P-118

Usefulness of B-type natriuretic peptide and pro-inflammatory interleukin 6 levels to predict adverse cardiac events in adolescents and adults with congenital heart disease.

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Introduction:
Natriuretic peptides, neurohormones and inflammatory cytokines, all products of the failing heart, are present in elevated concentrations in the circulation of patients with congenital heart disease. Their prognostic value, though, remains unknown.
Methods:
Sixty consecutive clinical stable patients, mean age 28.9±11.4 years old, 53% male, with various forms of CHD, were recruited from a tertiary center. B-type brain natriuretic peptide (BNP) and interleukin 6 (IL-6) were measured prospectively and the patients were followed for major cardiovascular events   (MACE), including death or hospitalization for 5.1±1.1 years. Cox proportional hazard ratio analysis was used to determine the relation of BNP and IL-6 concentrations to all cause mortality. Receiver operating characteristics curves were used to determine the cut-off values for BNP and IL-6 that would best predict all-cause mortality.
Results:
Most patients were symptomatic (48.3% with NYHA II and 36.7% with NYHA III), seventeen (28.3%) of them were cyanotic at rest and sixteen (26.6%) had ventricular dysfunction. Mean plasma concentrations of BNP and IL-6 were 106.6±98.6 pg/ml and 2.4±2.6 pg/ml respectively. Twenty-two patients (36.6%) experienced a MACE during the follow-up period, among them 8 patients (13.3%) died. Both BNP and IL-6 were proved to be strong predictors of survival (hazard ratio for every pg/ml unit increase, 2% and 12.9% respectively, 95% confidence interval 6.5% to 19.8%, p<0.05) respectively. A BNP value > 241 pg/ml predicted MACE with a sensitivity of 65.38% and a specificity of 73.53% (Area Under the ROC Curve, i.e. AUC = 0.693, p< 0.0001). An IL-6 value > 1.54 pg/ml predicted MACE with a sensitivity of 61.53% and a specificity of 73.53% (AUC = 0.627, p< 0.0001). No patient with a BNP level < 241 pg/ml and IL-6 level < 1.54 pg/ml died during the follow-up period.
Conclusions:
Both BNP and IL-6 levels strongly predicted MACE in symptomatic ambulatory patients with various forms of congenital heart disease, during mid-term follow up and could be used as easy applicable risk stratification markers in this population.