

# FOCUS ON FUNCTIONAL ALTERATION TO PREVENT STRUCTURAL DAMAGE

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## Introduction

Troponin ths (Tro ths) and NT-pro-Brain-Natriuretic Peptide (NT-pro-BNP) are increased in cerebrovascular conditions. No significant modifications were found at serial assessment by ANOVA. Although levels may reflect more the chronicity rather than the acuity of heart dysfunction, it is recommended to monitor them (Fiori P et al, 2014-2016). The aim of our study is to evaluate their modifications, according to the “delta criterion”.

## Materials and Methods

We recruited 953 acute strokes (AS), 500 chronic cerebrovascular diseases (CCVD), 193 other neurological diseases (OND).

## Results

Levels of Tro ths above 15 pg/ml were detected in 6,7% OND, 58,2% CCVD, 67,5% AS. Signs of myocardial necrosis were observed in a minority of patients, 2,7% OND, 1,1% CCVD, 3,5% AS at electrocardiograms, 4,8% OND, 4,8% CCVD, 7,3% AS at echocardiograms. Significant differences of cardiac biomarkers were found between patients in class I/II, A/B compared to class III/IV, C/D NYHA and ACA scales. We attained significant absolute and relative percentage decrease of Tro ths in CCVD and AS, NT-PBNP in OND, CCVD, AS. AS patients with at least a 50% decrease of NT-pro-BNP had better outcomes at day 7.

## Conclusions

“Delta criterion” is pivotal for early detection of sudden acuity or worsening of chronicity. NT-pro-BNP is an early marker of cardiac overload and heralds possible rise of Tro ths. While the former is a sign of functional alteration, the latter represents already a structural damage. Absolute changes are more critical than relative ones. The reliability of cardiac biomarkers has to be evaluated in the context of clinical conditions, ECG/echocardiography.

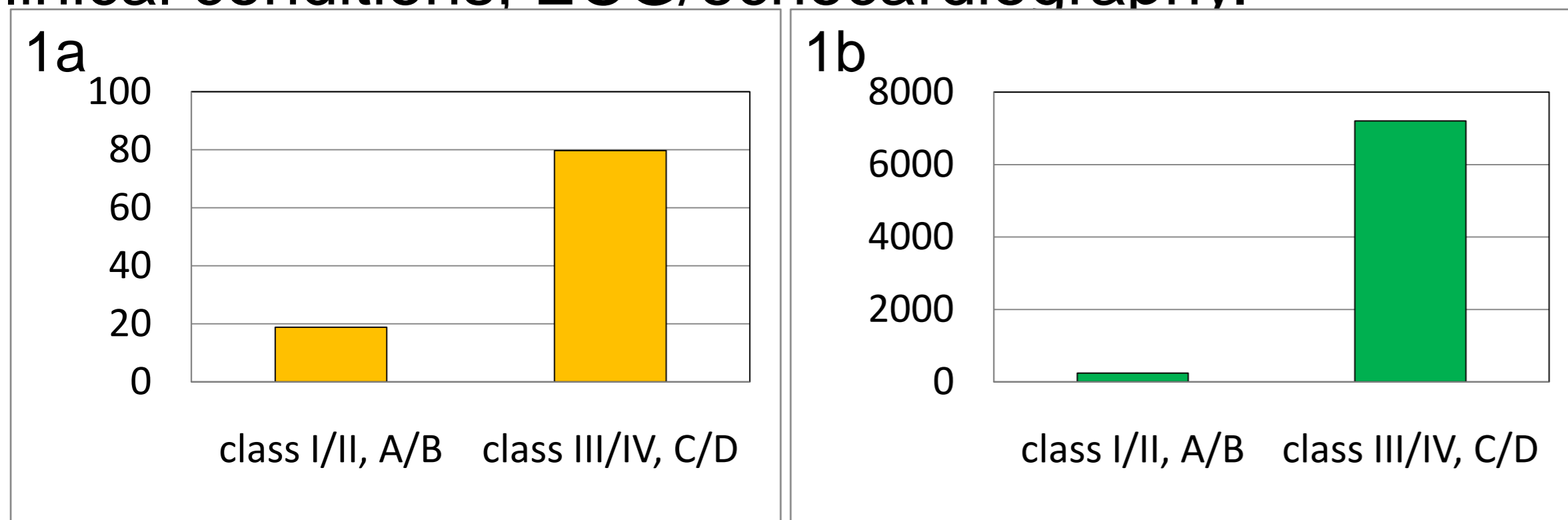


Fig. 1: Levels of Tro ths (a) and NT-PBNP (b) in class I/II, A/B and class III/IV, C/D NYHA and ACA AS patients.

