A160 - A study on the predictability of global end-diastolic volume index (GEDI) through brain natriuretic peptide (BNP) measurement in the initial infusion management of septic patients with mechanical ventilation

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Introduction:
Among various measurement methods for prediction of the adequate infusion volume for septic patients requiring mechanical ventilation, the effectiveness of transpulmonary thermodilution technique (TPTD) and Global End-Diastolic Volume Index (GEDI) has become the focus of attention in recent years. However, to insert the dedicated arterial pressure line and central vein line are required for the measurement of GEDI. BNP, on the other hand, has been shown to be useful for an index to rule-in/rule-out patients with acute heart failure. The aims of this study is to verify the usability of BNP as an index for infusion management in treating septic patients requiring mechanical ventilation.

Methods:
This study is a post-hoc analysis of RCT (TPTD vs. EGDT) of an infusion management method for septic patients requiring mechanical ventilation conducted at 16 ICUs in Japan between October 2013 and March 2016. The correlation between BNP collected at 0, 24, 48, and 72 hours and GEDI measured at the same time was examined. Since the dataset used in this study consists of repeated measurement data, the analysis used the general linear mixed effect model (GLMM). The multivariate analysis adjusted with age, Cr, and cardiac index was also conducted.

Results:
Of the 143 patients with the total BNP measurements conducted for 412 times and GEDI measurements for 171 times, the median of age and SAPS2 were 73 (IQR 62-80) and 53 (IQR 43-67), and the hospital mortality rate was 25%. The univariable analysis and the multivariable analysis using GLMM respectively found statistically significant differences, with regression coefficient at 0.03 95%CI 0.01-0.06 (p=0.02), and 0.06 95%CI 0.03-0.09 (p<0.001).

Conclusion:
While a positive correlation between GEDI and BNP was statistically identified, its effect may be minor in clinical terms, and its significant clinical difference remains unclear.