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Special article

Vascular Risk and Cardiac Rehabilitation 2015: A Selection of Topical Issues

Selección de temas de actualidad en riesgo vascular y rehabilitación cardiaca 2015

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DIET

In cardiovascular (CV) prevention, interest in diet is focused on the Mediterranean diet because a great deal of high-quality scientific evidence, such as that of the PREDIMED study,[1] has shown a 30% reduction in severe CV complications and overall mortality in individuals at high CV risk.

These results are not solely due to the beneficial effect of this diet on classical risk factors (lipid profile, hypertension, waist circumference, obesity, insulin resistance, type 2 diabetes mellitus [DM2], and carotid atherosclerosis),[2] but to additional emerging risk factors (PREDIMED substudies). Antioxidants, anti-inflammatory molecules, and poyphenols[3] improve endothelial function, increase nitric oxide synthesis, and reduce thrombosis. The concept of nutrigenomic modulation,[4] implicated in the oxidation of low-density lipoprotein and in postprandial triglyceridemia, fundamentally involves epigenetics and establishes different intermediate and final dyslipidemia phenotypes.[5] Although the Mediterranean diet is a sustainable paradigm of CV prevention,[6] and despite the proximity of this diet, current data show that 60% of the Spanish population with high cardiovascular risk is obese. In advanced stages, obesity reduces life expectancy by 10 years due to CV death, overall mortality, and cancer.[7]

PHYSICAL EXERCISE

The importance of regular physical exercise is more and more convincing, not only to prevent ischemic events in individuals with CV risk factors, but also to prevent the development of heart failure.[8] However, recent studies are now answering the question of whether there is a J curve for physical exercise. A recently published study[9] involving more than 1 million women and a 9-year follow-up found that 49 113 women had a primary coronary event, 17 822 had a first cerebrovascular event, and 14 550 had a first venous thromboembolic event. Women reporting moderate activity had a significantly lower risk of all 3 events than inactive women (all $P < .001$). Conversely, women who engaged in strenuous physical activity had a higher risk of coronary events ($P = .002$), cerebrovascular disease ($P < .001$), and venous thromboembolic events ($P < .001$) than moderately active women. Thus, it appears that there is indeed a J curve for physical activity.

Finally, an increasing number of initiatives promote early "active and heart-healthy lifestyles", even in school-going children.[10]

SMOKING

Smoking remains the leading cause of preventable death and our main public health problem. According to Eurobarometer 2015 data, the prevalence of smoking in Spain is 29% (35% in men and 25% in women), slightly higher than the European average of 26%.

The latest revision of "Smoking and Health: Report of the Advisory Committee of the Surgeon General of the Public Health Service" was published in 2014; the report summarizes new evidence on the impact of smoking on age-related macular degeneration, DM2 (30%-40% higher risk for smokers), colorectal and liver cancer, tuberculosis, erectile dysfunction, orofacial clefts in the offspring of smokers, ectopic pregnancy, rheumatoid arthritis, inflammation, and impaired immune function. In addition, exposure to passive smoking is associated with a 20% to 30% increased risk of stroke, as well as higher risk of acute myocardial infarction, lung cancer, acute respiratory diseases, and sudden infant death syndrome.[11]

In a large prospective series evaluating the effects of smoking and smoking cessation in a cohort of more than 200 000 American adults,[12] all-cause death was 3 times greater in smokers than in never smokers, with a life expectancy reduction of more than 10 years, largely due to neoplasms and respiratory and CV diseases. Smoking cessation before 40 years of age reduced the risk of smoking-related death by 90%.

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Abbreviations

ACS: acute coronary syndrome
CV: cardiovascular
DM: diabetes mellitus
LDL-C: low-density lipoprotein cholesterol

One factor that has triggered wide social debate, and some differences of opinion among health care professionals, is the electronic cigarette. Those who defend its benefits as a preventive or risk reduction strategy have challenged the precautionary principle espoused by the World Health Organization, the main scientific societies, including the Spanish Society for Cardiology, and the Spanish National Committee of Smoking Prevention. There is still no solid evidence indicating that the electronic cigarette is an effective strategy to stop smoking,[13] there are persistent doubts about its long-term safety, and, above all, from the point of view of public health, there are concerns that the electronic cigarette could become a gateway to nicotine addiction. Thus, and given the existence of safe and effective alternative strategies, the electronic cigarette should not be recommended to patients wishing to quit smoking.[14]

A systematic review investigating the impact of smoking on the CV morbidity and mortality of diabetic patients found a 50% higher CV mortality rate in diabetic patients who smoked, with a significant reduction in those who managed to quit.[15]

The Report to the Spanish Parliament evaluating the impact on public health of Law 42/2010, which extended the Spanish smoking ban to public places, summarized the benefits of this law on public health: a reduced prevalence of daily smokers (from 26.2% in 2009 to 24.0% in 2011), a 90% reduction in pollution from nicotine and fine particles in recreational areas, and fewer admissions for acute myocardial infarction, ischemic heart disease, and asthma. In the case of acute myocardial infarction in people older than 24 years, 2 falls in the admission rates were seen after the introduction of the law (2006) and its amendment (2011), of about 4% for each law in men, and a notable general reduction between 2005 and 2011 in both sexes (Figure 1).