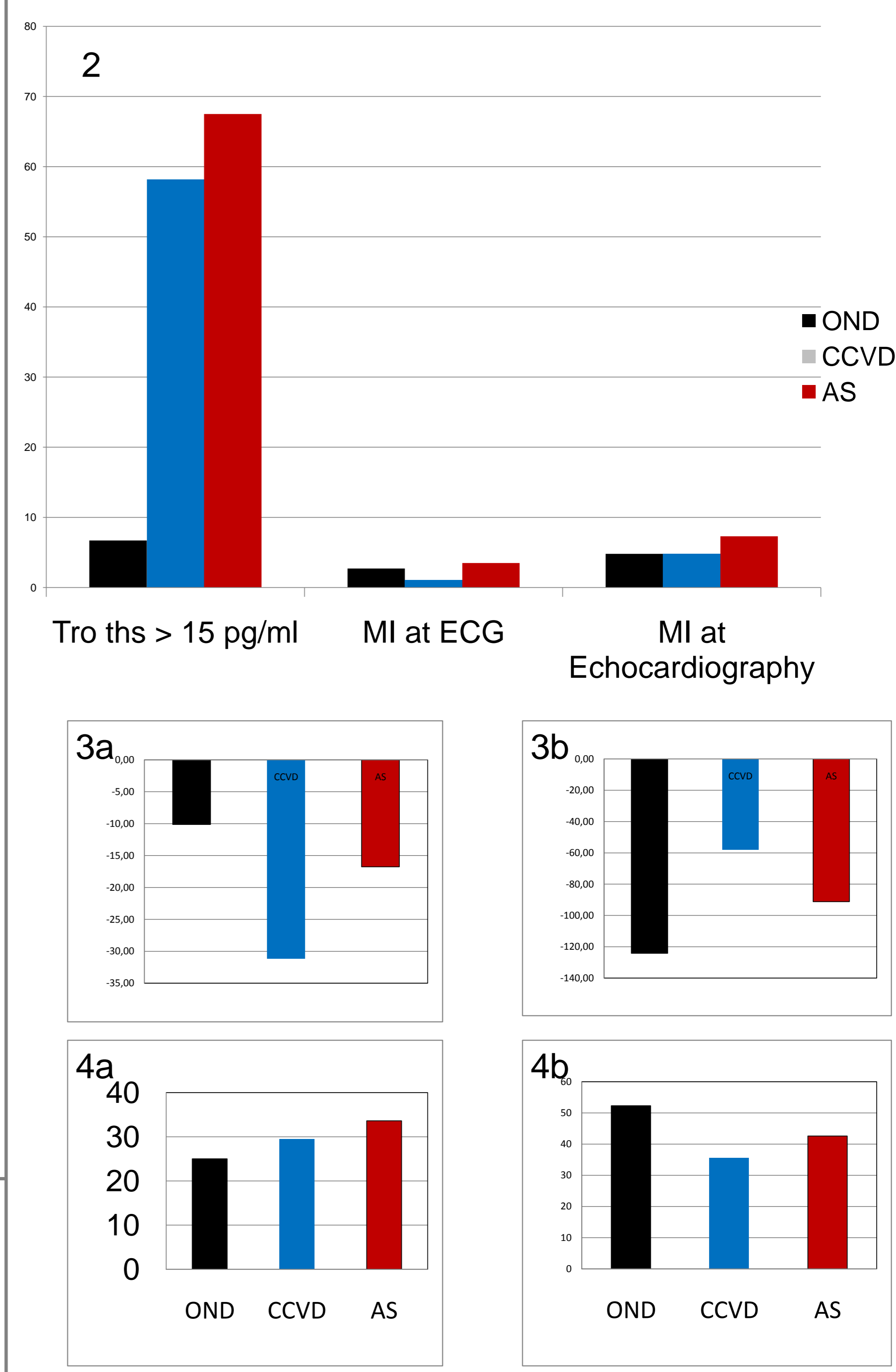


Fig.2: Percentage of patients with Tro ths levels > 15 pg/ml (left), myocardial infarction at ECG (center) and/or at Echocardiography (right).

Fig. 3: Relative percentage decreases of Tro ths (a) and NT-PBNP (b).

Fig. 4: Percentage of patients with relative percentage decreases of Tro ths >20% (a), NT-PBNP > 50% (b).

|           | no changes | at least 50% decrease NT-PBNP |
|-----------|------------|-------------------------------|
| I GCS     | 11,9       | 12,58                         |
| Hachinski | 10,43      | 9,94                          |
| HAS BLED  | 4,4        | 4,2                           |
| VII GCS   | 12,77      | 13,59                         |
| GOS       | 3,47       | 3,77                          |
| MRS       | 3,14       | 2,6                           |

## References

Fiori Patrizia et al: ICHB, 2014; SIN, 2014; WSC, 2014; ESOC, 2015; SIN, 2015; WCN, 2015; ICHB, 2016; SIN, 2016; WSC, 2016