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EC GYNAECOLOGY
Research Article

Adequate Interventions for Treatment and Prevention of Metabolic Syndrome during Menopause

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Received: March 11, 2018; **Published:** May 12, 2018

Abstract

Introduction: Metabolic syndrome increases the risk of cardiovascular diseases. Estrogen deficiency due to menopause is associated with an increased risk of suffering from this pathology, since these hormones have a cardioprotective function in young women since it preserves the endothelial function of the arteries, and decreases cholesterol and blood viscosity. The aim of this study was knowing the state of knowledge of the different symptomatological and preventive treatments of the metabolic syndrome in menopausal women.

Material and Methods: The publication search was carried out from October to December 2017 in the databases Medline, Embase, CINAHL Biological Sciences, ScienceDirect, ISI Web of Knowledge, Scopus, Sport Discuss, BioMed Central and EBSCOhost. The keywords were: metabolic syndrome, treatment, prevention, women, and menopause.

Results: The search and selection process resulted in 14 articles on educational interventions (5), dietary recommendations (4), physical activity practice (2) and elimination of toxic habits (3).

Conclusions: The challenge is to promote heart-healthy behavior in postmenopausal women, so that they are aware of the importance of preventing these diseases. It should influence health education activities, by primary care professionals, in order to prevent this disease of high prevalence.

Keywords: *Hypertension; Mellitus Diabetes; Women; Health Education; Menopause*

Introduction

Menopause is the permanent cessation of menstruation caused by loss of ovarian function. It is diagnosed retrospectively after 12 months of amenorrhea. The term perimenopause refers to the period before menopause, when fertility declines and irregular menstrual cycles increase. The onset of perimenopause occurs between two and eight years before the last menses [1].

Although initially women have a lower risk of developing cardiovascular diseases (CVD) than men before menopause, their risk is equal or may exceed that of men in the postmenopausal phase, which could be related, in part, to the changes metabolism that this causes: specifically, elevations of total cholesterol, LDL cholesterol and triglycerides and decreases of HDL cholesterol [2].

Estrogen deficiency due to menopause is associated with an increased risk of suffering from this pathology, since these hormones have a cardioprotective function in young women since it preserves the endothelial function of the arteries, decreases cholesterol and blood viscosity and minimizes the risk of thrombosis [3]. The mechanism by which menopause exerts a negative effect on the cardiovascular system is mainly due to the fact that estrogen deficiency causes an increase in the stiffness of the arteries [4]. Women with natural menopause often have significant reductions in HDL cholesterol and LDL cholesterol increases compared to premenopausal women [3]. In addition, early menopause is more often associated with coronary heart disease and CVD than late menopause [5]. Another study showed that women with late menopause and who also had not received hormone replacement treatment (HRT) had lower atherosclerosis than those with early menopause [6].

Currently, there is a lot of controversy about the use of HRT. While some studies showed that estrogen treatment in menopausal women reduced cardiovascular risk, others affirmed the opposite, that is, that HRT does not reduce coronary events and also increases the incidence of stroke and venous thromboembolic disease [2,5], by increasing triglyceride levels, and promoting coagulation by means of factor VII, prothrombin fragments 1 and 2 and the rise of fibrinopeptide-A, in addition to increasing levels of reactive C protein [1].

Metabolic syndrome (MS) increases the risk of CVD and diabetes mellitus. The main signs of the syndrome are central obesity, hypertriglyceridemia, decreased HDL cholesterol, hyperglycemia and high blood pressure [7]. The abdominal or central adiposity is a characteristic sign of the syndrome and its presence depends on the linear relationship between the abdominal circumference and the greater adiposity. However, despite the importance of obesity, some people with normal weight may also have this syndrome [8]. According to a published study, the prevalence of MS in American women increases with age, being 15.6% among women between 20 and 39 years of age, 37.2% for women between 40 and 59 years of age, and 54.4% for those with an age equal to or greater than 60 years. It was also observed in this same study that the risk of CVD was higher in women with MS (relative risk of 2.63) than in men (relative risk of 1.98) [9].

