

The Function of Fatty Acid Protein Complex in Heart Disease

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Introduction

Fatty acid binding proteins (FABPs) are proteins found in the cytosol that contribute to cardiovascular disorders such as atherosclerosis and metabolic syndrome. FABPs function as intracellular lipid chaperones, interacting with hydrophobic ligands and mediating their transport to lipid metabolism sites. To date, nine distinct members of the FABP family (FABP 1-9) have been identified and classified based on the tissue in which they are most abundant.

FABP3 has been shown in the literature to be a promising clinical biomarker for coronary and peripheral artery disease. Given the increasing prevalence of cardiovascular disease and its associated morbidity and mortality, identifying biomarkers for early detection and treatment is critical [1]. We highlight key discoveries and recent studies on the role of FABP3 in cardiovascular disorders, with a particular emphasis on its clinical relevance as a biomarker for peripheral artery disease, in this review symptoms when present are progressive dyspnoea and cough. The identification of IPF is the basis for the diagnosis.

Description

Cardiovascular disease (CVD) is a major cause of death worldwide, accounting for 17.5 million deaths each year. Atherosclerosis, endothelial dysfunction and dyslipidemia continue to be important risk factors for CVD. Clinically, blood vessel complications that lead to coronary, cerebrovascular and peripheral artery disease (PAD) account for the majority of CVD morbidity and mortality. PAD is a devastating CVD that causes lower extremity arterial atherosclerosis and affects over 200,000,000 people worldwide. Despite the fact that PAD significantly increases the risk of amputation and death, it is still poorly diagnosed and treated. In comparison to patients with coronary artery disease (CAD), PAD patients have a worse long-term prognosis [2].

One reason is that there is no PAD equivalent for cardiac troponin, a widely used biomarker in CAD. As a result, PAD patients are frequently misdiagnosed and receive delayed care. The ankle brachial index (ABI) is currently the only accepted PAD screening tool, but it has several limitations, including unreliability in adults with diabetes, reliance on the test administrator and difficult interpretability [3].

Fatty acid binding proteins (FABPs) are intracellular proteins involved in lipid transport. Researchers have identified nine distinct isoforms of this protein, all of which share the mechanism of interacting with lipid ligands and transporting them to metabolic sites. The distinct function of each isoform is still under investigation. Nonetheless, the role of FABPs in lipid processing within atherosclerotic cells such as adipocytes, macrophages and endothelial cells suggests their significance in CVD development. FABP3 has been linked to a number of cardiovascular diseases. FABP3, a small protein found intracellularly

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within cardiac or skeletal muscles, is released into circulation and excreted into the urinary system following skeletal muscle injury, which may occur as a result of PAD-related tissue ischemia. Previous research in this area has shown that FABP3 plays a role in metabolic syndrome, mitochondrial dysfunction and CVD. Several recent studies demonstrating the utility of FABP3 as a potential biomarker for the diagnosis and prognosis of PAD patients will be highlighted in this review.

Poor diet and lack of physical activity are major modifiable risk factors for CVD because they increase blood lipid levels, which is a driving mechanism for atherosclerosis, a major contributor to CVD. Additionally, smoking raises the risk of CVD by damaging the endothelium, the innermost cell lining of blood vessels. Older age, male sex and a family history of CVD, hypercholesterolemia and hypertension are all non-modifiable risk factors for CVD. CVD risk is frequently associated with higher serum cholesterol levels and vascular system degeneration, resulting in loss of arterial elasticity in the elderly [4,5].

Conclusion

Atherosclerosis, a chronic disease characterised by the formation of lipid-rich plaques on blood vessel walls, causes stenosis and turbulent flow. The formation of fatty streaks, soft lesions containing lipid deposits and foam cells is the first step in the atherosclerotic process. These entities protrude into the vascular lumen over time, limiting flow and causing downstream ischemia. Hypercholesterolemia is the primary cause of fatty streak formation, with other mechanisms playing a supporting role. Circulating low-density lipoproteins (LDL) can cross the endothelium and enter the vessel's intimal layer, where they are oxidised and cause inflammation

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Conflict of Interest

There are no conflicts of interest by author.

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