

CARDIOMAG NEWSLETTER

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Dear Doctor,

Greetings from Micro Labs Limited. We are happy to bring you “Cardio Mag” which contains latest and interesting news in the field of Cardiology

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Dietary management of patients at high risk for cardiovascular disease

Introduction: Worldwide, prevalence of Cardiovascular risk factors such as hypertension, dyslipidaemia and diabetes are increasing¹ and it is a leading causes of death, accounts for one third of all mortality. In the past decade, CVD mortalities have increased globally by 12.5%². Unhealthy diet is the one of the Significant risk factor of CVD, so encouraging healthy diet adherence is important in decreasing CVD morbidity and mortality². Adults who follow to guidelines for a healthy diet and physical activity have lower cardiovascular morbidity and mortality than those who do not follow³. Healthy dietary patterns like Mediterranean diet, have been associated with lower concentrations of some inflammatory biomarkers and a reduced risk of CVD⁴. Persons irrespective of risk status can gain health benefits from healthy eating behaviours and appropriate physical activity³. The aim of this study is to assess the dietary actions taken by subjects presenting with at least one of the main cardiovascular risk factors

Method: A Cross-sectional, multicentre observational study was conducted in 78 centres from 16 ESC countries. Participants aged 18-79 years, devoid of CVD but treated with antihypertensive and/or lipid lowering and/or antidiabetic therapy were interviewed >6 months and <2 years after medication initiation. Information regarding dietary management was collected by questionnaire. Descriptive statistics were used to evaluate the prevalence rates of dietary actions taken by the participants.

Results: A total of 2759 participant's and overall participation rate is 70.2%, 1589 women. Nearly ≥60 years of patients 1415 aged, 43.5% with obesity, 71.1% on antihypertensive, 29.2% on lipid-lowering and 31.5% on antidiabetic treatment. After dietary action taken, among participants with obesity, 71.8% described reducing fat and 69.6% reducing sugar intake. 62.0% reported consuming fewer calories, and 48.7% reported reducing excessive alcohol intake 47.7% reported having received dietary advice to lose weight.

Among participants on antihypertensive drug therapy, 53.9% of the participants reported being on a special diet recommended by a doctor, and 71.4% reported having reduced their salt intake. 76.0% reported having increased fruit and vegetable intake, 70.4% reported having reduced their fat intake, 60.6% reported having changed the type of fat intake, 60.1% reported consuming more fish, and 44.0% reported consuming oilier fish. Patients with diabetes, overall 57.2% of participants reported being on a special diet prescribed by a health professional, 80.8% reported having reduced sugar intake, 77.6% reported increased fruit & vegetable intake; 76.5% reported having reduced fat, and 51.3% reported having reduced excessive alcohol intake.

Discussion: Participants with obesity reported having reduced their caloric intake through reduction of fat or sugar intake, same values are reported in a previous study. Salt reduction

has been shown to decrease blood pressure levels and measures for salt reduction are beneficial and cost-effective for cardiovascular disease

Table: 1 Dietary management

Table 4. Dietary management and actions taken during the last three years by patients using lipid-lowering drugs at interview, EUROASPIRE V.

