N-TERMINAL PRO-BRAIN NATRIURETIC PEPTIDE – AN EARLY INDEPENDENT PREDICTOR OF ANTHRACYCLINE-INDUCED CARDIOMYOPATHY

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INTRODUCTION AND OBJECTIVES:

Early prediction of anticancer therapy cardiotoxicity is essential for applying proper preventive and supporting therapeutic strategies. Aim: to evaluate plasma N-terminal fragment of pro-brain natriuretic peptide (NT-proBNP) related to cardiac dysfunction assessed by transthoracic 2D echocardiography (2D-TTE) in patients with cancer and early onset asymptomatic anthracycline-induced cardiomyopathy (AIC).

METHODS:

Prospective study of 68 patients with cancer treated with anthracyclines, followed up for 6 months. Diagnosis of AIC was set at 6 months by the decrease of left ventricular ejection fraction (LVEF) below 50% or with more than 10 units or 20% from baseline. NT-proBNP and 2D-TTE were assessed at enrolment, and thereafter at 3 and 6 months.

RESULTS:

- Fifteen (22.1%) patients developed AIC at 6 months of anthracycline treatment (group 1), and 53 (77.9%) patients did not evolve with AIC (group 2).
- At 3 months, NT pro-BNP was significantly higher in patients from group 1 compared to group 2 [121.0 (119.8; 140.8) pg/mL *vs.* 97.7 (75.5; 111.7) pg/mL, $P = 0.0001$, values expressed as median (25th; 75th percentiles)].
- Left ventricular (LV) diastolic dysfunction was significantly more frequent in group 1 (93.3%) *vs.* group 2 (37.7%), $P = 0.0002$.
- NT-proBNP at 3 months proved accurate in predicting asymptomatic AIC at 6 months [area under the receiver operating characteristic curve (AUC) = 0.845, 95% Confidence Interval (CI): 0.735-0.954, $P=0.0001$]. New-installed diastolic dysfunction at 3 months had a sensitivity of 60 %, and a specificity of 77% in predicting AIC at 6 months *(Figure 1)*.
- NT-proBNP assessed at 3 months above a cut-off = 118.5pg/mL was an independent predictor of AIC at 6 months.

Figure 1. Receiver Operating Characteristic Curve plots for NT-proBNP at 3months of anthracycline therapy (*in green),* and for the percentage increase of 3 months NT-proBNP from baseline (*in blue*) accuracy in predicting AIC

CONCLUSION:

Plasma NT-proBNP at 3 months of anthracycline therapy proved to be an early independent predictor of asymptomatic anthracycline-induced cardiomyopathy.

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4. Eschenhagen T, Force T, Ewer MS, *et al.* Cardiovascular side effects of cancer therapies: a position statement from the Heart Failure Association of the European Society of Cardiology. European Journal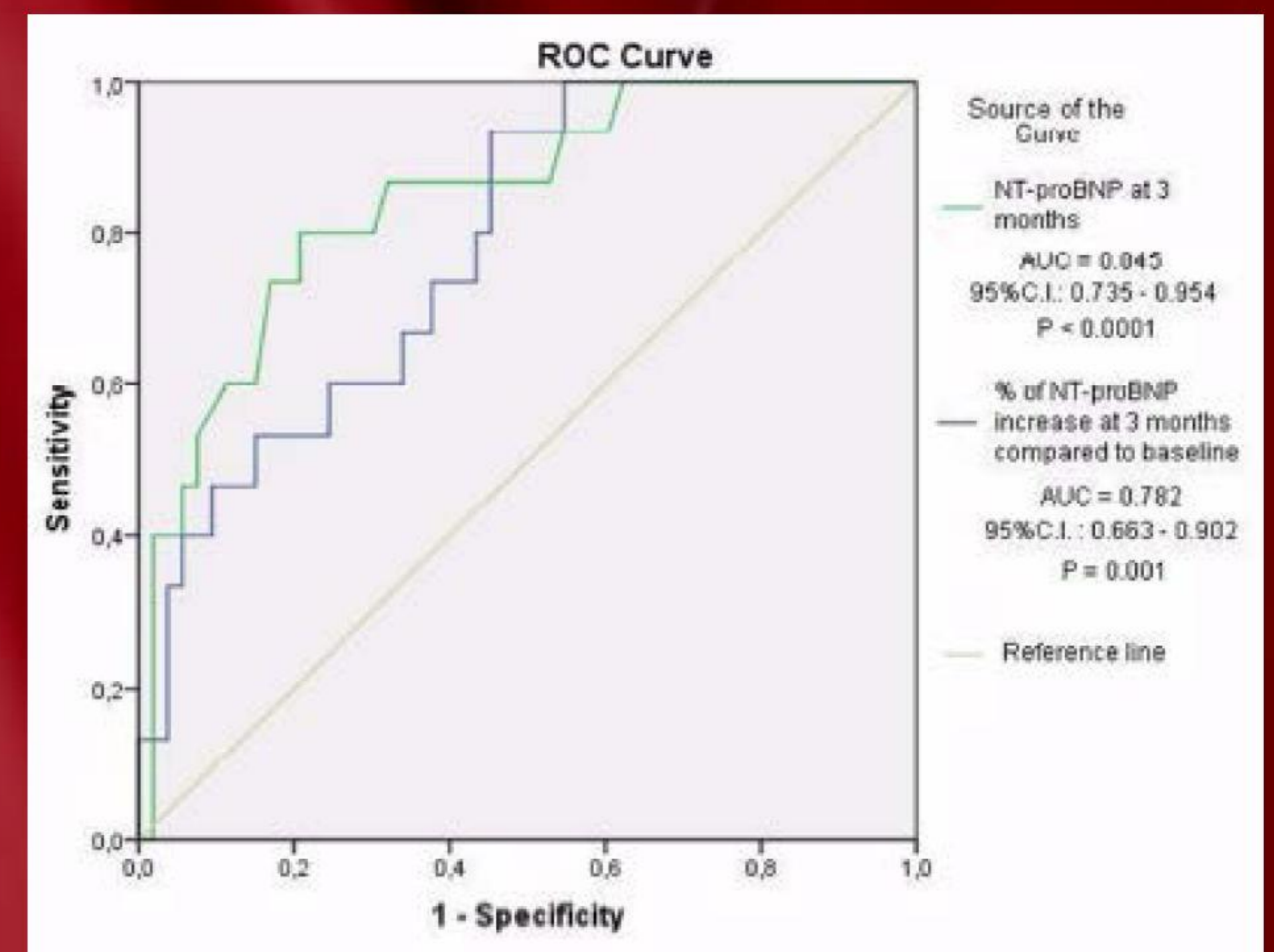 of Heart Failure. 2011; 13: 1–10.