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Endothelial function in Kawasaki patients

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BACKGROUND: Kawasaki disease (KD) consists of an acute systemic vasculitis of unknown aetiology. Cardiac complications are frequent and include endothelial dysfunction (ED) in patients with coronary anomalies. Up to now it has not been clearly demonstrated the presence of ED in KD patients who had no coronary lesions. Peripheral arterial tonometry (Endo-PAT) measures the reactive hyperemia mediated by NO release in response to local ischemia. It has been validated in adult population to assess microvascular function, but its use in pediatric patients is scarce.

Aim: To evaluate endothelial dysfunction (ED) in children and young adults as long term complication after KD, using Endo-PAT.

METHODS: Case-control study. Group A: KD patients aged more than 11, with KD diagnosed for more than 5 years and no coronary lesions or any other identified risk factor for cardiovascular disease including normal body surface mass. Control Group: individuals without cardiovascular risk factors, matched for gender and age. Patients and controls were accessed clinically, and by electrocardiography and echocardiography. Endo-PAT was performed to determine reactive hyperemia index (RHI) and augmentation index (AI). It was repeated one to three months later, to assess consistency of data.

RESULTS: 35 individuals were evaluated (Group A: 19 vs Controls: 16). Groups were comparable in terms of gender distribution (women: 37% vs 43%), age (21 ± 6 yo) and height (166 ± 9). Compared with control group KD patients presented significant lower RHI (1.68 ± 0.49 vs 2.31 ± 0.53 ; $p=0.001$, Mann Whitney test). AI was similar in both groups (-10 ± 7 vs -11 ± 5 ; $p>0.005$). The majority of patients with KD disclosed ED (68%) detected by RHI compared with 12% in controls. In fact KD patients had 5.5 folds increased risk for ED as a long term follow up complication of KD compared to controls.

CONCLUSION: Peripheral arterial tonometry is feasible, safe and reproducible in pediatric population to study endothelial function. Endothelial dysfunction is a frequent long term complication in patients after Kawasaki disease and normal appearing coronary arteries compared with healthy controls. However, these results need validation in a larger population.