	Special diet *		Less fat ‡		Changing type of fat intake ‡		More F&V ‡	
	N	% and 95% CI	N	% and 95% CI	N	% and 95% CI	N	% and 95% CI
All	922	56.0 (52.7 - 59.2)	929	70.4 (67.3 - 73.3)	907	60.6 (57.4 - 63.8)	932	76.0 (73.1 - 78.7)
Centre								
Bosnia & Herzegovina	65	84.6 (73.5 - 92.4)	61	88.5 (77.8 - 95.3)	58	66.7 (52.5 - 78.9)	62	85.5 (74.2 - 93.1)
Bulgaria	36	72.2 (54.8 - 85.8)	39	53.8 (37.2 - 69.9)	38	38.5 (23.4 - 55.4)	39	66.7 (49.8 - 80.9)
Croatia	84	72.6 (61.8 - 81.8)	84	71.4 (60.5 - 80.8)	76	63.1 (51.9 - 73.4)	82	81.7 (71.6 - 89.4)
Czech Republic	33	33.3 (18.0 - 51.8)	33	57.6 (39.2 - 74.5)	33	51.5 (33.5 - 69.2)	33	69.7 (51.3 - 84.4)
Egypt	31	90.3 (74.2 - 98.0)	31	87.1 (70.2 - 96.4)	31	67.7 (48.6 - 83.3)	31	54.8 (36.0 - 72.7)
Greece	91	85.7 (76.8 - 92.2)	95	81.1 (71.7 - 88.4)	95	70.8 (60.7 - 79.7)	96	84.4 (75.5 - 91.0)
Kazakhstan	13	76.9 (46.2 - 95.0)	13	76.9 (46.2 - 95.0)	13	69.2 (38.6 - 90.9)	13	76.9 (46.2 - 95.0)
Kyrgyzstan	6	33.3 (4.3 - 77.7)	6	66.7 (22.3 - 95.7)	6	66.7 (22.3 - 95.7)	6	83.3 (35.9 - 99.6)
Lithuania	60	45.0 (32.1 - 58.4)	62	80.6 (68.6 - 89.6)	60	78.3 (65.8 - 87.9)	63	85.7 (74.6 - 93.3)
Poland	76	39.5 (28.4 - 51.4)	77	58.4 (46.6 - 69.6)	77	53.9 (42.1 - 65.5)	76	65.8 (54.0 - 76.3)
Portugal	95	51.6 (41.1 - 62.0)	95	73.7 (63.6 - 82.2)	94	61.5 (51.0 - 71.2)	96	85.4 (76.7 - 91.8)
Romania	101	74.3 (64.6 - 82.4)	102	81.4 (72.4 - 88.4)	100	69.0 (59.0 - 77.9)	101	88.1 (80.2 - 93.7)
Russian Federation	31	67.7 (48.6 - 83.3)	31	80.6 (62.5 - 92.5)	31	74.2 (55.4 - 88.1)	31	74.2 (55.4 - 88.1)
Sweden	28	7.1 (0.9 - 23.5)	28	32.1 (15.9 - 52.4)	28	39.3 (21.5 - 59.4)	28	42.9 (24.5 - 62.8)
Ukraine	77	33.8 (23.4 - 45.4)	77	62.3 (50.6 - 73.1)	73	56.6 (44.7 - 67.9)	80	71.3 (60.0 - 80.8)
United Kingdom	95	15.8 (9.1 - 24.7)	95	54.7 (44.2 - 65.0)	94	42.6 (32.4 - 53.2)	95	62.1 (51.6 - 71.9)

Conclusion: Study concludes that less than 6 out of 10 participants at high cardiovascular risk report being on a specific diet and dietary management of cardiovascular risk factors is unevenly implemented in different ESC countries.

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A System Review to evaluate the association between coffee consumption and cardiovascular disease

Introduction: Worldwide, the coffee is the most popular beverages and is enjoyed regardless of individuals' ethnicity, sex, or cultural background because of its psychoactive effects, including mental alertness, vigilance, reaction time, and productivity¹. The health benefits and risks of coffee have long been discussed, with various outcomes reported in terms of cardiovascular disease (CVD) and the possible cardio-protective effect could reflect the components of coffee that have antioxidant and anti-inflammatory actions². Coffee contains caffeine, polyphenols, and diterpenes, which have been shown to effect cardiovascular disorders. Coffee promotes the release of epinephrine, norepinephrine, and renin and increases the sensitivity of myocardium to calcium, which can affect heart rhythm³. Concerns have been raised about the ability of coffee to induce cardiac arrhythmias and increase blood pressure. The aim of this study is to evaluate the association between coffee consumption and cardiovascular disease.

