

Cardiovascular risk index and adequate nutrition

Índice de riesgo cardiovascular y nutrición adecuada

To the Editor: We have appreciated some articles about cardiovascular risk factors published in *Revista Médica de Chile* and would like to address comments about the most recent, from Dr. Tomás Romero¹. This author discussed the modifiable factors, with focus on the need of real improvement in the socioeconomic features involved in the actual epidemic of obesity. He analyses the actual *conundrum* linking diverse risk factors and the development of atherosclerosis, and proposes more advantageous risk-benefit and cost-effective measures.¹ Indeed, cardiovascular disease constitutes a major cause of death in the whole world; main risk factors are sedentary life, excess of weight, arterial hypertension, and dyslipidemia^{1,2}. Several studies developed in South American countries emphasize the frequency of obesity and arterial hypertension among schoolchildren and young individuals²⁻⁴, and call the attention to a correlated increase in the frequency of cardiovascular disorders. Inadequate lifestyle, which includes non-balanced diets (high in salt, poor in fibers and in monounsaturated fats, and rich in cholesterol, saturated and *trans* fats), is a main risk factor for cardiovascular diseases^{5,6}. The purpose of the present comments is to exemplify the favorable effect of a well-balanced diet in common disorders, which may affect South American patients of diverse age groups. A 68 year-old female with antecedent of metabolic syndrome, type 2 diabetes, coronary disease, arterial hypertension and autoimmune hepatitis, was admitted because of cholestasis. She was in use of NPH insulin, acetylsalicylic acid, spironolactone, furosemide, and diltiazem. Her previous diet was considered inadequate; although weight loss was obtained, she persisted with high cardiovascular risk index. Since one year ago, her physical activities became limited due to deterioration in the cardiac function. She denied tobacco smoking and alcoholism. Alimentary inquiry revealed usual low salt diet, low ingestion of regulator foods; and appropriate consumption of energy and bodybuilder foods. Physical examination showed jaundice; waist circumference: 88 cm; and BMI: 23.62 kg/m²; other data were unremarkable. La-

boratory determinations (Table 1) revealed liver changes and elevated cardiovascular risk (Castelli index). Thyroid function tests and ultrasensitive C-reactive protein were normal. Recent nutritional management consisted of a diet low in salt and in fats, and without sucrose. The diet contained 1800 kcal (27.6 kcal/ kg), with foods rich in omega-3 and omega-9 fatty acids, including linseed (50g/day), olive oil (40ml/day) and oleaginous fruits (30g/day). Additionally, diverse fresh fruits were included in her six daily meals. Less than a month under dietary control, the HDL level rose from 6 to 27 mg/dl and triglycerides decreased from 153 to 133 mg/dl, lowering the Castelli index. After clinical improvement and following adequate diet, she was referred to longstanding outpatient nutritional surveillance.

Good alimentary habits play an important role in the general health and in quality of life. Adequate consumption of foods rich in omega-3 polyunsaturated fatty acids (PUFA) as oils (flaxseed, linseed, canola, walnut, wheat germ, and soybean), green leafy vegetables, legumes, fresh fruits, and cold water fish; omega-6 PUFA (vegetable oils) and omega-9 PUFA (olive oil and oleaginous fruits) can contribute to reduce cardiovascular diseases^{5,6}. Normalization of lipid profile is beneficial for patients with heart arrhythmias, reduces inflammatory processes, shows anti-thrombotic and anti-atherosclerotic effects; and can play an important role in the management of the metabolic syndrome^{2,5,6}. Correction of inadequate diet habits can prevent and control cardiovascular diseases, which emphasizes the need for adequate nutritional education^{1,5}. Each elevation of 1 mg/dl in plasma HDL reduces in 6% the risk of death due to coronary disease⁵; in addition, there is a decrease in hypertriglyceridemia, which constitutes a cardiovascular risk factor. Light and moderate physical exercises contribute to increase the HDL level; and, if necessary, some hypolipidemic drug should be associated⁵. Adequate nutritional therapy heightened plasma levels of the HDL fraction, with reduction of the Castelli cardiovascular risk index, and contributed to normalize the plasma lipid profile of this elderly female with arterial hypertension and diabetes mellitus. Coronary disease and hypertension contributed to sedentary habits, with difficulties to control her dyslipidemia, not associated with overweight. In fact, this elderly patient obtained benefits from a well-balanced

Table 1. Blood parameters from a 68-year-old female with adequate diet to reduce the Castelli risk index

Parameters (2009)	May 15	May 24	June 05	Parameters (2009)	May 08	May 13	June 05
Cholesterol (mg/dl)	179	131	145	Total bilirubin (mg/dl)	13.60	5.50	2.30
LDL (mg/dl)	87	89	91	Direct bilirubin (mg/dl)	9.88	4.05	1.64
HDL (mg/dl)	6	12	27	AST (U/dl)	460.4	505.1	76.6
VLDL (mg/dl)	31	30	27	ALT (U/dl)	467.8	475.1	75.9
Tryglicerides (mg/dl)	153	151	133	Gamma GT (U/dl)	527.3	513.6	433.6
CI 1 (normal: < 4.4)	20.7	10.9	5.4	Alkaline phosphatases (U/dl)	104.7	104.6	129.8
CI 2 (normal: < 2.9)	14.6	7.4	3.4	Prothrombin activity (%)	36	46	45
Glucose (mg/dl)	85	94	217	INR	1.93	1.57	1.59
Urea (mg/dl)	19	22.5	22.9	Albumin (mg/dl)	3.5	3.5	3.6
Creatinine (MG/dl)	0.6	0.6	0.7	LDH (U/dl)	444	ND	ND

CI: Castelli risk index; ND: not done.

diet in a very short time, and actually, her lipid parameters are within normal range, as well as the Castelli index. Nevertheless, more effective results should be achieved by “modifying the modifiable cardiovascular risk factors”,¹ as soon as possible. For instance, by adopting adequate diets and good lifestyle habits since early infancy, and maintaining them during all the life-course. While “public and privately sponsored mechanisms to improve education and access to health resources” are not entirely available to populations from developing countries, the authors believe that this is an “advantageous risk-benefit and cost-effective strategy” to be followed¹.

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