The decrease of the HDL cholesterol typical of the MS, is due to the lower cholesterol ester content of the lipoprotein center, with modifications carried out by the transfer protein of said ester in triglycerides, in such a way that the particles become small and dense. . This fact also causes a greater elimination of HDL cholesterol from the circulation. The alterations of the insulin cause that the production of glucose by the liver and the kidney is diminished and that there is a lower uptake and metabolism of said carbohydrate in insulin-sensitive tissues such as muscle and body fat [8].

In a follow-up study for eight years, 34% of men and 16% of women with MS ended up suffering from CVD. In the specific case of stroke, in men and women with MS the risk is 19% and 27%, respectively. The risk of type 2 diabetes arising in individuals with MS is 62% in men and 47% in women [10]. In addition, MS is shown to favor the appearance of non-alcoholic fatty liver disease, hyperuricaemia, polycystic ovarian syndrome or obstructive sleep apnea [8].

Taking into account all the above, it was decided to carry out a literature review with the aim of knowing the state of knowledge of the different symptomatological and preventive treatments of the metabolic syndrome in menopausal women.

Material and Methods

Search strategy

The publication search was carried out from October to December 2017 in the databases Medline, Embase, CINAHL Biological Sciences, ScienceDirect, ISI Web of Knowledge, Scopus, Sport Discuss, BioMed Central and EBSCOhost.

The key-words were: metabolic syndrome, treatment, prevention, women, and menopause. Finally, a manual search of potentially relevant publications extracted from the bibliography of the selected articles was carried out following the same inclusion and exclusion criteria as in the primary search.

Selection of studies

The first selection included all kinds of publications (original works of any design, mini-symposiums, bibliographic reviews, editorials and consensus or regulations) without taking into account the language of the text or the publication of origin. This process resulted in 740 abstracts. The inclusion criteria established that all studies should have menopausal women as sample (independently of their experimental design) and should consist of investigations in which a therapeutic or preventive treatment or intervention was evaluated.

Result and Discussion

Education for health

Most prevention activities involve behavioral modifications in which the educational intervention and health advice to patients play an important role [11]. An alternative to the individual approach to health education would be that given in groups. It consists of the education offered by a health professional to a group of patients with the same health problem and that must be specifically designed. It would be possible to establish a difference between group activities and group activities. The group activities would consist of those carried out by health professionals consisting of imparting knowledge about a certain pathology, the so-called "health education talks". Group education has shown a reduction in health costs in hospitalizations, in medical consultations and in the consumption of drugs in some chronic diseases [12].

There is sufficient evidence that clearly indicates that these interventions are possible and effective, for example, to reduce risk factors related to osteoporosis [13], tobacco consumption, Body Mass Index and waist-hip index [14], the arterial-blood pressure [15], to bring about improvements in the lipid profile or to promote physical activity and the cardio-healthy diet [16].

Nutritional interventions

Dietary habits play a decisive role in the maintenance of health, and currently the Mediterranean diet is considered one of the healthiest eating patterns [11]. It has been shown that countries that follow the pattern of the Mediterranean countries, have the highest life expectancy in the world, in addition to a lower incidence of CVD, causing a reduction in cardiovascular risk biomarkers [17].