Method: We conducted a literature search of the PubMed/ MEDLINE database for relevant articles using a combination of key terms such as “coffee,” “coffee consumption,” “cardiovascular diseases,” “hypertension,” “cholesterol,” “myocardial infarct,” and “atrial fibrillation.” We included studies that investigated the association of coffee consumption and various cardiac conditions. This narrative review synthesizes findings from previous research and recent studies on the topic.

Results:

Recently published studies have shown that regular coffee consumption is associated with a decreased risk of developing hypertension, heart failure, and atrial fibrillation. However, results are unpredictable with regard to coffee consumption and risk of developing coronary heart disease.

Most studies show a J-shaped association, as it means moderate coffee consumption resulted in decreased risk of coronary heart disease and heavy coffee consumption resulted in increased risk. In addition, boiled or unfiltered coffee is more atherogenic than filtered coffee because of its rich diterpenes content that inhibits bile acid synthesis which ultimately affects lipid metabolism.

On the other hand, filtered coffee, which is essentially devoid of the above-mentioned compounds. Manner of coffee preparation plays a major role which influence the cholesterol. Studies found that moderate coffee consumption was associated with less mortality.

Discussion: The FHS, CHS, and ARIC studies showed that high coffee intake was associated with a decrease in long-term risk of heart failure independent of sex, baseline history of myocardial infarction, and diabetes. Studies have shown moderate coffee consumption to be associated with a reduction in all-cause and cardiovascular disease–related mortality, whereas higher amounts of coffee consumption were detrimental to health.

Conclusion:

This review concludes that moderate coffee consumption is associated with a reduction in all-cause and cardiovascular disease–related mortality, hypertension, cholesterol, heart failure, and atrial fibrillation and most favourable outcomes are associated with moderate coffee consumption.

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Preeclampsia in Daughters Is Associated with CVD in Parents

Introduction:

Women with a history of preeclampsia have greatly amplified risks of cardiovascular disease compared with women without the history¹. As World health organization represents preeclampsia (PE) is an important problem in obstetrics, affecting 2–8% of pregnancies and is the most common causes of maternal morbidity and mortality². Physiological pregnancy is characterized by high blood volume, low vascular resistance, and blood pressure decrease, especially in the first and second trimesters. low circulating blood volume, high blood pressure, and high vascular resistance were observed in PE². Increased risks of ischemic heart disease and cerebrovascular disease events and overall CVD mortality after PE was observed. During the early 10-year period following delivery, the risk for CVD, heart failure and stroke are relatively high. The connotation between PE and early CVD progression is not totally understood³. The objective of this study is to evaluate the preeclampsia in daughters is associated with CVD in parents.

Method:

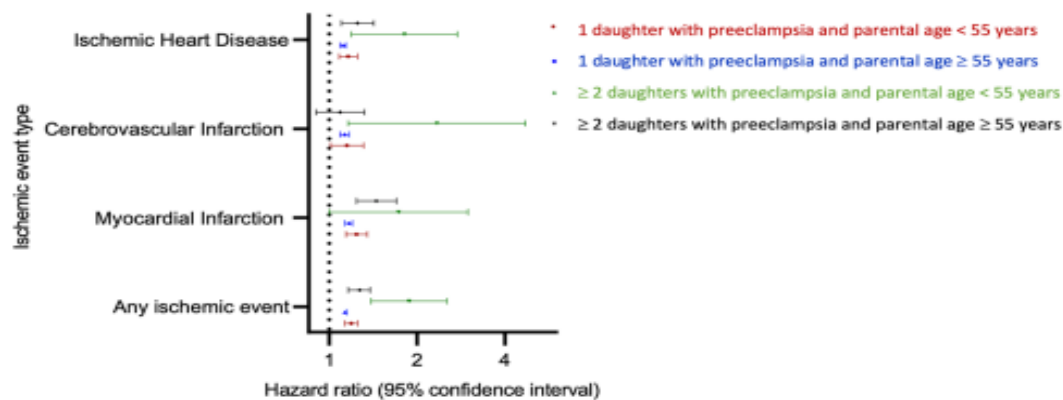
All women in Denmark ≥ 15 years of age with one or more pregnancy of >20 weeks' duration between 1978 and 2017 were identified and parents using the Danish Family Relations Database the parents were considered. Number of daughters with preeclampsia complicating one or more pregnancies was the exposure. A daughter was considered to have preeclampsia in a given pregnancy if she was registered in the National Patient Register with preeclampsia, eclampsia or haemolysis or elevated liver enzymes and low platelets (HELLP) syndrome. A parent was considered to have had CVD on the date of his/her first registration in the National Patient Register or Causes of Death Register with myocardial infarction, cerebrovascular infarction disorder.

