Impact of epicardial fat on the development of coronary heart disease: a systematic review of the literature

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1 INTRODUCTION

Epicardial fat (EG) is defined as the layer of adipose tissue bounded by the myocardium and pericardium. One of the functions attributed to this fat layer is cardiac thermoregulation through lipid energy supply. In addition, GE has anti-inflammatory properties on the adjacent cardiac muscle through the release of chemicals. There are a number of factors that affect EG, such as age, gender, ethnicity, and body mass index. It is predicted that, due to its anatomical proximity to the coronary arteries, the uncontrolled growth of GE may actively contribute to the development of coronary atherosclerotic disease.

2 OBJECTIVE

The purpose of this systematic literature review (SLR) is to evaluate the impact of Epicardial Fat on the development of Coronary Heart Disease.

3 METHODOLOGY

According to PRISMA recommendations, a literature search was performed in the Pubmed database using the keywords "epicardial fat" and "coronary disease". This resulted in a set of articles of significant relevance to this systematic literature review. Clinical studies and clinical trials were included, and review articles, letters to the editor, and clinical cases were excluded. Articles had to be published in English, Portuguese, or Spanish, have been published for 10 years or less, and demonstrate human outcomes.

In a first phase, the articles were selected based on the title. After this first selection phase, the *abstract of the* articles resulting from the first phase was analyzed. Here we excluded all articles whose *abstract* demonstrated an inadequate objective or methodology for the theme. The full text was then read, and those whose information was not pertinent to the present RSL were eliminated. Here the major inclusion criterion was: studies that directly compared the influence of GE on the development

of CD, without criteria for the method of measuring GE. In order to reduce bias, articles that focused particularly on specific groups of individuals with other known associated comorbidities, namely *Diabetes Mellitus,* were excluded.

Therefore, of the 664 articles submitted using the aforementioned keywords, 633 were excluded using the filters for the exclusion criteria. Of the 31 found, 17 were eliminated by reading the title. The 14 articles with potential interest were reduced to 11 by reading the *abstract* and to 5 by studying the full text.

4 DEVELOPMENT

After eliminating uninteresting articles through the exclusion criteria of title, abstract, and full text, 5 final articles remained. The main objective was common to all of them, however, they had different specific objectives. Answering the main objective, it was concluded from the articles that the amount of EG relates to the presence and development of CD. The EG is directly related to age, BMI and abdominal circumference, being higher in males, hypertensive individuals and those with DM.

As for the different types of fat and their influence on the development and progression of CD, the articles showed that GE plays a leading role in this disease while abdominal fat is not related to the development of calcified plaques.

5 CONCLUDING REMARKS

This Systematic Literature Review concludes that, given the increase in GE, these individuals are subject to a higher probability of developing CHD. Thus, the importance of measuring the GE through diagnostic imaging, such as echocardiography or computed tomography, is justified in an attempt to promote a progressively earlier diagnosis that has an impact on the survival of these individuals.

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