HEART) trials. Pre-test probability was assessed according to published criteria and patients dichotomised into low-risk and intermediate/high risk groups according to the definitions from each guideline. The primary endpoint was the presence of obstructive CAD on computed tomography coronary angiography (CTCA). The secondary endpoints were coronary revascularisation at 90 days and cardiovascular death or non-fatal myocardial infarction (CVD/MI) up to 3 years. To confirm guideline utility in distinct clinical settings, the study cohorts were analysed separately.
Results: In total, 13,773 patients (PROMISE 10,003; SCOT-HEART 3,770) were included in the analysis of whom 6,160 had CTCA (PROMISE 4,541, SCOT-HEART 1,619). The proportions of patients identified as low risk by the ACC/AHA, ESC and NICE guidelines respectively were 2.5%, 2.5% and 10.0% within PROMISE, and 14.0%, 19.8% and 38.4% within SCOT-HEART. All guidelines identified lower rates of obstructive CAD, revascularisation and CVD/MI in low-risk patients (Table). Identification as low-risk according to any of the 3 guidelines was associated with a negative predictive value for obstructive CAD of ≥0.90 in both trial cohorts.

Outcomes across guideline risk groups

	ACC/AHA Guideline		ESC Guideline		NICE Guideline	
	Low risk	High risk	Low risk	High risk	Low risk	High risk
PROMISE						
Obstructive CAD	3 (2.8%)	534 (12.0%)	3 (2.8%)	534 (12.0%)	39 (8.6%)	498 (12.2%)
Revascularisation	3 (1.2%)	468 (4.8%)	3 (1.2%)	468 (4.8%)	23 (2.3%)	449 (5.0%)
CVD/MI	2 (0.8%)	155 (1.6%)	2 (0.8%)	155 (1.6%)	9 (0.9%)	148 (1.6%)
SCOT-HEART						
Obstructive CAD	9 (4.7%)	350 (24.5%)	15 (4.9%)	344 (26.2%)	56 (9.5%)	303 (29.5%)
Revascularisation	2 (0.4%)	249 (7.7%)	4 (0.5%)	247 (8.2%)	7 (0.5%)	244 (10.5%)
CVD/MI	2 (0.4%)	71 (2.2%)	4 (0.5%)	69 (2.3%)	17 (1.2%)	56 (2.4%)

Conclusions: Compared to traditional, risk-based guidelines (ACC/AHA, ESC), symptom-focused assessment (NICE) identified a greater proportion of low-risk chest pain patients, with similar rates of CVD/MI. These results suggest that a symptom-focused assessment may be an effective strategy to identify low-risk patients deriving limited benefit from non-invasive testing.
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P4209
Coronary heart disease in relation to general and central adiposity in the UK Biobank: A cohort study of 500 000 men and women

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Introduction: Excess adiposity is a major cause of coronary heart disease (CHD). Although useful, body-mass index (BMI) is an imperfect measure of body fat, and therefore may not fully account for adiposity-associated CHD risk. Previous studies comparing associations between adiposity measures and CHD risk have not adequately corrected for measurement error and within-person variability (regression dilution bias), and large-scale evidence assessing the utility of bioimpedance analysis (BIA) is lacking.
Aims: This study aims to compare the association of six measures of adiposity with CHD risk after correcting for measurement error and within-person variability.
Methods: BMI, waist circumference, waist-to-hip ratio (WHR), waist-to-height ratio, body fat percentage (BFP) and trunk fat percentage were measured in 457,936 UK Biobank participants aged 40–69 without known vascular disease at baseline assessment, 2006–2010. Cox regression was used to estimate overall and sex-specific hazard ratios (HR) for incident CHD per standard deviation (SD) of each selected adiposity measure. Resurvey measurements in 18,737 participants approximately 5 years after recruitment enabled quantification of, and correction for, within-person variability to obtain associations with usual levels of adiposity.
Results: There were 5,239 first-ever CHD events over a mean follow-up period of 6.2 years. Measurement error and within-person variability was less extreme for BMI (regression dilution ratio: 0.92) than other measures, particularly WHR (0.66). In analyses adjusted for age, sex, socio-economic status, smoking and alcohol consumption, increasing usual levels of adiposity were positively and log-linearly associated with CHD risk across all measures. Associations were notably stronger for usual levels of central adiposity, particularly WHR (HR per usual SD 1.49, 95% CI 1.42–1.56) compared with BMI (1.20, 1.17–1.24). The relevance of usual WHR to CHD was particularly strong among women (1.63, 1.55–1.71). Compared with BMI, increasing usual BFP was more strongly associated with a higher risk of CHD (1.31, 1.25–1.37), which remained significant even after adjusting for BMI (1.14, 1.06–1.23). The observed prospective associations were partially mediated by blood pressure, pulse rate and diabetes, which together explained at least one-third of the observed excess risk.
Conclusion: Anthropometric measures of central adiposity or body fat distribution are associated with greater CHD risk compared with BMI, and should be considered when investigating CHD risk in large contemporary populations. BFP estimated using BIA technology appears independently associated with CHD beyond BMI.
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