Results:

A total of 1,299,310 persons who had one or more daughters with eligible pregnancies between 1978 and 2017 were considered. The majority of parents that is 56% had one daughter, 34% had two daughters, and only 10% had three or more daughters. Having one daughter with a history of preeclampsia was associated with a 19% increase in the rate of any parental CVD at <55 years of age, compared without preeclampsia. As shown in figure 2 Having two or more daughters with a history of preeclampsia was more strongly associated with parental CVD in this age group. During follow-up, 87,251 parents had one or more daughters with preeclampsia. Examination of gestational age at preeclampsia onset in daughters, the results suggested that

preterm pre-eclampsia, particularly in multiple daughters, might be most strongly associated with CVD in parents.

Figure: 2 Hazard ratios for cardiovascular disease in parents by parental age, number of daughters with preeclampsia



Discussion:

Several studies have linked preeclampsia with increased risk of later CVD⁴, strength of association for mothers and fathers supports the hypothesis that preeclampsia is linked with CVD through common heritable factors. Stronger associations for mothers than for fathers was seen and strong familial aggregation of preeclampsia in the female line as decidedly smaller coupled with mothers' increased risk of CVD after their own preeclampsia.

Conclusion:

Cohorts having one or more daughters with a history of preeclampsia was associated with increases in the risk of CVD in parents and this study suggest that suggest that preeclampsia and CVD share common genetic mechanism

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Reference:

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Measurement of Perivascular fat attenuation index by coronary computed tomography angiography as a tool for assessment of ischaemia-causing lesions

Coronary artery disease (CAD) is often difficult to diagnose in patients with symptoms of acute coronary syndrome (ACS) if coronary angiography does not show severe stenosis of the coronary arteries, so measurement of the perivascular fat attenuation index (FAI) may help to identify coronary inflammation¹. Coronary artery disease (CAD) as a precursor of myocardial infarction (MI) has a significant impact on survival and quality of life and is further associated with a significant health-related economic burden². Fat attenuation index (FAI) is also considered to be an imaging marker that can effectively stratify patients with clinical cardiovascular disease high perivascular FAI value is associated with the prediction of functional myocardial ischaemia and cardiac mortality³. The aim of this study is to present a case of a patient with signs of ACS but with no significant coronary artery stenosis. In this study they used CCTA images to identify increased perivascular FAI and intravascular ultrasonography to diagnose spontaneous coronary artery dissection (SCAD) in the left circumflex artery (LCX) of this patient

Case Report

A 49-year-old woman with the clinical characteristics of ACS was referred to hospital with history of chest pain since 4 days. Negative T waves in leads II, III and Avf was noted by 12-lead electrocardiogram (ECG). Hypo kinesis of the lateral-posterior wall of the left ventricle was seen in Transthoracic echocardiography (TTE). Patient's myocardial Troponin-T and creatine phosphokinase (CPK) isoenzymes levels were elevated and Coronary computed tomography angiography (CCTA) images showed decreased myocardial perfusion in the posterior wall myocardium but it did not show significant coronary artery stenosis.

