Evaluation of Myocardial Functions in Children Receiving Anthracyclines


Dr. Behçet Uz Children’s Hospital, Izmir, Turkey (1); Gulhane Military Medical Academy, Ankara, Turkey (2)

Objective: In our study, using echocardiographic measurements in patients with acute lymphoblastic leukemia receiving anthracycline therapy have evaluated presence of anthracycline-induced cardiac dysfunction and it has been carried out to determine the statistical echocardiographic parameters that best predict it.

Methods: Thirty cases (mean age 9.87±3.92 years, 13 males and 17 females) with pediatric hematological conditions receiving anthracycline therapy were enrolled in the study, along with 30 age-matched controls. Their cardiac functions were evaluated echocardiographically with two dimensional, M-mode, PW Doppler and PW tissue Doppler methods.

Results: The left ventricular cardiac functions were significantly reduced in the study group. The fractional shortening (FS) was 36.09 ± 3.17% (range 28-41%) in the study group as opposed to 39.65 ± 3.21% (34-45%) in controls (p= 0.03 ). The Diastolic functions (E/A ratio) weren’t significantly change in the study group. (Right ventricular (RV) flow E/A 1.36±0.29 and 1.34±0.69, p>0.05. Left ventricular (LV) flow E/A 1.53±0.31 and 1.58±0.35, p> 0.05. The myocardial performance index (MPI) was calculated in the study subjects using both PW Doppler and PW tissue Doppler methods and compared to controls. RV flow MPI 0.39±0.02 and 0.33±0.03, p< 0.01. LV flow MPI 0.41±0.08 and 0.34±0.04, p < 0.01. RV tissue MPI 0.44±0.04 and 0.39±0.05, p< 0.01. LV tissue MPI 0.42±0.02 and 0.36±0.01, p < 0.01.

Conclusions: The results of our study show that MPI (especially LV flow MPI, LV tissue MPI) and systolic functional changes are better indicators of anthracycline cardiotoxicity than are diastolic functions. We suggest that LV flow MPI and LV tissue MPI be primarily used in the search for anthracycline cardiotoxicity.