

Invited Editorial / Davetli Editöryal Yorum

The relationship between echocardiographic epicardial adipose tissue and P wave dispersion and corrected QT- interval

Ekokardiyografik epikardiyal yağ dokusu ile P dalga dispersiyonu ve düzeltilmiş QT aralığı arasındaki ilişki

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Epicardial adipose tissue (EAT) is a kind of visceral fat accumulation between the heart and the visceral pericardium. It is in direct contact with coronary arteries, and is more abundantly located in the atrioventricular and interventricular grooves and around the right ventricular lateral wall.^[1] There has been ongoing interest regarding the functions and consequences of a greater quantity of EAT. Embryologically, EAT has been shown to be related to omental and mesenteric tissues.^[2] It has the ability to produce proinflammatory cytokines, just as visceral adipose tissue does.^[2]

Some of the proposed physiological roles of EAT are contributing to the regulation of vascular flow by cytokines, functioning as an immune and mechanical barrier to the coronary arteries, and producing thermogenic effects.^[2] It may also serve as a source of fatty acids for the myocardium in case of excessive demand.^[2] The quantity of EAT increases in a state of positive energy balance, which shares similar pathophysiological mechanisms with visceral fat accumulation during the progression of metabolic syndrome.^[2] EAT seems to be related to obesity and greater age. There is also inconsistent data regarding a relationship between EAT and gender.^[2]

EAT has the ability to display paracrine cardiac effects due to a close anatomical relationship with the

myocardium and coronary arteries. The local effects of cytokines can accelerate the atherosclerotic process through increased inflammation and endothelial dysfunction.^[3,4] It may also contribute to plaque instability.^[5] There is considerable evidence that the quantity of EAT is related to the presence and severity of coronary artery disease.^[6] Furthermore, aside from the effects on atherosclerosis, fatty infiltration in the myocardium may also interfere with diastolic relaxation and the cardiac conduction system.^[2]

Abbreviation:

AF Atrial fibrillation

EAT Epicardial adipose tissue

In this issue of the Archives of the Turkish Society of Cardiology, Quisi et al.^[7] have evaluated the relationship between echocardiographic EAT thickness, P-wave dispersion, and the corrected QT interval in a population of patients with clinically suspected coronary artery disease but angiographically normal coronary arteries. The authors demonstrated increased P-wave dispersion in patients who had an EAT thickness greater than the median value compared with patients who had an EAT thickness less than the median value. However, the corrected QT interval was lower in the high-EAT group. Multiple logistic regression analysis yielded an independent positive association between EAT thickness and P-wave dispersion and a negative independent association between EAT thickness and the corrected QT interval. The observation of an as-

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sociation between EAT and P-wave dispersion is consistent with the results of a study conducted by Cicek et al.^[8] in a similar patient population. The authors of that study found a significant correlation between P-wave dispersion and EAT thickness; however, there was no significant association between EAT and QT dispersion. Multiple regression analysis revealed left atrial diameter to be the only independent predictor of P-wave dispersion in their study. P-wave dispersion has been assumed to reflect inhomogeneous atrial conduction, and it has been suggested to be a predictor of paroxysmal atrial fibrillation (AF).^[9] Based on these results, it might be suggested that EAT thickness is associated with an increased propensity for AF. Both local inflammation and fatty infiltration of the myocardium might have contributed to inhomogeneous atrial conduction in these patients. In agreement with this hypothesis, most clinical and epidemiological studies have demonstrated a relationship between EAT and the presence, severity, and recurrence of AF.^[10] A recent study conducted with Japanese patients has shown a significant association between the tomographic EAT volume index measurement and the prevalence of paroxysmal AF and persistent AF.^[11] The authors suggested that cutoff values predicted paroxysmal AF and persistent AF development independently of other risk factors.

The clinical significance of the negative association between EAT and QT interval observed in the present study is not clear at the moment. This observation might provide an impetus for future studies that evaluate the relationship between EAT thickness and ventricular arrhythmias.

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