

# BLOOD BIOMARKERS TO GUIDE THERAPEUTIC HYPOTHERMIA IN STROKE RESULTS FROM THE EUROHYP-1 STUDY

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on behalf of the EuroHYP-1 investigators

## INTRODUCTION

Therapeutic hypothermia represents a promising strategy for stroke. However, some hypothermia-induced adverse events, such as infections, might complicate stroke outcome<sup>1-2</sup>. We aimed to assess whether blood biomarkers might be associated with the benefit or adverse events of hypothermia.

## METHODS

The EuroHYP-1 study<sup>3</sup> (EudraCT 2012-002944-25) was a randomized multicenter clinical trial comparing the efficacy of therapeutic hypothermia initiated within 6 hours after stroke vs. best medical treatment (BMT). Blood samples were obtained at three time-points; baseline (before hypothermia initiation), within the first hour after rewarming, and 72 hours after stroke. A panel of 27 biomarkers including matrix metalloproteinases (MMPs), cardiac, inflammatory-immunity and glial markers was measured and correlated with the therapeutic effect of hypothermia and with hypothermia-induced complications.

## RESULTS

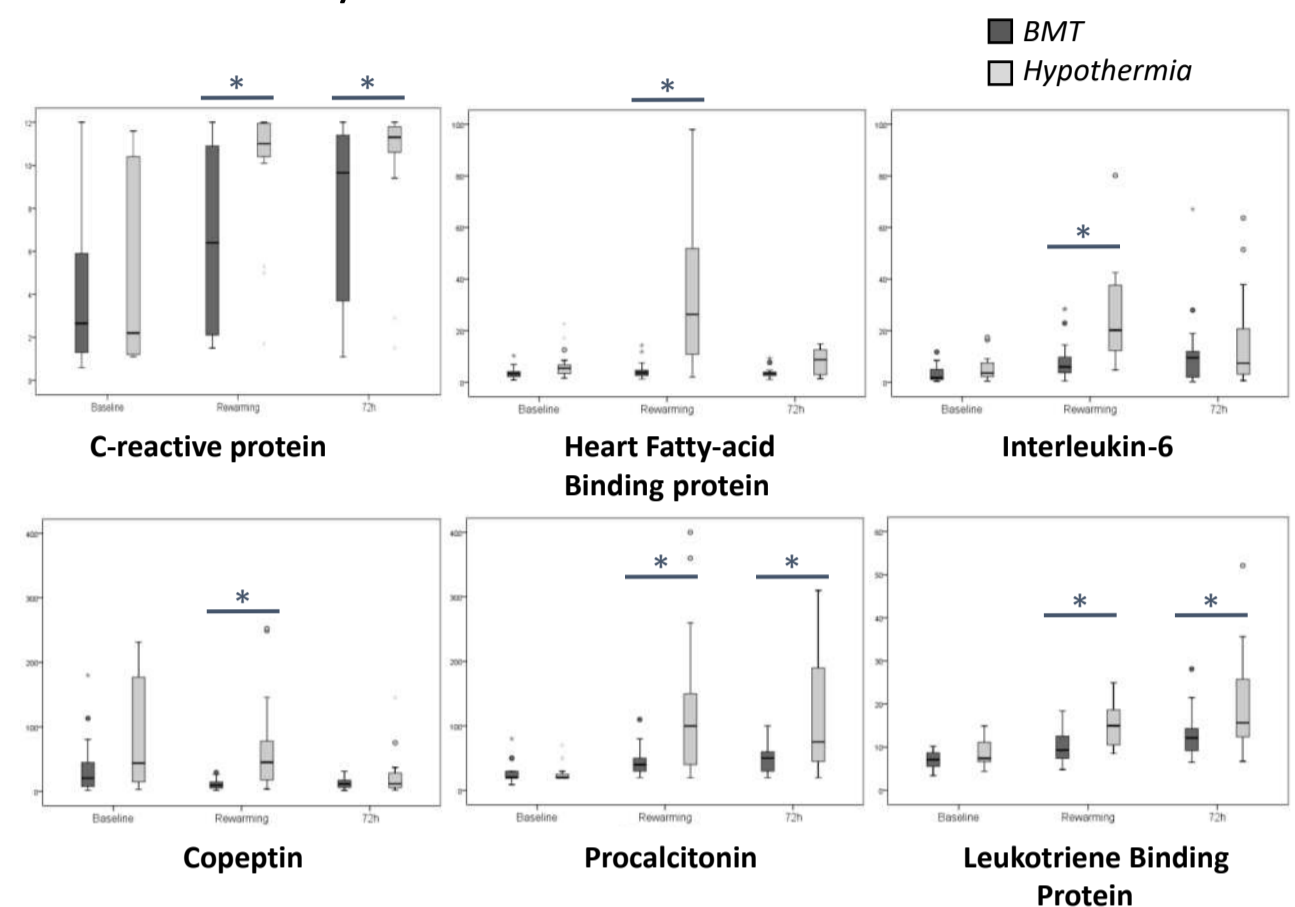
Samples were available for 54 patients;

