radiation exposure doses for rest-stress MPI Tc-99m SPECT (≈11 mSv), stress-only MPI SPECT (≈3 mSv), rest-stress MPI PET Rubidium-82 (≈3 mSv), and rest-stress MPI PET 13N (≈2 mSv) are represented in the recent consensus document (3). In addition, as defined by the authors, novel SPECT camera technology may allow us to reduce radiation doses with SPECT imaging (5). Stress-only MPI use may be encouraged whenever possible to reduce radiation exposure. Finally, in figure 1, the statement of "TM" should be corrected as "ETT" as this was a typographical error.

In conclusion, stress MPI SPECT and PET imaging performed with currently available techniques have a high diagnostic accuracy in the assessment of symptomatic women with intermediate and intermediate-high CAD risk. In addition, technological advancements in nuclear cardiology including novel cameras and coronary flow reserve calculation by PET hold promise in reducing the radiation exposure and risk stratification of women with CAD.

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References

1. Canpolat U, Özer N. Noninvasive cardiac imaging for the diagnosis of coronary artery disease in women. Anatol J Cardiol 2014; 14: 741-6. [CrossRef]
2. Mieres JH, Shaw LJ, Arai A, Budoff MJ, Flamm SD, Hundley WG, et al. Role of noninvasive testing in the clinical evaluation of women with suspected coronary artery disease: Consensus statement from the Cardiac Imaging Committee, Council on Clinical Cardiology, and the Cardiovascular Imaging and Intervention Committee, Council on Cardiovascular Radiology and Intervention, American Heart Association. Circulation 2005; 111: 682-96. [CrossRef]
3. Mieres JH, Gulati M, Bairey Merz N, Berman DS, Gerber TC, Hayes SN, et al. Role of noninvasive testing in the clinical evaluation of women with suspected ischemic heart disease: a consensus statement from the American Heart Association. Circulation 2014; 130: 350-79. [CrossRef]
4. Bateman TM, Heller GV, McGhie AI, Friedman JD, Case JA, Bryngelson JR, et al. Diagnostic accuracy of rest/stress ECG-gated Rb-82 myocardial perfusion PET: comparison with ECG-gated Tc-99m sestamibi SPECT. J Nucl Cardiol 2006; 13: 24-33. [CrossRef]
5. Nakazato R, Berman DS, Hayes SW, Fish M, Padgett R, Xu Y, et al. Myocardial perfusion imaging with a solid-state camera: simulation of a very low dose imaging protocol. J Nucl Med 2013; 54: 373-9. [CrossRef]

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Epicardial fat and coronary artery disease: An open debate

To the Editor,

Epicardial adipose tissue (EAT), a source of several adipokines, is located between the outer wall of the myocardium and the visceral layer of the pericardium. The paracrine or vasocrine secretion of several bioactive molecules such as tumor necrosis factor alpha, interleukin-6, plasminogen activator inhibitor-1, and resistin from EAT may have a promoting effect on atherosclerosis (1). Indeed, several studies have reported a positive association between epicardial fat thickness (EFT) and coronary artery disease (CAD) (2, 3).

We read with great interest the article titled "Epicardial adipose tissue thickness is associated with myocardial infarction and impaired coronary perfusion" published by Tanındı et al. (4) in Anatol J Cardiol. They reported that increased EFT is associated with acute myocardial infarction (AMI), and it may prove beneficial for identifying patients who would need more aggressive approach in terms of risk reduction.

In agreement with previous studies (1-3), the present study provides further information which aims to determine the relationship between impaired coronary perfusion and EFT in a wide range of chest pain syndromes.

As mentioned by the authors, the measurement of EFT with two-dimensional echocardiography has some advantages, including easy accessibility, rapid applicability, and good reproducibility. However, EAT has a three dimensional distribution and two-dimensional echocardiography may not provide sufficient information about the total epicardial volume (1).

It has been demonstrated that EAT may display cardioprotective properties by secreting antiinflammatory and antiatherogenic adipokines such as adiponectin and adrenomedullin. It may also promote the expansion of the coronary lumen during the early phases of atheromatous plaque obstruction (5). On the other hand, stable angina pectoris, unstable angina pectoris, and AMI are different clinical entities with respect to pathophysiology, presentation, and management. It would be useful if Tanındı et al. (4) examined the association between EFT and CAD after adjusting for other cardiovascular risk factors. Therefore, the conclusion stated by Tanındı et al. (4) should be interpreted with caution because their correlations do not necessarily prove causation.

Main issues that need to be answered are as follows: Is epicardial fat a modifiable risk factor or how can we translate these encouraging results into the clinical practice? More importantly, what is the mean of more aggressive approach other than percutaneous coronary intervention, statins, anticoagulants, and other therapies in a wide range of patient population as per the present study?

In conclusion, the role of EAT in atherosclerosis is an open debate. Further clinical and experimental studies are needed to determine the function of EAT in different pathological conditions.

