

Cardiovascular Risk Assessment and Ventricular Strain in Children with Psoriasis

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Introduction: Psoriasis is a systemic inflammatory disease affecting both adults and children. It is increasingly recognized that psoriasis may cause cardiovascular events in adults. This increased risk wasn't studied in children up to date. We investigated cardiovascular risk in childhood psoriasis by using carotid intima-media thickness(CIMT), arterial functions and ventricular strain.

Methods: The study consisted of 20 patients with psoriasis and 20 controls. Psoriasis activity and severity index (PASI) was calculated. Echocardiographic examinations were performed by using Philips IE33 echocardiography machine equipped with a L-11MHz lineer probe for carotid and arterial studies and 5-MHz transducer for ventricular strain. CIMT, arterial stiffness, distensibility, flow mediated dilatation of brachial artery (FMD) were calculated. M-mode and Doppler studies were performed in standart fashion. Longitudinal and global strain were studied using apical four-chamber(4C), long axis(LAX),and two-chamber(2C) views.

Results: The mean age of patients was 14.2 ± 0.89 (12-16 years)(12 girls, 8 boys) and the control group 14.05 ± 0.88 (12-16 years)(12 girls, 8 boys). Mean follow-up period was 8.7 months(5-14 months), PASI was 7.0 ± 1.84 (4-10.7). None of the patients had arthritis, overt cardiovascular disease or under medical treatment.

CIMT was higher in patients than control group, difference was not statistically significant. Aortic stiffness was significantly higher in psoriasis group(0.32 ± 0.14 ; 0.18 ± 0.089 , $p=0.02$). FMD (at 1st and 3rd minutes) didn't differ significantly between the groups .

There were significant differences in terms of interventricular septum diastolic (IVSD), left ventricle posterior wall diastolic diameter (LVPWD), Mitral E, Mitral A and E/A values between the patients and the control group (0.71 ± 0.065 , 0.68 ± 0.04 ; 0.73 ± 0.041 , 0.75 ± 0.038 ; 0.68 ± 0.07 , 0.76 ± 0.056 ; 0.43 ± 0.07 , 0.35 ± 0.06 ; 1.64 ± 0.22 , 2.17 ± 0.35 , $p<0,05$ respectively). Tissue Doppler imaging (TDI) revealed significant changes in terms of mitral lateral annulus E', A', E'/A, isovolumetric contraction time(IVCT), and ejection time(ET) ($0,62\pm 0.07$, 0.70 ± 0.02 ; 0.39 ± 0.036 , $0,50\pm 0.031$, 1.58 ± 1.88 , 1.34 ± 1.14 , 74.7 ± 6.65 , 75 ± 5.77 , 154.85 ± 3.57 , 137.95 ± 10.84 ; $p<0,05$ respectively)

Global circumferential and longitudinal strain were significantly lower in patients (-21.3 ± 3.75 , -23.6 ± 3.78 ; -19.8 ± 1.89 , -23.4 ± 3.92 ; $p<0,05$ respectively).

Conclusion: Our study demonstrated impaired ventricular and arterial functions and increased risk for atherosclerotic heart disease in psoriatic patients and the early changes are detectable even during childhood. Eliminating other preventable risk factors and close monitorization may be helpful in decreasing deleterious cardiovascular events.