

**EDITORIAL**

# The Multifaceted Role of Epicardial Fat in Cardiovascular Diseases

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Epicardial fat continues to fascinate the imagination of many researchers after the recent discovery of its multifaceted role in various cardiovascular diseases. The inflammatory cytokines released by the fat depots surrounding the heart have been recognized to play an important role in the determination of coronary artery disease, being associated with a higher incidence and severity of coronary artery stenosis.<sup>1</sup> At the same time, this metabolically active tissue has been associated with a higher recurrence of atrial fibrillation after catheter ablation and with worse outcomes in heart failure patients.<sup>2</sup> However, it is currently not known whether epicardial fat represents just a surrogate marker associated with atherosclerosis, or is rather one of its main determinants.

The link between epicardial fat and inflammation, as well as the link between inflammation and cardiovascular diseases, is well-known and largely accepted. However, few studies succeeded so far to demonstrate any link between epicardial fat and coronary plaque vulnerabilization, while the role of inflammation in acute coronary syndromes is also well-known.

Three articles published in this number of JIM address the issue of epicardial fat from the cardiovascular perspective.

In the first one, Nyulas *et al.* demonstrate that epicardial fat volumes are significantly higher in patients with acute coronary syndromes as compared to stable patients, identifying the presence of vulnerability features in coronary plaques of hearts surrounded by large epicardial depots.<sup>3</sup>

In the second one, Rat *et al.* prove that rather than the global epicardial fat, the local accumulation of fat around a coronary lesion, named periplaque adipose tissue, could serve as a more reliable marker associated with plaque vulnerability, being associated with CT features that characterize unstable plaques in a significantly higher extent than the global epicardial fat or the total intrathoracic fat.<sup>4</sup>

In the third article, Rat *et al.* prove that besides its role as marker of plaque vulnerability, epicardial fat could also serve as a marker of increased risk in other diseases such as pulmonary hypertension associated with various conditions: congenital heart diseases and coronary artery diseases, or secondary to sclerodermia.<sup>5</sup>

All three articles have in common the focus on epicardial fat as an inflammation-related marker easily identified by imaging techniques, from classical echocardiography to modern cardiac computed tomography. However, they underline the need for further investigation in this direction, as they only open new hypotheses. These hypothesis-generating studies have been tested by the authors on a low number of patients, with promising results; however, they need validation on larger cohorts in order to offer a clear answer to many open questions related to the role of epicardial fat in cardiovascular diseases.

#### **CONFLICT OF INTEREST**

Nothing to declare.

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