

SYSTEMIC LEVELS OF BIOCHEMICAL COMPONENTS AND INFLAMMATORY MARKERS IN PATIENTS WITH SEVERE OBESITY: A LITERATURE REVIEW

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ABSTRACT

Introduction: Obesity is currently one of the most serious public health problems. Its prevalence has been growing sharply in recent decades, even in developing countries, turning it into a global epidemic. Severe obesity is a complex condition that manifests itself through significant changes in the systemic levels of these inflammatory markers and biochemical components, often leading to the recommendation of bariatric surgery. **Objective:** To verify the systemic levels of biochemical components and inflammatory markers in different studies with the severely obese population. **Methodology:** Five original articles were extracted from the PubMed, Google Scholar, and Scielo databases, published between 2018 and 2024. The Health Sciences Descriptors (DeCS) used for the search were: “severe obesity,” “bariatric surgery,” and “biochemical markers,” with the Boolean operator “AND.” The inclusion criteria were publications in any language, original studies, and free access. **Results:** in obese individuals, there is an increase in glucose levels, blood lipids, and inflammatory markers, such as CRP and IL-6, in addition to an increase in oxidative stress, which can contribute to metabolic and cardiovascular comorbidities, requiring therapeutic interventions that modulate these markers. **Conclusion:** The studies analyzed demonstrated that obesity significantly impacts several biochemical markers, exacerbating both glycemic and lipid conditions and promoting a chronic inflammatory state.

Keywords: Severe obesity; Bariatric surgery; Biochemical markers.

INTRODUCTION

Obesity is currently one of the most serious public health problems. Its prevalence has been growing sharply in recent decades, even in developing countries, turning it into a global epidemic (JAACKS et al., 2019). In this sense, adipose tissue, previously seen only as an energy reserve, is now recognized as an endocrine organ that secretes adipokines with diverse inflammatory functions (ELAGIZI, et al., 2018). These adipokines include interleukins (IL-1, IL-6, IL-8, IL-12), tumor necrosis factor alpha (TNF- α), leptin, and resistin, which are involved in inflammatory and metabolic processes (FRÜHBECK, 2004). In obesity, the increase in adipose tissue promotes the excessive production of these adipokines, resulting in low-grade chronic

inflammation that is associated with several comorbidities (RODRIGUEZ-AYALA, et al., 2020).

Severe obesity is a complex condition that manifests itself through significant changes in the systemic levels of these inflammatory markers and biochemical components, often leading to the recommendation of bariatric surgery. Therefore, this study aimed to verify the systemic levels of biochemical components and inflammatory markers in different studies with the severely obese population.

METHODOLOGY

This study is characterized as a literature review. The search for articles was conducted in PubMed, Google Scholar, and Scielo databases, in addition to a manual search of references of included studies. The search criteria established were studies published between 2018 and 2024, using the Health Sciences (DeCS) descriptors: "severe obesity," "bariatric surgery," and "biochemical markers," with the Boolean operator "AND." The inclusion criteria were clinical trials, published in any language and freely accessible, that addressed the topic; incomplete studies and those with missing data were excluded.

RESULTS

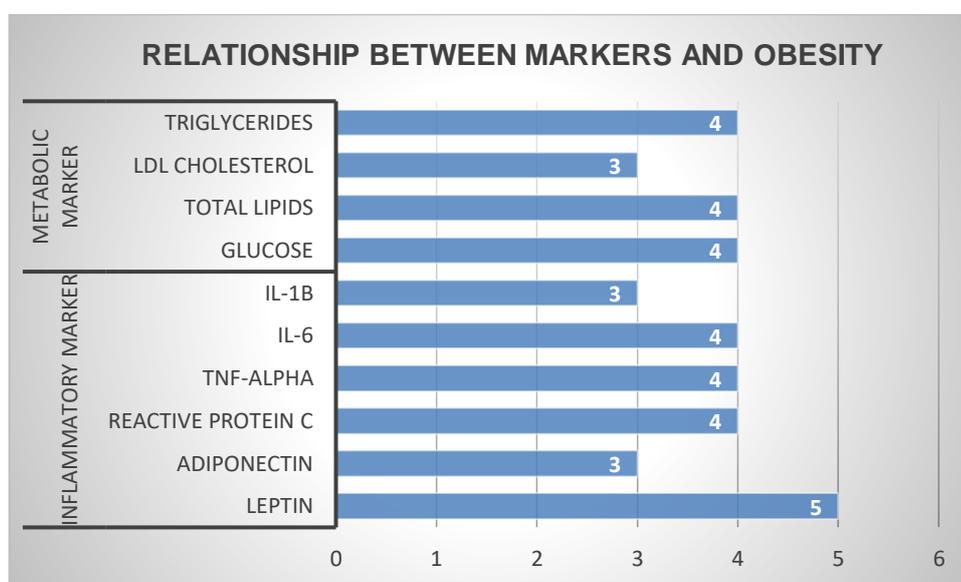
Five original articles were selected that demonstrated a comprehensive understanding of the interactions between inflammatory markers, biochemical components, and severe obesity, providing a solid basis for the development of effective therapeutic strategies for the management of obesity and its comorbidities.

According to the articles, each marker has a degree of association with obesity. In the study by Menezes et al., the relationship between leptin and adiponectin was observed, with the former having a strong genetic association with obesity, while the latter had lower levels of association but still had a genetic impact on concentrations in relation to the disease. In the study by Chielle, the aim was the relationship between C-reactive protein (CRP), which has been shown to be a relevant inflammatory marker in metabolic syndrome and obesity. In addition, the same article discussed IL-1 β , which is related to chronic inflammation and metabolism in metabolic syndrome. The article

by Giuliani et al. reported that interleukins TNF- α and IL-6 are markers that increase in obesity and also in response to bariatric surgery. Now, regarding metabolic markers (glucose, total lipids, LDL, and triglycerides), the article by Nascimento et al. showed that all of them increase in body compositions more prone to obesity.

Figure 1 demonstrates these findings, considering the intensity of the markers in relation to obesity on a scale of 1 to 5, with 5 being the highest intensity found, taking into account only the articles found and the author's interpretation. The graph was created using Microsoft Excel, using data found in the articles researched for the integrative literature review.

Figure 1. Relationship between markers and obesity



Source: author

In addition, according to the articles researched, it was clear that in individuals with obesity, there is an increase in glucose levels, blood lipids, and inflammatory markers, such as CRP and IL-6, as well as an increase in oxidative stress, which can contribute to metabolic and cardiovascular comorbidities, requiring therapeutic interventions that modulate these markers.

CONCLUSION

The studies analyzed demonstrated that obesity significantly impacts several biochemical markers, exacerbating both glycemic and lipid conditions and promoting a chronic inflammatory state. These changes highlight the role of obesity in the deterioration of metabolic health and predisposition to chronic diseases. On the other

hand, therapeutic interventions, such as strength training and surgical procedures, have been shown to be effective in modulating these biomarkers. Thus, these therapeutic approaches may offer substantial improvements in the metabolic health of obese individuals, highlighting the importance of multifaceted strategies for the management and treatment of obesity.

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