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Impact of catheter ablation for atrial fibrillation on clinical outcome in elderly patients hospitalized for acute heart failure

M. Manita, T. Asahi, N. Yokota, M. Nakata, N. Higa, K. Tabata. *Naha City Hospital, Department of Cardiology, Naha, Japan*

Background: Very recently, the result of CASTLE-AF Clinical Trials has been announced. It showed that catheter ablation for atrial fibrillation (AF) in patients with heart failure (HF) was associated with better prognosis. However, mean age of the participant in this trial was 64 years old. And in the other similar studies, mean age was also in the 60's or less. Each AF and HF is increasing with age, and coexistence of both conditions also increases with age. Especially, for the elderly patients aged 80 or older, the loss of social resources related to HF admission is enormous in developed countries.

Purpose: We investigated the impact of AF ablation on clinical outcome in elderly patients hospitalized for acute HF.

Methods: Elderly patients aged 65 or older hospitalized for acute HF underwent AF ablation after the treatment of acute HF (Ablation group, n=17, range 65 to 89 years old). Control subjects were selected from consecutive patients aged 65 or older with AF who were hospitalized for acute HF before we started AF ablation (Non-ablation group, n=63). All patients were followed for 1 year. The endpoint was the composite endpoint of cardiac mortality and readmission for worsening HF.

Results: In ablation group, one patient (6%) needed a second session for recurrence of AF and 15 patients (88%) maintained sinus rhythm and had no event during observation period. Mean age (Ablation group: 79±7 vs. Non-ablation group: 84±8 years old, p<0.05), initial diastolic blood pressure on admission (100±26 vs. 82±20 mmHg, p<0.01), serum creatinine (0.89±0.24 vs. 1.27±0.67 g/dl, p<0.01), and hemoglobin (13.8±1.9 vs. 11.5±2.4 g/dl, p<0.01) differed between the groups. Unadjusted hazard ratio for composite endpoint (Ablation vs. Non-ablation) was 0.215, (confidence interval: 0.066–0.699, P<0.05). After propensity score matching (n=14 each, mean age 81 years old), Kaplan-Meier curve demonstrated that composite endpoint was low in ablation group (Log-rank test, P=0.05)

Conclusions: AF ablation can reduce the adverse outcome in elderly patients hospitalized for acute HF. AF ablation would be an important therapeutic option and should be considered even in elderly patients with HF.

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Cystatin C-based estimated glomerular filtration rate to predict diuretic response to tolvaptan in acute decompensated heart failure

K. Tsuchida, K. Nishida, T. Akiyama, K. Sudo, T. Hakamata, K. Tanaka, Y. Hosaka, K. Takahashi, H. Oda. *Niigata City General Hospital, Niigata, Japan*

Background/Introduction: Tolvaptan (TLV), an aquaretic vasopressin V2 antagonist, is the treatment of choice to promptly alleviate congestion in acute decompensated heart failure (ADHF) patients with inadequate response to traditional loop diuretics. However, measures to identify responders to TLV are not well documented. Advanced chronic kidney disease (CKD) is negatively associated with TLV response. Serum cystatin C (CysC) shows a better correlation with glomerular filtration rate (GFR) and offers a more accurate predictor of several clinical outcomes compared with serum creatinine (Cr).

Purpose: The primary goal of this study was to evaluate the efficacy of serum CysC to predict diuretic response of TLV in ADHF patients.

Methods: We prospectively investigated a cohort of 74 consecutive patients hospitalized for ADHF and undergoing TLV treatment. Patients were administered TLV at ≤15 mg/day and were categorized into two groups according to mean urine volume (UV) during the first three days after initiating TLV: the upper two tertiles (UT) versus the lower tertile (LT). The UT group reflected better response to TLV. Both serum CysC and Cr were measured on admission and were used to determine estimated GFR (eGFR) for each individual patient according to the Chronic Kidney Disease Epidemiology Collaboration (CKD-EPI) equation. Spearman correlation coefficients and receiver operating characteristics (ROC) curves were used to compare the predictive ability of each eGFR for better response to TLV.

Results: Most study patients were administered TLV within three days of admission (94% in UT group versus 88% in LT group, p=0.598). Total dose of intra-

