v. 3, n. 52, 2023

International Journal of Health Science

RISKS AND BENEFITS OF MYOCARDIAL REVASCULARIZATION SURGERY IN ELDERLY PEOPLE WITH CORONARY ARTERIAL DISEASE

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Abstract: **Objective:** To assess the risks and benefits of coronary artery bypass grafting in elderly patients with coronary artery disease, in order to investigate the clinical outcomes of the surgery and its effects on the quality of life of these patients. **Methodology**: A literature review was carried out through searches in the PubMed and Scientific Electronic Library Online (SciELO) databases. After applying the inclusion and exclusion criteria, 9 articles were selected from the PubMed database and 2 articles from SciELO, totaling 11 studies used in the analysis. **Discussion:** The different types of studies analyzed point to the fact that surgical indication in the elderly must take into consideration, their preferences and comorbidities. The clinical results of elderly patients undergoing myocardial revascularization demonstrated a longer survival compared to patients who used only drug treatment. **Conclusion**: The elderly undergoing myocardial revascularization have a satisfactory clinical outcome compared to those who used only drug treatment. However, it is necessary to expand research to analyze the clinical outcomes and quality of life of the elderly undergoing surgical revascularization.

Keywords: Myocardial revascularization; Elderly; Post-Operative.

INTRODUCTION

The mortality rate in elderly patients undergoing CABG due to infarction is significantly high, reaching approximately 65% in a period of 8 years after the procedure. This statistic increases progressively with the age of the patients, negatively influencing the prognosis. For example, in individuals aged between 65 and 74 years, only 45% manage to survive up to 12 months after the infarction (KOCHAR et al., 2018).

Studies demonstrate that complete revascularization resulted in reductions

in mortality from infarction in this elderly population in primary coronary interventions, with revascularization in stages not being relevant (PASCERI et al., 2018). In another study, it was revealed that death due to ischemia can be greatly reduced after myocardial revascularization and is recommended in cases with a risk greater than 10% of impairment. Therefore, this treatment for stable coronary artery disease results in a longer patient survival (YONG et al., 2022).

Considering the risks and benefits observed in this population, it is important to assess the influence of surgery on quality of life after the procedure. The training of professionals is essential to provide individualized support. In addition, early clinical treatment is the best alternative, leaving revascularization as a therapeutic proposal for patients of great surgical significance (ROCHA; SILVA, 2022).

In this sense, the objective of this study is to evaluate the risks and benefits of coronary artery bypass grafting in elderly patients with coronary artery disease, aiming to investigate the clinical outcomes of the surgery and its effects on the quality of life of elderly patients, in order to provide useful information for clinical decision-making in this population.

METHODOLOGY

This is a bibliographic review developed according to the criteria of the PVO strategy, an acronym that represents: population or research problem, variables and outcome. It is used for the elaboration of the research through its guiding question: "What is the impact of myocardial revascularization in elderly patients in terms of clinical outcomes and risks?". In this sense, according to the parameters mentioned above, the population or problem of this research refers to elderly patients with coronary artery disease, myocardial revascularization surgery and the clinical outcomes, risks and benefits of surgery in this population.

The searches were carried out through searches in the PubMed and SciELO databases. The following descriptors were used in combination with the Boolean term "AND": Myocardial Revascularization, Aged, Risk-Benefit, Postoperative Period, Quality of Life. Thus, the initial search resulted in 6250 articles found, which were subsequently submitted to the selection criteria. Inclusion criteria were: articles in English, published between 2010 and 2022, which addressed the themes proposed for this research, and studies such as Systematic Reviews, Randomized Clinical Trials and Cohort Studies, available in full. Exclusion criteria were: duplicate articles, available in summary form, that did not directly address the studied proposal and that did not meet the other inclusion criteria.

After associating the descriptors used in the searched databases, a total of 6250 articles were found, all belonging to the PubMed database. After applying the inclusion and exclusion criteria, 9 articles were selected from the PubMed database and 2 articles from SciELO, using a total of 11 studies to compose the collection.

RESULTS

The number of patients with cardiovascular disorders increases with age, becoming the main cause of death and chronic disability in the elderly. In addition to pharmacological resources for coronary diseases, there is surgical treatment of cardiac revascularization, which aims to restore blood flow, supply of oxygen and nutrients, in order to avoid ischemic consequences in the myocardium muscle. However, surgical indication in the elderly requires consideration of patient preferences, cardiac and non-cardiac comorbidities, functional and cognitive status, as well as life expectancy. It is also important to consider that elderly patients have age-related changes

in cardiovascular anatomy and physiology, which increases the risk of adverse events (RICH et al., 2016).

There are several ways to perform cardiac revascularization treatment in the elderly, with two relevant techniques to be highlighted based on current comparative studies: Myocardial Revascularization Surgery (CABG) via grafting and Percutaneous Coronary Intervention (PCI). CRM involves inserting a vascular graft (artery or vein) to create new pathways for cardiac blood supply. On the other hand, IPC is a less invasive procedure, in which a balloon is inserted into the deficient coronary artery to increase the vessel lumen and optimize blood flow (FERREIRA et al., 2020). The choice of technique depends on the clinical conditions and the survival of patients, but it is important to consider the complications associated with each one: CABG is related to higher periprocedural mortality and a higher incidence of stroke, while CPI is associated with a higher rate. high rate of repeated revascularization (KHAN et al., 2019).