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References

1. Şengül C, Özveren O. Epicardial adipose tissue: a review of physiology, pathophysiology, and clinical applications. Anatol J Cardiol 2013; 13: 261-5.
2. Mazurek T, Zhang L, Zalewski A, Mannion JD, Diehl JT, Arafat H, et al. Human epicardial adipose tissue is a source of inflammatory mediators. Circulation 2003; 108: 2460-6. [CrossRef]
3. Shemirani H, Khoshavi M. Correlation of echocardiographic epicardial fat thickness with severity of coronary artery disease-an observational study. Anatol J Cardiol 2012; 12: 200-5. [CrossRef]
4. Tanındı A, Kocaman SA, Erkan AF, Uğurlu M, Alhan A, Töre HF. Epicardial adipose tissue thickness is associated with myocardial infarction and impaired coronary perfusion. Anatol J Cardiol 2015; 15: 224-31. [CrossRef]

5. Iacobellis G, di Gioia CR, Cotesta D, Petramala L, Travaglini C, De Santis V, et al. Epicardial adipose tissue adiponectin expression is related to intracoronary adiponectin levels. Horm Metab Res 2009; 41: 227-31. [CrossRef]

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Author`s Reply

To the Editor,

We thank the authors for their interest in our study entitled "Epicardial adipose tissue thickness is associated with myocardial infarction and impaired coronary perfusion." published in Anatolian Journal of Cardiology reporting an association between acute myocardial infarction and increased epicardial adipose tissue (EAT) (1). As mentioned, the association between coronary atherosclerosis and EAT has been demonstrated in many studies using either echocardiography or computed tomography (CT)/magnetic resonance imaging (MRI). EAT is three dimensional and its evaluation using CT or MRI would provide more accurate information about its volume. However, studies using echocardiography and CT/MRI have shown that these techniques are in good compliance (2). We think that it is important to categorize a patient as having increased EAT rather than precisely providing the exact EAT volume to classify a patient as "at high cardiovascular risk". Echocardiography is adequate for that purpose and is advantageous because it is inexpensive, repeatedly and easily available in almost every cardiology clinic.

The authors mentioned that EAT may have cardioprotective properties because of the secretion of anti-inflammatory and anti-atherogenic adipokines such as adiponectin and adrenomedullin, and cited Iacobellis et al. (3) However, in that study, Iacobellis et al. (3) found that EAT partially contributed to the adiponectin levels in the coronary circulation. Instead, intracoronary adiponectin levels reflected the adiponectin levels in the peripheral circulation. In addition, Iacobellis et al. (4) also stated that adrenomedullin gene and protein expression in EAT were downregulated in the presence of CAD, and there was no direct evidence that EAT contributed to intracoronary adrenomedullin levels.

We agree with the authors that stable angina pectoris, unstable angina pectoris, and acute myocardial infarction (AMI) are different clinical entities with respect to pathophysiology, presentation, and clinical management; however, we think that there is some merit in showing that EAT thickness is different among different clinical entities and providing a cut-off value to predict AMI. We accept that EAT is associated with traditional risk factors such as diabetes, hypertension, age, waist circumference, and metabolic syndrome (5). However, EAT has an additional predictive value over these, as there are studies highlighting an independent association between CAD and well-known risk factors.

We provided an association between increased EAT thickness and AMI. Apparently, this was not a prospective study where patients were followed in terms of adverse cardiac events. However, there are recent follow-up studies in the literature reporting increased cardiovascular death and myocardial infarction in patients with thicker EAT, that can be considered as supportive based on our hypothesis (6).

Finally, we think that patients with increased EAT thickness should receive more aggressive risk factor modification. What we mean by saying that is to maximize proved medical therapies based on cardiovascular protection in accordance with the current relevant guidelines. Although physicians agree on the idea of prescribing mortality reducing medications in maximum applicable doses, real life experience is not so promising. These high risk patients may be followed up closer than others to check for the status of the modifiable risk factors.

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References

1. Tanındı A, Kocaman SA, Erkan AF, Uğurlu M, Alhan A, Töre HF. Epicardial adipose tissue thickness is associated with myocardial infarction and impaired coronary perfusion. Anatol J Cardiol 2015; 15: 224-31. [CrossRef]
2. Sacks HS, Fain JN. Human epicardial adipose tissue: a review. Am Heart J 2007; 153: 907-17. [CrossRef]
3. Iacobellis G, di Gioia CR, Cotesta D, Petramala L, Travaglini C, De Santis V, et al. Epicardial adipose tissue adiponectin expression is related to intracoronary adiponectin levels. Horm Metab Res 2009; 41: 227-31. [CrossRef]
4. Iacobellis G, di Gioia CR, Di Vito M, Petramala L, Cotesta D, De Santis V, et al. Epicardial adipose tissue and intracoronary adrenomedullin levels in coronary artery disease. Horm Metab Res 2009; 41: 855-60. [CrossRef]
5. Iacobellis G, Ribaudo MC, Assael F, Vecci E, Tiberti C, Zappaterreno A, et al. Echocardiographic epicardial adipose tissue is related to anthropometric and clinical parameters of metabolic syndrome: a new indicator of cardiovascular risk. J Clin Endocrinol Metab 2003; 88: 5163-8. [CrossRef]
6. Hajsadeghi F, Nabavi V, Bhandari A, Choi A, Vincent H, Flores F, et al. Increased epicardial adipose tissue is associated with coronary artery disease and major adverse cardiovascular events. Atherosclerosis 2014; 237: 486-9. [CrossRef]

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The detection of cardiac tamponade by hemodynamic transesophageal echocardiography after left ventriculer assist device implantation

To the Editor,

Hemodynamic Transesophageal Echocardiography (hTEE) is a new technology in the follow-up of postoperative patients in the cardiovascular surgery intensive care units. It can provide bedside, continuously available, direct cardiac imaging by its disposable probe for up to 72 hours and guide treatment by the detection of complications and assessing ventricular filling and volume status (1-3). This is the reason that it is called as hemodynamic.

We present the case of a 61-year-old patient hospitalized with the diagnosis of decompensated heart failure and given diuretic treatment.