Poster

[P27-4] P27-4: Cardiovascular drugs (1)

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[P27-4-5] Serum digoxin concentration and mortality in patients with heart failure

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Background

Digoxin increases the intracellular concentration of calcium resulting in an increase in the force of myocardial contractions, slowing of the heart rate and a decrease in the conduction velocity through the atrioventricular node. Therefore, digoxin has been used to treat congestive heart failure. At high serum concentrations, however, digoxin develops several toxicities. Post-hoc analysis of the DIG trial suggested that mortality was increased at the high concentration ($\geqq$1.2 ng/ml) in heart failure patients and to maintain at low concentration (<0.9 ng/ml) was recommended. However, serum trough concentration of digoxin in the DIG trial was assessed only at one month after start of digoxin therapy and subsequent concentrations were not evaluated. The aim of this study was to evaluate the relationships between digoxin serum concentration and mortality in heart failure patients.

Methods

We retrospectively studied 370 heart failure patients who started digoxin therapy at Tokyo Women's Medical University Hospital between 2008 and 2015. Data on serum digoxin concentrations, patient clinical characteristics and concomitant medications were obtained from medical records and laboratory data. Digoxin concentrations were calculated using a modification of the Rosendaal's linear interpolation method. The primary endpoint was mortality and the secondary endpoint was digoxin toxicities. The survival curve was assessed by the Kaplan Meier method. The incidence rates (per 100 person-years) of death and toxicity were categorized by a concentration <0.6 ng/ml, 0.6 to 0.89 ng/ml, 0.9 to 1.19 ng/ml, $\geqq$1.2 ng/ml.

Results

During the median follow-up period was 978 days, 36 (9.7%) patients died. The mortality rate at a concentration <0.6 ng/ml, 0.6 to 0.89 ng/ml, 0.9 to 1.19 ng/ml and $\geqq$1.2 ng/ml was 3.0, 3.0, 6.8 and 3.0/100 patient-year, respectively. The toxicity rate at a concentration <0.6 ng/ml, 0.6 to 0.89 ng/ml, 0.9 to 1.19 ng/ml and $\geqq$1.2 ng/ml was 1.8, 2.1, 4.5 and 3.8/100 patient-year, respectively. The incidence rates of death and toxicity were not statistically significance.

Conclusions

Our results suggested that higher serum digoxin concentrations were not associated with increased mortality in heart failure patients.