

The role of cardiovascular rehabilitation in women with ischemic heart disease and rhythm disorders

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Abstract

The incidence and prevalence of cardiovascular disease among women has increased significantly over the last 50 years. However, women diagnosed with ischemic cardiopathy benefit to a much lesser extent from both pharmacological or interventional treatment and inclusion in cardiovascular rehabilitation programs. Cardiovascular rehabilitation programs in women should be individualized, taking into account the particularities of cardiovascular risk factors, effort, aritmogenic risk, socio-economic status. Women's cardiovascular rehabilitation programs need to be diversified and deployed in smaller groups of female patients. These programs should include, besides physical recovery, emotional, social and psychological support. The purpose of this article is to synthesize some of the particularities of cardiovascular rehabilitation in women with ischemic heart disease and rhythm disorders.

Key words: *women, ischemic heart disease, cardiac rehabilitation*

The incidence and prevalence of cardiovascular disease among women has increased significantly over the last 50 years. However, women diagnosed with ischemic cardiopathy benefit to a much lesser extent from both pharmacological or interventional treatment and inclusion in cardiovascular rehabilitation programs. Cardiovascular rehabilitation programs in women should be individualized, taking into account the particularities of cardiovascular risk factors, effort, aritmogenic risk, socio-economic status. They need to be adapted and diversified, and beside the physical training, to include as well a series of measures to ensure emotional, social and psychological support [1,13,15].

Currently, cardiovascular mortality (ischemic heart disease, stroke and other cardiovascular disease) in Europe is much higher in women - 49% compared to men - 40%. The age of onset of ischemic heart disease is generally 10 years higher in women than in men. The main pathophysiological mechanisms involved in the occurrence of ischemic cardiopathy in women are most often represented by changes in endothelium-independent dysfunction of the coronary microcirculation or microvascular dysfunction and endothelium-dependent dysfunction or endothelial dysfunction. We remind that the symptoms of ischemic heart disease in women are often atypical, which causes them to be presented in the emergency service much later, after the cardiac lesions have already occurred. Also, women diagnosed with ischemic heart disease benefit to a

much lesser extent from both pharmacologically or interventional treatment, as well as the inclusion in the cardiovascular rehabilitation programs [2,4,5,7].

Current cardiac rehabilitation programs include lifestyle changes, physical training programs, and secondary pharmacological prophylaxis of ischemic cardiopathy. The situation of cardiovascular rehabilitation in women is not well known since women are underrepresented in clinical trials on rehabilitation, accounting for less than a quarter of the patients included [13,14].

The purpose of this article is to synthesize some of the particularities of cardiovascular rehabilitation in women with ischemic heart disease and rhythm disorders.

Currently, when it is the era of myocardial revascularization, all the guide highlight that patients undergoing successful revascularization procedures can quickly recover, starting with 72 hours after admission. Most often, revascularized patients are not at risk (ischemic, arrhythmogenic or decreased left ventricular performance) by resuming immediately physical activity. But if there are any complex arrhythmias, before patients are included in physical training programs, it will be evaluated and treated - with medication or invasive. Obviously, if the patient is having an uncontrolled, complex ventricular or supraventricular arrhythmias, then the patient will be excluded from the cardiovascular rehabilitation program. We must not forget that physical activity can in some circumstances have an arithmogenic risk. [3,7].

If the patients are asymptomatic, without any complications, **phase 1** of rehabilitation can become practically non-existent in its classical form, acquiring now other valences. Practically, this phase becomes useful only for the implementation of secondary prevention measures. Patients will be informed of existing cardiovascular risk factors that have led to ischemic cardiopathy and how they should be treated.[7,12].

The most important cardiovascular risk factors which are most commonly associated with the risk of ischemic cardiopathy, but also with a negative prognosis are: hypertension, diabetes mellitus, dyslipidemia, obesity and metabolic syndrome. So, practically, these days of hospitalization will be dedicated to the implementation of life-changing measures, as well as those of secondary pharmacological prevention. Thus, patients will be trained on the importance of decreasing the blood pressure values (<140/90 mmHg), maintaining a normal blood glucose and glycosylated hemoglobin, decreasing lipid (LDL-cholesterol <70 mg / dl) and BMI (<25 kg / m²) [1,8,12,15].

Weight is no longer a very important goal to achieve in women with ischemic heart disease. There is, however, a study that included women undergoing PCI with stent placement DES, in which it was evaluated the prognosis of BMI, demonstrating the existence of another "paradox of obesity." Normal, overweight or obese patients have a lower percentage of all-cause mortality compared to underweight patients. At the same time, it should be specified that the level of psychological impairment is more severe in women than in men, and self-esteem and self-efficacy decrease significantly in women. That is why identification and addressing psychosocial stress by the psychologist, who is part of the complex rehabilitation team, is mandatory [7,10,11].

