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Correlation between calcification and oxidative stress in chronic Kawasaki disease

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Introduction: Patients with acute Kawasaki disease (KD) sometimes develop coronary lesions despite undergoing various medical treatments. Such patients have to undergo appropriate medical therapy and undergo long term follow-up. These coronary lesions initially show dilatation or aneurysms and their appearance is altered over time because of remodeling. It is now thought that these lesions may finally lead to atherosclerosis. Oxidative stress is known to play an important role in vascular remodeling and arteriosclerosis progression. However, the dynamics of oxidative stress in KD are not known. In this study, we investigated the correlation between calcification (as the final stage of atherosclerosis) and oxidative stress in patients with chronic KD.
Methods: We measured the reactive oxygen metabolite (dROM) levels and biological antioxidant potential (BAP) in 23 patients with chronic KD; of these patients, 9 had coronary calcification, 9 did not have calcification, and 5 did not have coronary lesions. Oxidative stress indicates the imbalance of the redox system; therefore, we tried to evaluate the oxidative stress by determining the balance between dROM and BAP (adjusted ratio, BAP/dROM/7.541; normal range, 1.0±0.13) and compared these ratios for each group.
Results: The patients who had calcification had lower dROM values and higher BAP values than the patients who did not have calcification. Thus, the adjusted ratio was significantly higher in the patients who had calcification ($p<0.01$).
Conclusions: Calcification may be one of the factors responsible for the collapse of the balance of the redox system in patients with chronic KD. Calcification is a well-known risk factor for cardiovascular events; therefore, evaluating oxidative stress may aid in predicting cardiovascular events in patients with chronic KD.