27 hypothermia and 27 BMT

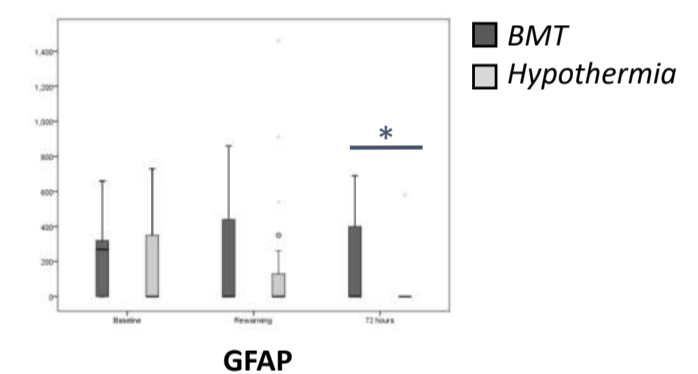
	ALL (54)	HYPOTHERMIA (27)	BMT (27)	P
Age	75.5 (70-80)	72 (68-79)	77 (71.5-80)	0.209
Sex (male)	32 (59.3%)	66.7%	51.9%	0.406
Hypertension	31 (68.9%)	62.5%	59.3%	0.322
Diabetes	16 (35.6%)	37.7%	33.3%	0.771
AF	4 (8.9%)	8.3%	9.5%	0.889
Previous mRS	0 (0-1)	0 (0-1)	0 (0-1)	0.259
Baseline NIHSS	10 (8-16)	10 (7-16.5)	9 (8-15)	0.965
IV tPA	45 (83.3%)	81.5%	85.2%	1.000
Death	7 (13%)	14.8%	11.1%	1.000
mRS>2	30 (57.7%)	48.1%	65.4%	0.262
Pneumonia	6 (11.1%)	14.8%	7.4%	0.484
Infection	11 (20.4%)	29.6%	11.1%	0.087*

## RESULTS

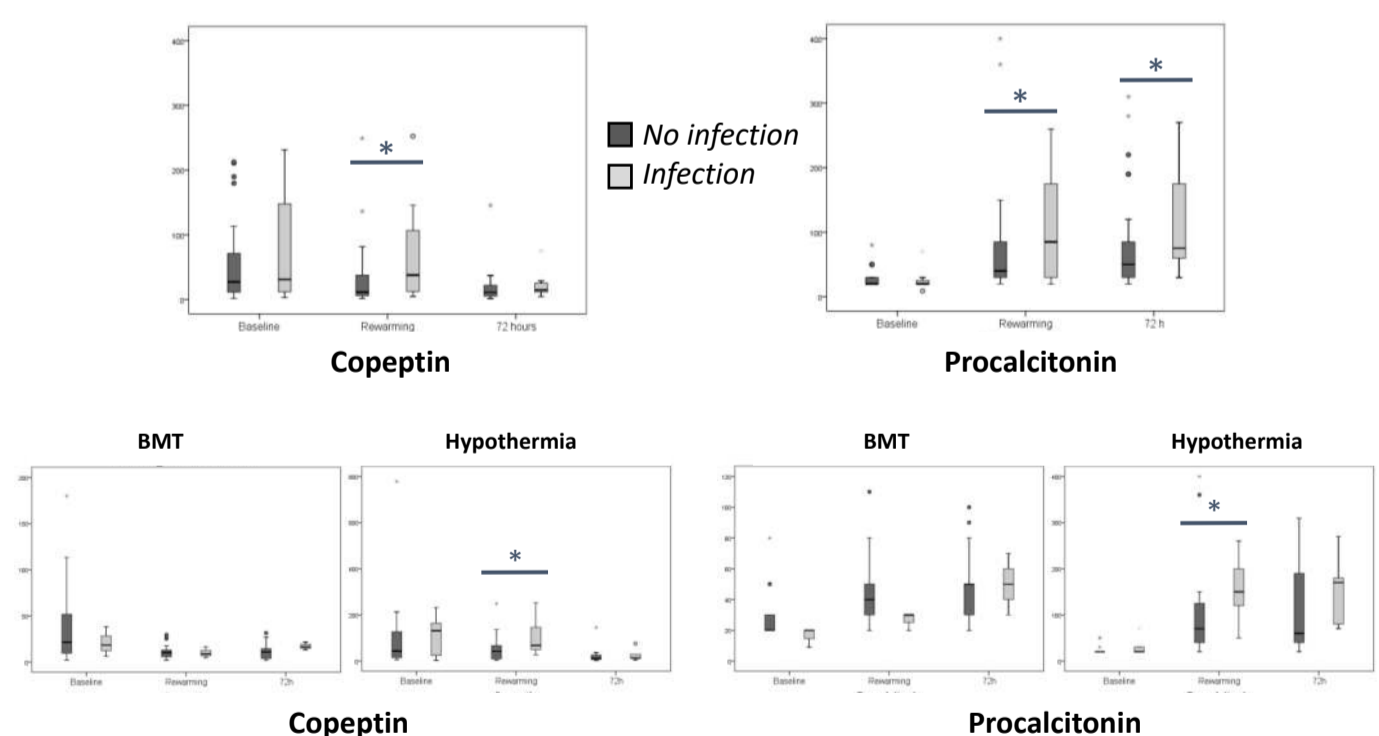
Hypothermia resulted in an increase of inflammatory and immunity markers:



In contrast, glial fibrillary acid protein (GFAP), a marker of brain damage, was reduced:



Of note, among the markers predicting infections, most were predictors just in the hypothermia arm:



\* denotes  $p < 0.05$

## CONCLUSIONS

- Although limited by the sample size, our results point to the usefulness of blood biomarkers to guide hypothermia in acute stroke for predicting adverse events such as infections, which are frequent complications of this treatment.
- Increased systemic inflammatory markers might be surrogates for detrimental effects of hypothermia.
- GFAP might constitute a surrogate marker for efficacy.

### REFERENCES

1. Hemmen TM, et al. Stroke 2010; 41: 2265-2270
2. Lyden P, et al. Stroke 2016; 47: 2888-2895
3. Van der Worp HB, et al. Int J Stroke 2014; 9: 642-645

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