**Prooxidant-Antioxidant Balance and Antioxidized LDL Antibody Level Values and Cardiac Function in Patients with Coronary Artery Disease**

Amir Ali Rahsepar\(^a\), Asadollah Mirzaee\(^a\), Fatemeh Moodi\(^a\)
Mohsen Moohebati\(^a\), Shima Tavallaie\(^b\), Ali Eshraghi\(^a\), Maryam-Sadat Alavi\(^a\)
Fatemeh Khorashadizadeh\(^a\), Hossein Pourghadamyari\(^b\), Roghayeh Paydar\(^a\)
Maral Amini\(^a\), Roshanak Khojasteh\(^b\), Somayeh Mousavi\(^a\), Maryam Sahebi\(^a,c\)
Majid Ghayour-Mobarhan\(^a,b\), Gordon A.A. Ferns\(^d\)

\(^a\)Cardiovascular Research Center, and \(^b\)Biochemistry of Nutrition Research Center, Faculty of Medicine, and
\(^c\)Department of Cardiovascular Surgery, Quem Hospital, Mashhad University of Medical Science, Mashhad, Iran;
\(^d\)Institute for Science and Technology in Medicine, University of Keele, Stoke on Trent, UK

**Abstract**

Objectives: We studied the association between the prooxidant-antioxidant balance (PAB), anti-malondialdehyde-modified low-density lipoprotein (oxidized LDL, ox-LDL) IgG antibody and indices of cardiac function (systolic and diastolic function) in patients with coronary artery disease (CAD).

Methods: Fifty-five patients with established CAD were selected, and serum levels of anti-ox-LDL IgG and PAB values were measured and compared with 40 matched healthy controls. Systolic and diastolic functions were determined for all patients.

Results: PAB values were significantly higher in patients than in controls (p < 0.001), whilst serum anti-ox-LDL concentrations were not statistically different between the 2 groups (p = 0.821). However, after adjustment for high-density lipoprotein cholesterol, the patients had higher anti-ox-LDL levels (p = 0.04). Total PAB values were inversely associated with ejection fraction (r = -0.326, p = 0.031), but this was not the case for anti-ox-LDL in either group (p > 0.05).

Conclusion: Serum concentrations of a marker of oxidative stress (PAB values) are inversely associated with cardiac function. PAB is a relatively simple index that could be incorporated into risk assessment in CAD patients. Anti-ox-LDL IgG antibody concentration does not appear to reflect total oxidative stress as assessed by PAB.

**Introduction**

Cardiovascular disease (CVD) is a major cause of death and disability worldwide [1]. Traditional risk factors account for no more than 25–30% of the excess cardiovascular risk factors in patients [2], suggesting that other risk factors play an important role in the pathogenesis of atherosclerosis. In recent decades, oxidative stress [3] and immune responses [4] have been considered as significant risk factors for vascular events.

Oxidative stress describes a situation where the production of reactive oxygen species (ROS) is greater than...