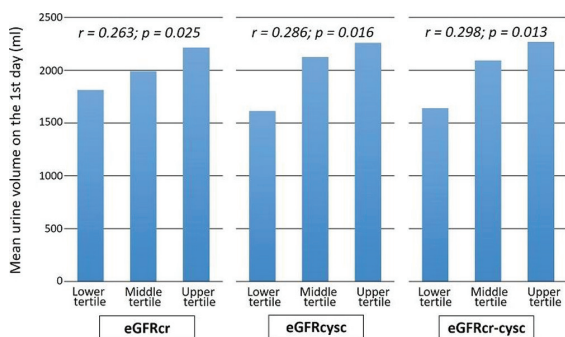


Figure 1

venous furosemide during the first three days did not differ significantly between groups (48±86 mg in UT group versus 33±47 mg in LT group, p=0.453). The UT group was associated with age (r=-0.35, p=0.035), hemoglobin (r=0.28, p=0.016), nutritional state (Geriatric Nutritional Risk Index; r=0.25, p=0.048), serum Cr (r=-0.27, p=0.023), serum CysC (r=-0.33, p=0.006), and CKD stage (r=-0.29, p=0.021), whereas urine osmolality and blood urea nitrogen did not correlate with TLV response. All CKD-EPI eGFR equations with Cr, CysC and Cr-CysC were significantly higher in the UT group than in the LT group (eGFRcr: 57±26 ml/min versus 40±20 ml/min, p=0.011; eGFRcysc: 50±26 ml/min versus 31±16 ml/min, p=0.001; eGFRcr-cysc: 53±26 ml/min versus 34±18 ml/min, p=0.002). Higher UV on the first day after TLV administration was correlated with a higher degree of all eGFRs, but the correlation strength improved by the CysC-combined eGFR (Figure). Areas under the ROC curves to predict UT group for eGFRcr, eGFRcysc, and eGFRcr-cysc were 0.697 (p=0.011), 0.699 (p=0.010), and 0.705 (p=0.008), respectively.

Conclusions: CysC-based renal assessment can potentially identify responders to TLV more adequately than Cr alone and other parameters.

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Heart failure specialist nurse-led day case ambulatory management with intravenous diuretics reduces hospitalisations for acute decompensated heart failure irrespective of ejection fraction

S. Hassan, C. Lee, T. Beleznaï, S. Nyjo, C. Jackson, K. Fenlon, J. Llewellyn, H. Douglas, P. Kanagala, R. Sankaranarayanan. *Aintree University Hospital, Cardiology, Liverpool, United Kingdom.* On behalf of Aintree Ambulatory Heart Failure Unit

Introduction: Acutely decompensated heart failure (ADHF) leads to frequent hospitalisations and prolonged in-patient stay. A specialist nurse-delivered HF unit with a multi-disciplinary approach could safely manage these patients in an ambulatory setting without the need for hospitalisation.

Purpose: Our ambulatory HF unit (AHFU) receives referrals from emergency department, primary care and community teams. The unit provides intravenous (IV) bolus furosemide (if required) at 4mg/mt in an ambulatory setting. A multi-disciplinary approach is used through regular input from day-case renal, pleural and ascites clinics, as well as palliative care team. We analysed the efficacy of ambulatory management of ADHF and compared the outcomes based on the ejection fraction (EF).

Methods: 335 consecutive patients (479 patient visits) who received IV furosemide in the AHFU from December 2014 -to December 2017 were included in this study. Mean follow-up was 10±6.7 months. Hospitalisations were compared for an equal period pre and post-AHFU treatment. Statistical analysis was performed using One Way ANOVA or Student's T test.

Results: 53% (179/335) patients had HF with reduced EF (HFREF), 35% (117/335) had HF with preserved EF (HFPEF) and 12% (39/335) had HF with mildly reduced EF (HFmREF). HFPEF patients were significantly older (median age 80; range 40–97; p=0.02) than HFmREF (76 years; range 28–93) or HFREF patients (76.5 years; range 18–96). There were more males in the HFREF group (76% vs. 53% in HFPEF and 59% in HFmREF groups). HFREF patients also had higher BNP levels (median 4555 ng/L range 267–35000; p<0.001) versus 2057 ng/L (range 215–35000) in HFPEF and 1807 ng/L (range 236–11741) in HFmREF. Baseline renal function (measured by eGFR) was similar in the 3 groups (HFREF mean 49±20 ml/min; HFPEF 49±17 ml/min and HFmREF 46±17 ml/min; p=0.6).

HFPEF patients required a higher dose of IV furosemide (median dose 200 mg, range 60–440mg; p=0.02) as well as a higher number of visits (mean 5.3±2.5; p<0.001) compared to HFREF patients (median dose 180mg; range 40–400 and mean no. of visits 4±2) and HFmREF groups (median dose 200mg, range 80–480 and mean no. of visits 4.3±2.1). HF hospitalisations reduced significantly in the HFREF group (mean 0.97±0.42 pre-AHFU service to 0.45±0.1 post-AHFU treatment; p<0.001), in HFPEF group (0.88±0.4 pre-AHFU to 0.4±0.1 post-AHFU; p<0.001) and in the HFmREF group (0.84±0.35 pre-AHFU to 0.37±0.15 post-AHFU; p<0.001). Mortality during the follow-up period was the highest in the HFREF group (33%; p=0.03) when compared to HFmREF (12%) and HFPEF (24%).

Conclusions: A specialist HF nurse-led ambulatory unit can lead to a significant reduction in hospitalisations for ADHF irrespective of the EF. HFPEF patients are generally older, require higher diuretic doses and more prolonged treatment compared to other sub-groups. Further research is required to ascertain if this could be due to a higher degree of diuretic resistance.

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Comparison of changes in the plasma volume and renal function between acetazolamide vs. conventional diuretics: understanding their mechanical differences according to the chloride theory

H. Kataoka. *Nishida Hospital, Oita, Japan*

Background: According to the "chloride theory" for heart failure (HF) pathophysiology (AHA2015/ACC2016/ESC2016), changes in the serum chloride concentration are the primary determinant of changes in plasma volume, suggesting that