Chapter 7

PREOPERATIVE ALBUMIN AND DEVELOPMENT ATRIAL FIBRILLATION IN HEART SURGERY

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INTRODUCTION:

Atrial fibrillation is a common arrhythmia after cardiac surgery. Studies have shown that postoperative atrial fibrillation (POAF) increases long-term cardiovascular mortality and morbidity (ischemic stroke, heart failure, cerebrovascular diseases) (1,2).

Determining the risk of atrial fibrillation development in the postoperative period is effective in planning treatment and therefore reducing morbidity and mortality. For this reason, many biomarkers such as serum vitamin D levels has been investigated for the formation of POAF in patients undergoing heart surgery (3).

Inflammation, oxidative stress, and autonomic nervous system stimulation play a role in the pathogenesis of POAF, which is caused by many perioperative risk factors (age, gender, obesity, diabetes mellitus, duration of cardiopulmonary bypass (CPB), infection, bleeding and inotropic use) (4).

In this study, we aimed to investigate whether preoperative levels of albumin can predict POAF development after cardiac surgery.

METHOD:

Database screening was completed in accordance with the published guidelines (5). Aim of the review was to determine the possible role of preoperative serum albumin levels importance for the prediction of atrial fibrillation following cardiac surgery. And also we aimed

to determine the possible cut-off point for albumin level. We investigated the database between 01.01.2023 and 01.03.2023. No publication date was determined for the trials. Used electronic databases were Scopus, Web of Science, Ovid, and

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factor only in univariate logistic regression analysis. On the other hand, in an epidemiological study conducted by Liao et al. (29) in 2020, the connection between serum albumin level and atrial fibrillation in a total of 12833 patients were examined with the Mendelian randomization. According to this study, there was an inverse relationship between serum albumin level and the frequency of atrial fibrillation independently in a linear pattern; however, the mendelian randomization analysis showed that albumin did not have a causal role in the occurrence of atrial fibrillation. This result is consistent with the meta-analysis we have done.

Limitations:

Our analysis has two important limitations. The first is that the studies are not randomized controlled studies. The second is the low number of patients in individual studies. Although POAF is a complication with a high frequency and serum albumin level is an easily accessible marker, the small sample size is seen as an important limitation in terms of studies.

CONCLUSION:

Albumin level is generally used for prediction of nutritional status of intensive care patients. And it is also a biomarker of inflammation. Inflammation is one of the important cause of atrial fibrillation. Therefore, it is thought that it can be used to determine postoperative atrial fibrillation. However in contrast to literature our analysis could not determine that the preoperative serum albumin level as an inflammation marker has an effect on the development of POAF. Despite this result the larger randomized controlled studies are needed on this subject because of the high heterogeneity of the published studies.

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