In recent times, due to advances in surgical techniques, a greater number of elderly patients have undergone myocardial revascularization, and even with a greater risk of postoperative sequelae in this population, surgical results have continuously improved. For example, CABG using the left mammary artery as a bridge for revascularization of the anterior descending coronary artery is an innovation that has improved survival and reduced late cardiac sequelae. In addition, studies have shown positive clinical results with radial artery grafting, with good healing, better permeability and lower risk of surgical incision infection compared to saphenous vein grafts (ERDIL et al., 2010).

According to Phan et al. (2020), invasive revascularization therapy in elderly patients has a similar or even greater clinical benefit than in younger individuals. In this context, among the invasive therapeutic options, PCI and CABG have been shown to be more effective than clinical therapy in reducing mortality in most patients, except those who have already undergone a previous CABG or are of black descent, the which makes choosing the best invasive treatment option a challenge. In the case of CRM, studies show that, despite the greater likelihood of complications, the benefits are significant and notable in the elderly. Therefore, the data suggest that a smaller proportion of elderly individuals receive clinical treatment due to the high risk-benefit ratio in this subgroup.

The use of cardiopulmonary bypass (CPB) does not have a major impact on patient survival. However, studies show that, when associated with CABG, it may be directly related to incomplete revascularization, which is characterized by a lower number of coronary anastomoses than expected, the presence of calcified target vessels or an area of non-viable scarring. This situation commonly occurs in off-pump patients and is associated with a reduced long-term survival rate in the elderly. Therefore, although CPB does not interfere directly, when combined with the other factors mentioned, it may favor a more advanced heart disease with a worse prognosis (DIEGLER et al., 2019).

The clinical outcome in the elderly after coronary artery bypass grafting showed significant results. A 10-year follow-up revealed that elderly patients with complex coronary artery disease undergoing CABG had significantly longer survival compared with patients treated with medical therapy alone. In addition, coronary artery bypass graft surgery was effective in improving symptoms related to coronary artery disease, such as angina, and provided a significant improvement in the quality of life of these elderly patients (ONO et al., 2021).

The use of total arterial grafts in elderly patients aged 70 years or older demonstrated greater survival compared to myocardial revascularization with the use of venous grafts. Revascularization by total arterial grafts provided not only a higher survival rate, but also a reduction in the occurrence of adverse cardiovascular events and a lower need for coronary reintervention compared to the use of venous grafts (JUSSLI-MELCHERS et al., 2019).

Another relevant aspect is the use of the radial artery as a totally arterial graft in coronary arteries in elderly patients aged 65 years or older. This approach showed promising results, as its use as the main graft in myocardial revascularization in the elderly was associated with a lower rate of complications and perioperative mortality, in addition to ensuring good patency of the grafts in the short term (ERDIL et al., 2010).

Although revascularization-related mortality is higher in the elderly age group compared to the young age group, the elderly benefit from CABG in several clinical situations. An analysis of the cardiac surgery database at the National Institute of Cardiology, in Rio de Janeiro, between December 2004 and March 2012, revealed that most patients were elderly and male. Despite having a greater number of comorbidities compared to younger patients, the elderly had higher mortality when undergoing both percutaneous and surgical revascularization. However, when compared to each other, the elderly demonstrated long-term benefits with coronary artery bypass grafting compared with the percutaneous technique, such as a reduction in symptoms and a lower chance of a new approach (KAUFMAN et al., 2018).

In this context, a study with the Japanese elderly population showed benefit of CRM treatment for acute myocardial infarction (AMI) with ST elevation, but not for AMI without ST-segment elevation (PHAN et al., 2020).

Therefore, the clinical outcomes of coronary artery bypass grafting in the elderly show promising results. Survival is significantly higher compared to drug therapy, in addition to improvement in symptoms related to coronary artery disease and quality of life. The use of total arterial and radial artery grafts as the main graft has also shown advantages, with better survival rates and fewer complications. On the other hand, no significant differences were observed in clinical outcomes between CABG with and without cardiopulmonary bypass. Thus, CRM remains an effective option for the treatment of elderly patients with coronary artery disease, offering long-term benefits (ONO et al., 2021; JUSSLI-MELCHERS et al., 2019; ERDIL et al., 2010; DIEGLER et al., 2019; KAUFMAN et al., 2018; PHAN et al., 2020).

FINAL CONSIDERATIONS

It is worth mentioning that there is a significant increase in the number of elderly people with cardiovascular pathologies, and surgical indications must be based on the uniqueness of each individual. However, it is observed that due to technical and surgical advances, there has been an increase in the number of elderly people undergoing myocardial revascularization. This is due to the fact that the clinical outcome has been increasingly satisfactory, with significantly longer survival, in addition to improved symptoms and quality of life compared to those treated only with medication. Although much research has been done on this topic, it is still necessary to carry out additional studies that address clinical outcomes and the influence on quality of life, since this portion of the population has alterations related to age, anatomy and physiology, which increase the risk of adverse events.

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