Evaluation of Hyperlipidemia in Patients Candidates for Coronary Artery bypass Graft Surgery

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ABSTRACT

Introduction: The aim of this study was to evaluate the relationship between hyperlipidemia and serum levels of blood lipids and the number of coronary arteries involved in patients undergoing coronary artery bypass grafting.**Material and Methods:** Study design: This is a cross-sectional descriptive study that was performed in 30 years in 2018-2020 in Shahid Madani Hospital (Tabriz University of Medical Sciences) with the participation of patients candidates for coronary artery bypass graft surgery and their fat profile was examined by the number of involved vessels.**Results:** In the study of 150 patients with coronary artery disease, candidates for CABG surgery, patients were divided into three groups based on the number of vessels involved in angiography, and it was observed that 4 patients (2.7%) had single involvement. Vascular, 39 patients (26%) have 32 vascular involvement and 107 patients (71.3%) have vascular involvement. A total of 64 patients (42.7%) were female and 86 patients (57.3%) were male and the mean age was 58.2 ±10.86 years. Serum fat levels were assessed by the number of coronary arteries involved. **Conclusion:** Total cholesterol and LDL are important indicators for predicting the extent of coronary artery involvement. While the prevalence of elevated total cholesterol and elevated LDL are associated with multivascular involvement, the role of elevated LDL in multivessel coronary artery involvement is more effective than increased total cholesterol. Total cholesterol and LDL are among the predictors of the potential need for surgical intervention.

Keywords: hyperlipidemia, Risk Factor, coronary artery bypass graft

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Introduction

Hyperlipidemia is a known risk factor for coronary artery disease and the progression of atherosclerosis, and an increase in some types of plasma fats has been shown to exacerbate atherosclerotic involvement of the coronary arteries [1]. There are different types of plasma fats, and among them, low-density lipoprotein (LDL) lipids have been directly and closely related to coronary artery disease, and high-density lipoproteins (HDL) are one of the strongest protective factors. Is the cause of atherosclerosis. Recent evidence suggests that a slight increase in glyceride levels increases the risk of coronary heart disease and accelerates coronary artery disease, as well as leading to new lesions and greater coronary artery involvement [2].The association between serum lipid levels and coronary artery disease is well known, although studies on the role of lipoproteins as indicators of the severity of coronary artery involvement are still limited. The clinical manifestations of coronary artery disease have no independent and obvious relationship with the extent of coronary artery atherosclerosis, but the severity of the obstruction and the number of vessels involved are important in patients' treatment plans [3]. Finally, it is hypothesized that if one type of serum fat predicts the degree and severity of coronary artery involvement, it can be controlled by therapeutic strategies and the need for aggressive procedures such as catheterization and stenting or the need for bypass surgery [4]. The aim of this study was to evaluate the relationship between hyperlipidemia and serum levels of blood lipids and the number of coronary arteries involved in patients undergoing coronary artery bypass grafting.

Material and Methods

Study design: This is a cross-sectional descriptive study that was performed in 30 years in 2018-2020 in Shahid Madani Hospital (Tabriz University of Medical Sciences) with the participation of patients who are candidates for coronary artery bypass graft surgery. Sampling method was available in this study.

Inclusion and exclusion criteria: Inclusion criteria included consent to participate in the study, candidate for coronary artery bypass graft surgery and age over 18 years and exclusion

criteria also included patients with a history of heart surgery, patients with congenital heart defects and death. Surgery was also one of the exclusion criteria of this study.

Methodology: By referring to the archives of the Open-Heart Surgery Department of Ghaem Hospital, the files of patients who underwent coronary artery bypass graft surgery in 2018 were reviewed and in addition to angiography, fat profile tests of patients were examined and then patients Based on the number of coronary arteries involved in angiography, they were divided into three groups: mono-vascular, bivascular and tricuspid. The prevalence of hyperlipidemia in these groups was compared to evaluate the relationship between hyperlipidemia and the number of coronary arteries involved.

Data analysis: After extracting the required information, the data were entered into SPSS software and data analysis and comparison in patient groups were performed using chi-square tests and analysis of variance.

