Circadian Variation of N-terminal Pro-B-Type Natriuretic Peptide in Normal Population

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Background: The N-terminal pro-B-type natriuretic peptide (NT-proBNP) is a well-known hormone. But its half-life is only 60-120 minutes which varies with the time. The NT-proBNP may have a circadian variation. The normal circadian variation of NT-proBNP may affect the diagnosis of heart failure.

Objective: Primary end point was to determine the different NT-proBNP level in different time of the day.

Methods: 30 healthy volunteers aged > 20 years were enrolled for collection of NT-proBNP level at 8.00 a.m., 12.00 noon, 04.00 p.m., 08.00 p.m., and 12.00 midnight on the same day. If abnormal found in physical examination, chest radiograph, electrocardiography (ECG), renal function, and liver function, they would be excluded from the study.

Result: A total of 30 volunteers were enrolled in this study. Most of them were female (66.6%). The mean age was 30.3±5.98 years, with mean BMI 20.34±3.57 kg/m2, and mean serum creatinine 0.79±0.16 mg/dL. The level of NT-proBNP at 8.00 a.m., 12.00 noon, 04.00 p.m., 08.00 p.m., and 12.00 midnight were 36.2 ± 29.9 pg/mL, 35.4 ± 30.3 pg/mL, 39 ± 40.9 pg/mL, 32.4 ± 36.1 pg/mL, and 23.8 ± 20.3 pg/mL, respectively. The levels were not significant (p-value=0.132).

Conclusion: The level of NT-proBNP shows no significant circadian variation. The level at 04.00 p.m. is likely the maximized level at 39±40.9 pg/dL and lowest level is at 12.00 midnight.

Keywords: N-terminal pro-B-type natriuretic peptide, NT-proBNP, Heart failure, Healthy