A 3-mm width of the coronary adventitia was traced along the total length of the three main coronary arteries in the CCTA images. Our measurements differed from those of the original report because we traced the proximal 40-mm segments of all three major epicardial coronary vessels. The total length of the coronary artery was approximately 155 mm for all three branches. As shown in figure 2, they identified perivascular FAI using the attenuation histogram of perivascular fat, within the range -30 to -190 HU, as measured by CCTA.

Coronary angiography identified moderate stenosis in the distal segment of the LCX. Intravascular ultrasonography was used to evaluate lesion morphology and identified an intramural haematoma in the LCX, consistent with type 3 SCAD.

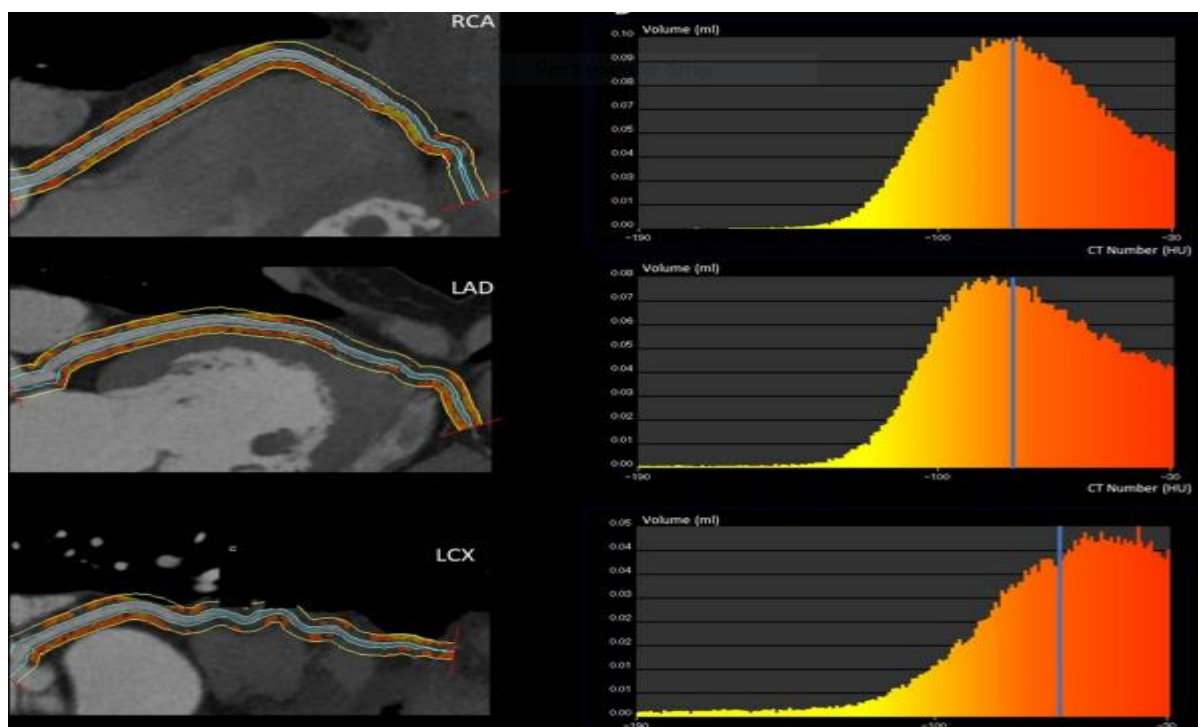


Figure 2: Perivascular FAI analysis of the RCA, LAD and LCX

Discussion:

Cardiovascular Risk Prediction using Computed Tomography (CRISP-CT) study mapped perivascular fat attenuation in the proximal RCA, the LAD and the LCX in two cohorts of patients⁴

Conclusion: Case study shows that using CCTA to measure perivascular FAI in the coronary arteries will be useful tool to confirm a diagnosis of SCAD in ACS patients.

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