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EDITORIAL

Monocyte Inflammatory Signaling

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Editorial referring to the article: Biomarker-associated Monocyte Inflammatory Signaling in Myocardial Infarction

The human race evolves and is increasingly exposed to new risk factors that increase the chance of acute cardiovascular events. Today, classic risk factors include pollution, obstructive sleep apnea syndrome, individual income, marital status, stress due to injuries of all kinds, economic factors, and others.

Observational studies have shown an upward trend towards an increase in deaths from cardiovascular disease due to exposure to risk factors, lack of more efficient control, adherence to treatments, policies for drug distribution, in addition to the possibility of diagnosing the disease. The scenario observed by the high rates of obesity, overweight, sedentary lifestyle, diabetes, high blood pressure, and smoking is far from ideal, and, in relation to new risk factors, the situation is still very early.[1,2]

However, the beginning of the development of atherosclerosis follows a well-defined pathophysiological pattern. Models developed by Peter Libb, Paul Ridcker, among others have boosted the concept and knowledge of this disease.[3,4]

Guimarães et al.[5] compared the classic biomarkers of myocardial injury according to the current fourth universal definition of myocardial infarction used in medical routine and the behavior of subsets of monocytes opens new frontiers for a better and more complete assessment of the state of myocardial injury. Monocytes were then reclassified and are now defined into three subsets according to CD14 and CD16 surface markers, as follows: CD14++CD16− are termed classical monocytes; CD14++CD16+ are termed intermediate, and CD14+CD16++ are termed non-classical.

Keywords

Monocytes; inflammatory; signaling.

The statistical treatment was very well designed and conducted, with the choice of the non-parametric Kruskal-Wallis test for differences between groups, the Dunn test to identify which groups were different, and, finally, the application of the Cuzick test to assess trends of growth increase.

This promising study concluded that, in non-inflammatory states, classical monocytes are predominant and may represent up to 90% of monocytes. However, inflammatory states lead to an increased proportion of non-classical monocytes compared to baseline.

Thus, it was observed that, in patients with unstable angina, there was a high count of CD14+CD16+ monocytes (intermediate and non-classical), which are associated with the thickness of the coronary fibrous cap in atherosclerotic lesions.[6] On the other hand, in patients with stable angina, CD14+CD16+ was shown to be associated with the vulnerability of atherosclerotic plaque.[7] These laboratory data are of paramount importance for the management of these patients, and it has been observed that CD14+CD16+ monocytes have a greater capacity to interact with endothelial cells, greater ability to present antigens, and increased expression of inflammatory cytokines compared to CD14+CD16+.[5]

These findings demonstrate that CD14++CD16+ monocytes are associated with cardiovascular disease and the progression and instability of atherosclerotic plaque.

These data will increase the understanding of the current state of patients with atherosclerosis in the therapeutic and temporal management of the current inflammatory state.

For decades, we were restricted to the diagnosis of acute myocardial infarction through surface electrocardiogram, nonspecific markers, specific markers, and confirmation through hemodynamic studies. With the introduction of

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interventional treatments, a great innovation occurred, and millions of patients have been treated all over the world, mainly in coronary care units. This goal is still very distant in our environment, but, with advances in the creation of new units, parallel to this, adequate levels of new goals for cholesterol laboratory tests, management of platelet antiaggregants, more intensive treatment of blood pressure and diabetes, efforts to combat sedentary lifestyle and smoking, and consideration of new risk factors have boosted treatment for the better. Despite the study's methodological and sample limitations, the study in question was a major step towards the development of new tools for diagnosing acute coronary artery disease events and the inflammatory state of the atherosclerotic plaques. Thus, it has opened a new field of study for this very serious disease in the sense that, in the future, we will have a methodology that evaluates the inflammatory state of plaques and consequently correct the conventional treatment applied. These advances remain dependent on new assessments and research through multicenter studies with a larger number of participants.

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