The second phase of cardiovascular rehabilitation begins two weeks after discharge and is preferably to be scheduled at the same date as the next check. In these two weeks, the patients will be advised to follow life-changing measures, pharmacological treatment, and regular exercise. Phase 2 is in fact the recovery phase, and is indicated for all forms of ischemic cardiopathy, with or without rhythm and conduction disorders, the goal of which is to give patients the maximum of physical capacity compatible with the functional state of the heart. Before it starts, an effort stress testing is mandatory.

The duration of this phase is up to 6-8 weeks and it can be done either ambulatory or at home. In terms of type of exercise, it has been shown that resistance efforts are very beneficial in women, regardless age, with the involvement of scapula-humeral, abdominal and pelvic muscles. It is intended to increase the effort capacity more than 7 METs. [12].

The patients with arrhythmias will be closely monitored for palpitations, dyspnea, dizziness, heart rate and electrocardiographic modification. It is well known that at the start of a physical training program, the exercise capacity in women is lower by 9-26% than that in men, these low values in women with ischemic heart disease are comparable to those seen in patients with heart failure. An increased effort with VO₂ >13 mlO₂ / kg / min leads to a decrease in coronary heart disease mortality by more than 50% and in overall mortality by 20%. Thus, each increase in exercise capacity, with 1 mlO₂ / kg / min of VO₂, reduces mortality by 10%. Also, physical activity in postmenopausal women decreases the risk of stroke by 50%, and mortality by 23-38% [7,12].

In a recent article published in 2017, it was demonstrated that patients who are included to the cardiac rehabilitation programs had a significant decrease in cardiovascular mortality, morbidity and number of hospitalizations. It also increased the quality of life, significantly reduced anxiety and depression, as well as improving education and information on the disease and the importance of the recovery. These beneficial results are also obtained in the case of coronary microvascular disease, the most common form of ischemic cardiopathy experienced in women [16].

However, constant physical training has beneficial effects beyond the increasing effort capacity. Following recovery programs, a decrease in inflammatory markers such as IL-6, TNF- α , hsCRP and ICAM has been demonstrated. Also, after a 5-year physical rehabilitation, lipid fractions show significant improvements in women compared with those in men: HDL cholesterol (20% vs. 5% men) and LDL cholesterol (34% vs. 15% men). Good results have also been obtained in terms of decreasing triglyceride levels, systolic blood pressure and waist circumference [7,8,9].

Unfortunately, only 48% of women with coronary heart disease have reached this second phase of cardiovascular rehabilitation, compared with 66% of men [7,12].

The third phase or the maintenance phase of the results is indicated for all patients who have completed phase 2. It is done at home. This phase is mandatory, because it has been proven that the effects of physical training are lost within 3-6 weeks after physical activity is interrupted. There are studies that showed that after 3 months from the beginning of the rehabilitation program, only 48% of women were recovering at home. Energy consumption at this stage should be higher than 7 METs. The duration of this phase is indefinite, with physical activity being recommended to be continuous throughout life [1,12,15]. Throughout phase 3, patients should follow the rate of effort self-perception, monitor the heart rate, and when symptoms such as retrosternal pain, dyspnea or palpitations occur, the patient must stop the physical activity and contact the cardiologist. It has turned out that during home recovery, women prefer physical activities such as swimming, cycling, or outdoor walks [1,3,12,14].

Unfortunately, female patients who have suffered a coronary event tend to minimize the impact of the event on their health status and also avoid the involvement of close persons in the evolution of their disease. Women have a greater responsibility for family life, with a role in maintaining the household, and for younger women with coronary heart disease, all this mentioned above, are added to the existence of a job. Female patients with ischemic heart disease return more quickly to work, on average after a month, compared to men. Studies show that about 75% of women go back to work, compared to only 30% for men. At the same time, unfortunately, they receive less support from their partner, thus focusing on the support of their children. For the elderly female patients, we emphasize that most are alone, only 26-59% have a life partner, compared to male patients where the percentage is 70-91% [6,7,8,14,16].

The most common causes that lead to the interruption of physical recovery in women are: inadequate information about cardiovascular rehabilitation, lack of time, lack of social and family support, anxiety and depression, and the high number of comorbidities that make physical activity difficult. At the same time, women get bored faster if they do the same kind of physical training, they adjust much harder and tend to underestimate their effort capacity [14,16].

The most important barriers to cardiac rehabilitation in women with ischemic heart disease

are: increased age, lower exercise capacity, reduced functional capacity, associated comorbidities, family and social responsibilities, reduced physical and sporting experience, lack of social support, reduced social integration, transport problems, more precarious socio-economic status, anxiety and depression, low self-efficacy and self-esteem.[14,16].

A particular form of cardiovascular recovery is the institutionalized or residential type, which takes longer term in rehabilitation hospitals. Such an institution is represented by the *Covasna Cardiovascular Diseases Hospital*, where, besides the "classic" methods of cardiac rehabilitation, represented by physical training under strict supervision, other methods specific to this hospital are also used: climatotherapy, CO₂ baths, aerotherapy, electrotherapy and hydrokinetotherapy.

In conclusion, women's cardiovascular rehabilitation programs need to be personalized, diversified and deployed in smaller groups of female patients. These programs should include, besides physical recovery, emotional, social and psychological support.

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