Objectives: No definite markers have been established to identify patients in whom anthracycline-containing chemotherapy may represent a high risk for the development of cardiotoxicity. We aimed to evaluate the predictive value of comprehensive echocardiography in anthracycline-induced cardiomyopathy.

Study design: In a prospective design, the study included 39 patients (9 males, 30 females; mean age 53.7±11.5 years) who received antineoplastic therapy including anthracycline. Comprehensive echocardiographic examination including tissue Doppler imaging and coronary flow reserve was performed before treatment with anthracycline and at the end of a six-month follow-up.

Results: Eight patients (20.5%) developed cardiomyopathy during the follow-up period. Compared to patients with unaffected left ventricular ejection fraction at 6 months, patients with cardiomyopathy exhibited significant differences in baseline left ventricular systolic diameter, mitral E/A, E-wave deceleration time, Sm, Em, Em/Am ratio, SEm duration, and the Tei index. In univariate logistic regression analysis, only Sm (OR 0.40, p=0.002) and the Tei index (OR 3.24, p=0.02) were significant variables for the development of cardiotoxicity. These two were also the only independent predictors of anthracycline cardiotoxicity in multivariate linear regression analysis. Receiver operating characteristic curve analysis yielded a cut-off value of 8 cm/sec for Sm and 0.38 for the Tei index to predict cardiomyopathy.

Conclusion: Our findings suggest that Sm and myocardial performance index (the Tei index) are significant independent markers to identify patients at high risk for the development of anthracycline-induced cardiomyopathy.