



REHABILITATION IN PATIENTS WITH MYOCARDIAL INFARCTION - A HISTORICAL REVIEW AND REFLECTION ON THE TOTAL, CARDIOVASCULAR MORTALITY AND THE RISK OF RECURRENT MYOCARDIAL INFARCTION

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Abstract:

The aim of this study was to review the literature regarding the impact of rehabilitation on prognosis in patients with acute myocardial infarction. Cardio-rehabilitation is administered routinely in practice over the last two centuries. It underwent significant development in our times and is characterized by an accelerated rate and by the application of very intense exercise. Numerous studies in recent decades prove beyond doubt the benefits of cardio-rehabilitation in patients with acute myocardial infarction. It reflects favourably on the quality of life of patients and on their forecast. In confirmation of this statement are clear evidence of reduced total mortality, cardiovascular mortality and recurrent myocardial infarction in patients conducted cardio-rehabilitation.

Keywords: myocardial infarction, rehabilitation, historical review, total mortality, cardiovascular mortality

Introduction

According to the European Society of Cardiology the cardio-rehabilitation is defined as "*...a set of interventions aimed at achieving the best physical, psychological and social opportunities so that patients with chronic or after acute heart disease, maintain or occupy their inherent in society*". Generally, rehabilitation represents a return to an active and

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fulfilling lifestyle. The relative importance of physical activity in patients with coronary artery disease is described further in the eighteenth century. In 1772, a doctor named Heberden published a report describing the six-month training program consisting of 30 minutes of daily physical activity of one of his male patients who had a diagnosed problem localized in chest [Heberden W]. Parry, in 1799 noted the beneficial effects of exercise in patients suffering from chest pains [Parry CH]. Although these messages appear long before the disease of the coronary arteries can be described in scientific literature, no doubt some of these patients suffered from heart failure or myocardial infarction. Herrich in 1912 gives the original clinical description of acute myocardial infarction [Mallory GK]. He expressed concern about the relationship between physical exercise and increased risk of ventricular rupture or provoking ischemia in these patients. This promotes the adoption of a conservative approach in the treatment of myocardial infarction in patients who were kept at rest for six to eight weeks after onset of illness. This approach to the patients was confirmed by Mallory and White in the thirties of the nineteenth century based on the fact that the necrotic area of the myocardium is transformed into connective tissue, for a period of about 6 weeks [Mallory GK,]. Limited physical activity is recommended after hospital discharge. In some cases even prohibited and climbing stairs for up to one year. Often, patients do not return to work, and consequently treated as unproductive members of society.

In the sixties of the twentieth century, inpatient cardiac rehabilitation is widely used thanks to the efforts and the efforts of new approaches and practices Wenger, Zohman, Tobis and Bruce. They are of the opinion that cardio-rehabilitation leads to faster recovery of patients and reduce hospital stays; improve the functional status and allows earlier return to work. Adopted programs include early rehabilitation and recovery during the acute phase after myocardial infarction [Wenger N] [Zohman L] [Bruce RA].

At the end of 1960 Hellerstein, encouraged by the results of his hospital program includes bold exercise in patients after hospital discharge. Hellerstein is seriously criticized by his colleagues for his innovative and risky approach. His research clearly showed that patients with heart disease can safely benefit from regular exercise and enjoy improved physical and psychological state without negative effect [Hellerstein H]. The success of this medically supervised program offers a new dimension in the outpatient cardiac rehabilitation program. As a result of the work of Hellerstein and co-authors, the concept of progressive controlled activity in patients who have myocardial infarction received a major role in the therapeutic approach [Zohman L329-335] [Hellerstein H]. Rehabilitation of patients with myocardial infarction developed

significantly in recent years and is an established practice in most countries. Numerous studies have shown that inpatient and outpatient rehabilitation programs are safe and effective methods to improve the physical and mental well-being of the patients; they are associated with significant improvement in prognosis and quality of life. So cardio-rehabilitation established itself as a mandatory element of effective clinical management of myocardial infarction.