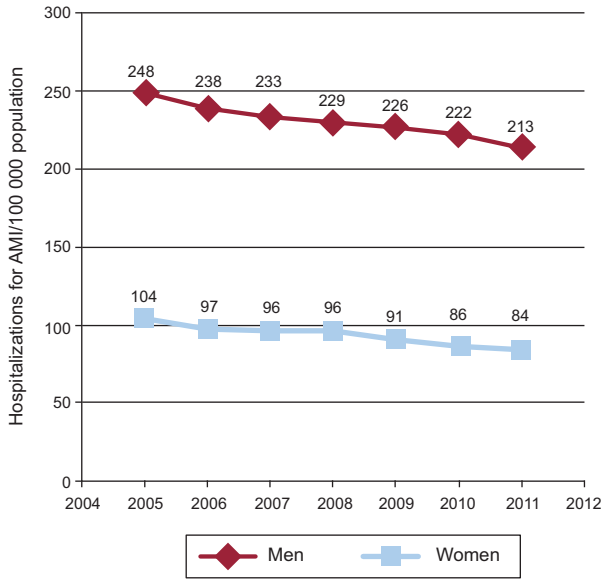

Figure 1. Distribution of the rate of hospitalization for acute myocardial infarction per 100 000 population adjusted by sex and age. AMI, acute myocardial infarction. Data extracted from the Spanish Ministry of Health, Social Services, and Equality. Available at: http://www.msssi.gob.es/estadEstudios/estadisticas/cmbdhome.htm

HYPERTENSION

A recently published updated treatment protocol for patients with coronary heart disease recommended that clinicians include the correct management of other risk factors when treating hypertension, especially in patients with heart failure, individualize the main antihypertensive treatment according to the concomitant disease, and maintain the therapeutic targets of systolic blood pressure below 140/90 mmHg. In some selected patients, values less than 130/80 mmHg can be recommended, but always in conjunction with a slow reduction in the arterial pressure values with medical therapy. For octogenarians with orthostatic hypotension, such low targets are not required.[16]

The new clinical trials presented at the 2015 European Congress of Cardiology have shown the superior efficacy of spironolactone over doxazosin and bisoprolol in combating resistant hypertension, defined as uncontrolled hypertension despite treatment with the maximum tolerated doses of 3 antihypertensive medications (angiotensin-converting enzyme inhibitors/angiotensin receptor blockers, calcium antagonists, and thiazides) in the PATHWAY-2 trial[17] (Table 1). The PATHWAY-3 trial[18] showed that a combination of 2 diuretics, amiloride and hydrochlorothiazide, significantly reduced blood pressure to a greater extent than each drug alone and had a beneficial effect on glucose metabolism and potassium concentration. Thus, according to the current evidence, the effective treatment of hypertension could actually be quite inexpensive.

LIPIDS

In the field of lipids, notable recent publications include the results of the IMPROVE-IT study[19] and the new data obtained from the ODYSSEY LONG TERM[20] and OSLER[21] trials on the efficacy, safety, and CV events of PCSK9 (proprotein convertase subtilisin/kexin type 9) inhibitors.

The IMPROVE-IT trial evaluated the usefulness of ezetimibe in patients treated with statins after acute coronary syndrome (ACS). In that study, 18 144 patients were randomized to simvastatin in monotherapy or simvastatin and ezetimibe together, with a mean follow-up of 6 years. The primary endpoint was a composite of CV death, nonfatal myocardial infarction, unstable angina with rehospitalization, coronary revascularization (at least 30 days after randomization), and nonfatal stroke. During hospitalization due to ACS, the mean low-density lipoprotein cholesterol (LDL-C) was 93.8 mg/dL; at 1 year, it was 69.9 mg/dL in the simvastatin monotherapy group and 53.2 mg/dL in the simvastatin-ezetimibe group ($P < .001$), with a 24% reduction in the LDL-C values with the simvastatin-ezetimibe combination. Regarding efficacy (Table 2),

Table 1
Primary Endpoint of the PATHWAY-2 Study

	Difference in SBP (home), mmHg*	*P*
Spironolactone vs placebo	−8.70	< .001
Spironolactone vs bisoprolol/doxazosin	−4.26	< .001
Spironolactone vs doxazosin	−4.03	< .001
Spironolactone vs bisoprolol	−4.48	< .001

SBP, systolic blood pressure.
* Difference in systolic blood pressure (home readings) and comparators (n = 314). Data extracted from Williams et al.[17]