The Mediterranean diet turns out to be the traditional food pattern of the countries of southern Europe, where olives typically grow, such as Spain, Crete, Greece and Southern Italy [18]. This diet is characterized by a high consumption of foods of vegetable origin (fruits, vegetables, legumes, cereals, nuts and seeds); frequent but moderate intake of wine (especially red) with meals; moderate consumption of fish, seafood, fermented milk products (yogurt and cheese), poultry and eggs, and low consumption of red and processed meats, and also of sweets. It is characterized, therefore, by a relatively high consumption of fat (up to 40% of the total energy intake), mainly in the form of monounsaturated fatty acids (olive oil), which should account for 20% or more of energy intake total and have antiatherogenic effect due to its high content of oleic acid and polyunsaturated fatty acids (fish and nuts). The nuts have a special composition that favors the hypocholesterolemic effect and also improve endothelium-dependent vasodilation [18]. Another key nutrient in this diet is the dietary fiber presented by cereals, vegetables, fruits and vegetables, the polyphenols that make up the wine, extra virgin olive oil, fruit and vegetables with antioxidant and anti-inflammatory effects, vitamins A, D, E, B12, folic acid, riboflavin and minerals such as potassium, calcium, phosphorus and magnesium [11]. The Mediterranean diet shows good adherence, since the preparation and cooking techniques of the food use olive oil that enhances the flavor of the food. In our country, the largest study on nutrition is being carried out in which the effects of the Mediterranean diet on the primary prevention of chronic diseases are assessed. One of the most relevant findings has been that a Mediterranean diet supplemented with extra olive oil or nuts could prevent the occurrence of CVD compared to a low-fat diet. It has been shown that this eating pattern can significantly reduce the antihypertensive medication requirements of these subjects and the blood pressure figures in subjects with high cardiovascular risk. Other relevant findings have been that a diet based on the Mediterranean diet can reduce the risk of Diabetes Mellitus [19] and MS, as well as improving the biomarkers of cardiovascular risk [20].

Physical activity

The general objective of physical exercise is to improve physical fitness and promote health by reducing cardiovascular risk factors. The benefits on the cardiovascular system are that it increases the stroke volume, increases the volume of the cardiac cavities and parietal thickness, decreases the heart rate both at rest and in submaximal intensity exercise and improves myocardial perfusion. Exercise also improves the lipid profile (reduction of LDL cholesterol and triglycerides, increased HDL cholesterol) and control of blood glucose and insulin sensitivity, reduces or prevents hypertension, obesity and stress. Exercise, when it is part of work and recreational activities, has a beneficial effect in the prevention of CVD, in the reduction of global mortality and in the improvement of the physical and mental quality of life [21]. It also has antiatherogenic and antithrombotic effects, since it improves blood circulation and fibrinolytic activity. Specifically, aerobic physical activity produces a series of musculoskeletal, metabolic, respiratory and cardiovascular adaptations that produce health benefits. The dynamic and resistance exercise favors morphological and functional cardiovascular adaptations. There are studies that demonstrate the effectiveness of an educational intervention in the increase of physical activity [22].

Toxic habits

The work of the healthcare professional is very important in helping and motivating the patient to achieve the difficult task of reducing toxic habits. Smoking is the most important reversible risk factor in the vast majority of patients. The abandonment of smoking is one of the most effective and economic measures to prevent the development of CVD. Quitting smoking reduces cardiovascular morbidity and mortality in smokers with and without coronary heart disease. Smokers who quit smoking between 45 and 54 years of age gained 6 years of life compared to those who continued to smoke. The risk of atherosclerosis associated with smoking diminishes after 2 years of stopping smoking; but the reduction in the risk of ACS occurs within a few hours [23]. An educative intervention on the tobacco can favor the diminution and even the elimination of this toxic habit in the short term [24].

Another recommendation that should be given to patients and that has demonstrated its effectiveness, is that they make a reduced consumption of alcohol since it increases the blood pressure and produces damage in the myocardium, as well as diminish or avoid the consumption of coffee since it can worsen cardiovascular risk parameters [25].

Conclusions

The challenge for health professionals is therefore to promote heart-healthy behaviors effectively in the general population, and in particular in postmenopausal women, so that they are aware of the importance of preventing these diseases. It should influence health education activities by primary care professionals, as well as promoting research in this field, including more women in clinical trials or conducting studies specifically aimed at this group population, in order to prevent this disease of high prevalence.

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Volume 7 Issue 6 June 2018