Benefits and possible risks of rehabilitation in patients with myocardial infarction, determination of its impact on total, cardiovascular mortality and the risk of recurrent myocardial infarction, have been the subject of several studies. They cover different number of persons as follow-up period ranged widely - from several months to 10 years or more. The larger randomized studies prove that held inpatient and outpatient rehabilitation significantly reduced total and cardiovascular death, but also the risk of fatal and nonfatal recurrent myocardial infarction [Kallio V., Carson P., Fridlund B., Hamalainen H., Specchia G., Naughton J., La Rovere M., Lee B.].

In confirmation of these allegations is the latest big a randomized study conducted in the United States covering 2991 patients with myocardial infarction [Dunlay S.]. In 52,5% thereof is carried out rehabilitation after being discharged from hospital within 90 days. Patients were followed for an average of 7.6 years. The authors found a drastic reduction in the risk of death by 42% in patients conducted rehabilitation. Most probative value have several meta-analyzes involving a randomized studies. Taylor R. et al conducted a meta-analysis of 48 studies involving a total of 8940 patients with myocardial infarction, published by 2004. [Taylor R.]. The follow-up was over 6 months. The authors found that the conduct of cardio-rehabilitation is associated with a credible reduction of total mortality (OR = 0,80 [0.68 - 0.93]) and cardiac mortality (OR = 0,74 [0,61 - 0.96]). The newest meta-analysis of studies conducted by 2011 regarding the prognostic significance of cardio-rehabilitation in patients with acute myocardial infarction is represented by Lawler et al [Lawler P.]. Inclusion criteria are very well chosen; with 147 publications were selected 34. The total number of patients in these studies was 6111, the minimum duration of rehabilitation was conducted one month and duration of follow-up from 3 months to 5 years. The authors found fairly lower total mortality (OR = 0,74 [0.58-0.95]), cardiovascular mortality (OR = 0,64 [0,46 - 0.88]) and risk of re-infarction (OR = 0,53 [0 38 - 0.76]) in patients rehabilitated. A very important point in this analysis is that the benefits of rehabilitation are observed regardless of the duration of the applied program (minimum 1 month) and continue years after its termination. With the introduction of reperfusion therapy in the treatment of acute myocardial infarction, particularly

percutaneous interventions, the question arises whether in these patients conducting cardio-rehabilitation a significant prognostic importance. This issue is discussed in relatively small studies. The biggest and targeted study published by K. Goel et al in 2011 [Goel K.]. It is based on a retrospective analysis, and included 2395 patients with acute myocardial infarction undergoing percutaneous coronary intervention. The study analyzed indicators total mortality, cardiovascular mortality, recurrent myocardial infarction and repeat percutaneous intervention. Tracking patients averaged 6.3 years. In this period were recorded 503 deaths for any reason, 199 cases of death, myocardial infarctions and 394 755 cases of revascularization. Cardio-rehabilitation has conducted 964 patients (40%). The authors reported a significant reduction in overall mortality rehabilitated patients (ratio of 0.53 to 0,55; $P < 0.001$). Also, there is a tendency to lower cardiovascular mortality, recurrent myocardial infarction, and repeat revascularization. The difference between rehabilitated and the other patients independent of age and gender.

Conclusion

Rehabilitation of patients with acute myocardial infarction underwent development over the past two centuries. The principles that changed and fluctuated dramatically, prolonged immobilization of patients in the past, the application of relatively intense exercise regimen in our time. Numerous studies in recent decades prove beyond doubt the benefits of cardio-rehabilitation in patients with acute myocardial infarction. It reflects favorably on the quality of life of patients and on their forecast. In confirmation of this statement are clear evidence of reduced total mortality, cardiovascular mortality and recurrent myocardial infarction in patients conducted cardio-rehabilitation.

These findings concern for patients treated conservatively and patients with reperfusion therapy applied (percutaneous coronary intervention and bypass surgery). It is worrying that a small proportion of patients with acute myocardial infarction are included in rehabilitation programs. This is particularly true for economically developed countries with stable health system. In even more relevant is that for our country. This requires taking measures by the state and society for accessibility for all patients with myocardial infarction to contemporary rehabilitation programs.

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