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Decrease in serum N-terminal pro-N-type natriuretic peptide levels following anti-heart failure treatment predicts good prognosis in chronic heart failure

Ching Yi Chen RN and Wei-Hsian Yin
Cheng Hsin General Hospital, Taiwan

Purpose: N-terminal pro-N-type Natriuretic Peptide (NT-proBNP) is elevated in patients with chronic heart failure (CHF). The present study sought to explore the prognostic value of temporal changes in serum NT-proBNP concentration following treatment for CHF.

Methods: Serum NT-proBNP levels were measured at baseline and after 3-month anti-failure treatment in 124 patients with proven symptomatic CHF and left ventricular ejection fraction (LVEF) <40%. Major adverse cardiac events (MACE) including death, heart transplantation or hospitalization with worsening HF during a median follow-up period of 482 days were determined. Patients were divided into 4 groups according to concentrations of NT-proBNP at baseline versus 3 months, with respect to the baseline median: low→low (stable below median, n=51), high→high (stable above median, n=42), high→low (above to below median, n=20), and low→high (below to above median, n=11). Survival analysis was used to assess the risk of MACE, with adjustment for baseline NT-proBNP concentrations.

Results: Patients whose serum NT-proBNP concentration below median after treatment (high→low) had a similar MACE rate compared with the low→low patients (5% vs. 26%, P=NS). Patients whose NT-proBNP concentration worsened (low→high) had a significantly higher risk (46%) than patients in the low→low group, and indistinguishable from the high→high group (50%). Reducing of NT-proBNP was associated with increase of LVEF ($r=-0.369$, $P<0.001$).

Conclusions: Serum NT-proBNP concentration was elevated in CHF and fluctuated following the treatment and might be used as a biomarker in the management of CHF patients. Maintaining lower serum NT-proBNP concentration is associated with improving LVEF and better clinical prognosis.

ch6842@chgh.org.tw

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