Ethical Considerations: It is worth mentioning that the whole process of the present study was carried out after the approval and approval of the ethics committee of Tabriz University of Medical Sciences.

Results

In the study of 150 patients with coronary artery disease, candidates for CABG surgery, patients were divided into three groups based on the number of vessels involved in angiography, and it was observed that 4 patients (2.7%) had single involvement. Vascular, 39 patients (26%) have 32 vascular involvement and 107 patients (71.3%) have vascular involvement. A total of 64 patients (42.7%) were female and 86 patients (57.3%) were male and the mean age was 58.2 ±10.86 years. Serum fat levels were assessed by the number of coronary arteries involved.

Discussion

Ischemic heart disease causes more death and disability than any other disease in developed and developing countries. These diseases have imposed economic costs on society and the individual, and with the urbanization of the developing world, the prevalence of the risk factor for IHD in

these areas is increasing rapidly [5]. Widespread increases in IHD have been identified worldwide and are likely to become the most common cause of death worldwide by 2020. Also, the prevalence of this disease is increasing in our country [6]. It should be noted that several factors affect this disease, such as increased blood lipid levels, increased sugar and other risk factors, many of the risk factors that cause the disease can be prevented. For any intervention to reduce the risk factor and disease-causing factors, basic information is needed on the frequency of these risk factors in the community and patients, so this study was performed to determine the prevalence and type of hyperlipidemia in patients undergoing cardiac surgery [7]. In this study, 150 patients with coronary artery disease who were CABG candidates were divided into three groups based on the number of vessels involved in angiography: single-vessel, 2-vessel and 3-vessel involvement, and their serum fat levels were compared. Among 217 patients, single vascular involvement, 26% had 2 vascular involvement and 71.3% had 3 vascular involvement. In a study by Jin 1 and colleagues in China, 125 patients had much more single-vessel involvement, 113 had 2-vessel involvement, and 107 had 3-vessel 3-vessel involvement. In one study, among their patients, 33.4% had single-vessel involvement, 39.7% had two-vessel involvement and 27.4% had three-vessel involvement [8, 10-12]. Again, in the present study, the ratio of single-vessel involvement was much lower and CAD in our community It looks much wider and more intense. In the present study, the overall male-to-female prevalence was 86 to 64, and like other studies in all groups, especially those with multiple vascular involvement, it was male. In the Ladia study in El Salvador, the male-to-female ratio was 62 to 38. In Penalva's study in 2008, 53.2% of her patients were male [9, 13-15]. The mean age of patients in this study was 58.2 years and the mean age was lower in the group of monovascular patients, although the differences were not significant. The mean age of CABG candidate patients was 56.3 years, which was similar to the present study [10, 16-18]. In all of our study groups, they were matched in terms of sex, age, smoking, and other MI. Although these risk factors were somewhat higher in multivariate conflict groups, the differences between the groups were not significant, so the distorting effect of these factors The danger was removed [11, 19-22]. In assessing blood lipid levels by considering the cut-off point of 130 for LDL for HLD 260 for HLD 260 for triglyceride and 200 for total cholesterol, in total patients increased LDL by 7.3%, decreased HDL by 10.7%, increased TG by 8% and increased cholesterol. Tom was reported to be 6.7% [8, 23-25]. Comparing the rate of hyperlipidemia in each case in different groups according to the number of

vessels involved in angiography, it was observed that the prevalence of total cholesterol and LDL hyperlipidemia in multivascular patients is significantly higher than monovascular. In other studies, dyslipidemia, especially elevated cholesterol and LDL and decreased HDL, has been identified as a strong risk factor for coronary heart disease [26-28]. In one study, the ratio of total cholesterol to HDL was reported as the most important factor with the number of coronary arteries involved. In a study in El Salvador, the ratio of total cholesterol to HDL was significantly higher in patients with coronary artery disease [12, 29-31].

Conclusion

Total cholesterol and LDL are important indicators for predicting the extent of coronary artery involvement. While the prevalence of elevated total cholesterol and elevated LDL are associated with multivascular involvement, the role of elevated LDL in multivessel coronary artery involvement is more effective than increased total cholesterol. Total cholesterol and LDL are among the predictors of the potential need for surgical intervention.

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