**P1030**

## Elevated baseline brain natriuretic peptide level was associated with poor outcome after multiple catheter ablation for paroxysmal atrial fibrillation

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**Background:** Serum Brain Natriuretic Peptide (BNP) level is associated with various cardiovascular events. Because elevated BNP level reflects increased left ventricular end-diastolic pressure and LA pressure promoting left atrial (LA) remodeling, BNP level might be associated with the extent of arrhythmogenic substrate in patients with atrial fibrillation (AF). We hypothesized that elevated BNP level has impact on outcome after catheter ablation (CA) for AF.

**Purpose:** We investigated the impact of baseline BNP level on outcome after multiple CA for paroxysmal atrial fibrillation (PAF), and assessed the association between baseline BNP level and extent of LA remodeling.

**Methods:** This was a retrospective, single-center observational study. A total of 287 patients who underwent CA for PAF in our institute from March 2012 to March 2014. All patients had dataset of baseline BNP level and LA volume measured by multi-detector computed tomography (MDCT) in sinus rhythm. First we performed receiver operating characteristic (ROC) analysis for recurrence after multiple CA and obtained the best cut-off value of BNP. Patients were divided into Low BNP and High BNP group based on BNP cut-off value, and AF-free survival was analyzed with log-rank test. To assess the impact of BNP level on recurrence, multivariate Cox regression model were performed. Finally, we assessed the extent of baseline LA remodeling in low BNP and high BNP group.

**Results:** During follow-up period, AF recurred in 65/287 patients (26.2%) after multiple CA procedure (follow up 3.4 [2.2, 4.0] years, total number of sessions: 1.39±0.63). Patients with recurrence had greater baseline BNP than those without recurrence (99.8 pg/mL [30.0, 128] vs. 60.7 pg/mL [17.3, 80.8], recurrence vs. no-recurrence, $P<0.05$). In ROC analysis, baseline BNP had mild accuracy for the prediction of recurrence (AUC: 0.63, P=0.002, best cut-off value: 57.3 pg/mL). We divided patients into High BNP group (BNP≥57.3, N=106) and Low BNP group (BNP<57.3, N=181). AF-free survival was higher in Low BNP than in High BNP (Figure 1) (83.4% vs. 67.0%, Low vs. High, $P<0.001$). After adjustment with age, gender, hypertension, heart failure, body mass index, LA diameter and LV ejection fraction, High BNP (BNP≥57.3) was associated with recurrence (Hazard ratio: 2.31, 95% CI 1.42–3.75, $P<0.001$). In baseline parameters of LA remodeling measured with MDCT, Low BNP group had higher LA emptying fraction (41.7±9.5 vs. 32.0±8.5%, Low vs. High, $P<0.001$) and lower indexed maximum LA volume (48.5±12.0 vs. 61.3±16.7 mL/m$^2$, $P<0.001$) (Figure 2).

**Conclusion:** Baseline serum BNP level was associated with recurrence after multiple procedures for PAF. The baseline extent of LA remodeling was greater in High BNP than in Low BNP. Elevated BNP level might reflect the severe LA remodeling causing ablation-refractory AF even after multiple CA. The preoperative assessment of BNP might be helpful for prediction of multiple CA outcome.

**Figure. 1 AF-free survival-rate after multiple ablation**

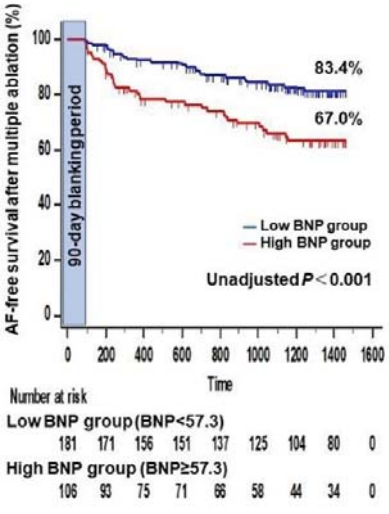
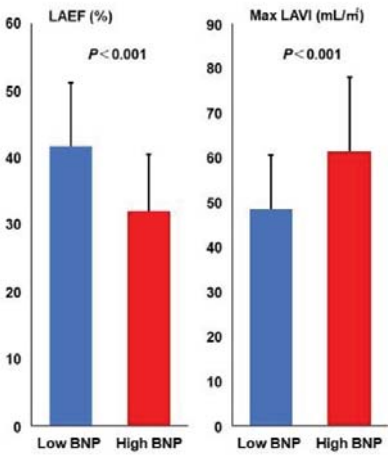



**Figure. 2 Parameters of Left atrial function**




LAEF : Left atrial emptying fraction
Max LAVI :Indexed maximum left atrial volume

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