Prognostic Value of CA125 with NT-proBNP in Patients with Acute Heart Failure

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**Background:** Carbohydrate antigen-125 (CA-125) is an emerging prognostic biomarker in heart failure. We aimed to test the long term prognostic value of CA-125 in combination with N-terminal pro-brain natriuretic peptide (NT-proBNP) in patients with acute decompensated heart failure.

**Methods:** A total of 419 patients (64.1±15.6 years-old, 214 men) suffered acute decompensated heart failure between 2005. Jan and 2013. July were retrospectively enrolled. All-cause mortality during 2 years follow-up was investigated for the prognosis of the patients. 

**Results:** During follow-up, 109 (26.0%) deaths were recorded. In multivariable analysis model, CA-125 was an independent prognostic marker (log CA-125 hazard ratio 1.23 [1.02-1.48], \( p = 0.030 \)) together with age, sex, NYHA class, β-blocker use, inotropics use and NT-proBNP level. We divided the study cohort into 4 groups according to the levels of NT-proBNP (cutoff value 5269 pg/ml for 2-year survival) and CA-125 (cutoff value 54.5 U/ml for 2-year survival). Kaplan-Meier survival analysis demonstrated that the group with both low marker levels showed best 2-year survival (87.9%) followed by the group with low NT-proBNP and high CA-125 level (76.1%), high NT-proBNP and low CA-125 (64.7%) and high NT-proBNP and high CA-125 (54.3%) (\( p < 0.001 \)). Likelihood ratio test showed that addition of NT-proBNP level to established risk factors increase the predictive power for mortality (global chi-square from 130.6 to 138.3, \( p = 0.005 \)). Addition of CA-125 on the top of the combination of NT-proBNP and established risk factors still more increased the predictive power for mortality (global chi-square from 138.2 to 143.3, \( p = 0.026 \)) in patients with acute decompensated heart failure.

**Conclusions:** CA-125 was an independent prognostic marker in patients with acute decompensated heart failure. Combined use of CA-125 and NT-proBNP provided a significant improvement in prediction of mortality in patients with acute decompensated heart failure.

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Recurrent stroke in relation to the grade of patent foramen ovale

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**Purpose:** Previous studies have demonstrated a strong association between the presence of patent foramen ovale (PFO) and cryptogenic stroke. We aimed to investigate the relationship between the grade of PFO and recurrent stroke.

**Methods:** Consecutive 120 patients who underwent transesophageal echocardiography (TEE) for evaluation of cryptogenic stroke were retrospectively collected. Each stroke in all patients was classified as an index stroke and a recurrent stroke; the recurrent stroke was defined as a case which had definite history of previous stroke and/or showed old ischemic lesion on brain MR in addition to acute lesion. PFO was diagnosed by a cardiologist based on TEE using agitated-saline contrast and Valsalva maneuver. Quantification of PFO was graded as 0 (no microbubbles), 1 (1-5 microbubbles), II (6-20 microbubbles), or III (>20 microbubbles). We also reviewed conventional risk factors of ischemic stroke in all patients.

**Results:** A total of 96 patients (55±13 years, 66 men) were analyzed after excluding 34 patients who showed extracardiac shunt, interatrial septal defect, or nondiagnostic TEE. PFO was observed in 88 (92%) patients; 8 patients with grade 0, 16 with grade I, 35 with grade II, and 37 with grade III. Index strokes and recurrent strokes were observed in 59 and 37 patients, respectively. Risk factors of hypertension (n=43), diabetes (n=12), dyslipidemia (n=25) and smoking (n=30) were observed. Increasing grades of PFO was not related to the presence of recurrent stroke in the study patients (\( p = 0.118 \)). In multivariate analysis including age, sex, PFO grading, and the risk factors, PFO grading was still not a significant predictor for recurrent stroke (odds ratio =0.68, 95% confidence interval [CI]=0.42-1.11). In the multivariate analysis, age, sex, and the risk factors were also not significant predictors for recurrent stroke (data not shown).

**Conclusions:** Despite a well-known association between the presence of PFO and cryptogenic stroke, the amount of shunt through PFO was not related to recurrent strokes in this study. The relationship between the grade of PFO and the recurrence of stroke needs large prospective study.