ELEVATION OF CARDIAC BIOMARKERS AFTER A RUNNING ACTIVITY CAN OCCUR IN SEDENTARY SUBJECTS

C. Le Goff[1], T. Bury [2], C. Rodriguez [2] , J-F. Kaux [2], J.Vannuscorps [2], J-P. Chapelle[1], J-L. Croisier [2]
[1] Department of Clinical Chemistry of the University of Liege, Liège, Belgium
[2] Department of Motricity Sciences of the University of Liege and CHU Sart-Timan, Liège, Belgium

Background:

We studied the kinetic of serum cardiac troponin and oxidative stress biomarkers [highly sensitive troponin T (hsTnT), highly sensitive troponin I (TNI II), NT-proBNP, myeloperoxydase (MPO), reduced glutathione (GSH), oxidized glutathione (GOX) and lipid peroxide (POXL)] in 15 sedentary subjects submitted to a running activity.

Materials and methods:

Venous blood samples of 15 young men were collected just before (T1) and after (T2) exercise, 3 hours (T3) and 24 hours (T4) after exercise for the determination of cardiac and oxidative stress biomarkers. The exercise consisted in a 1-hour race on a treadmill at 75%VO2max. The VO2max of each participant was determined one week before the test.

Results:

After the race, NT-proBNP (Fig. 1), hsTNT (Fig. 2), POXL (Fig. 3) and MPO (Fig. 4) increased during three hours post aerobic effort. NT-proBNP (Fig.1) significantly increased from T2 to T4 compared to T1(p=0.0009). Seventy percent of subjects overtook the cut-off for hsTnT at T3 significantly compare to other times (p=0.003); MPO (Fig.4) slight increased at T2 but not statistically. POXL (Fig. 3) showed moderate (not significant) increased values at T4. GOX (Fig. 5) significantly increased at T2 (p=0.019). There was no variation for GSH yet the ratio GSH/GOX (Fig. 6) is significantly increased at T4 (p=0.0003).

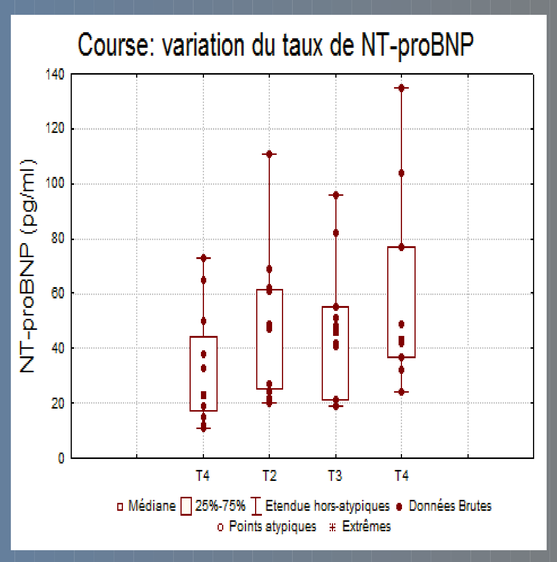

Fig. 1: Variation of NT-proBNP with time

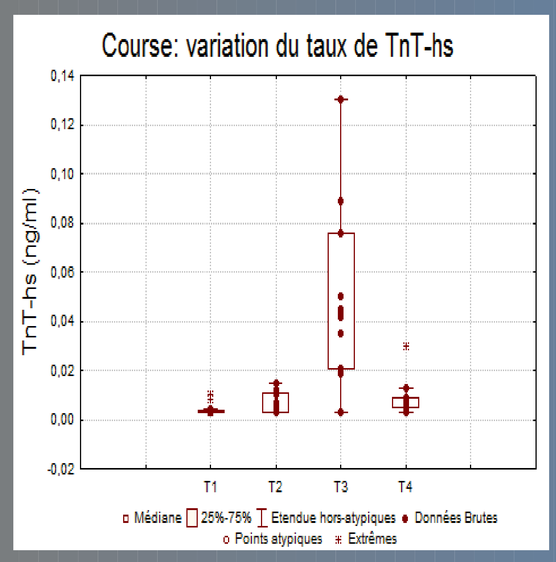

Fig. 2: Variation of TnT-hs with time

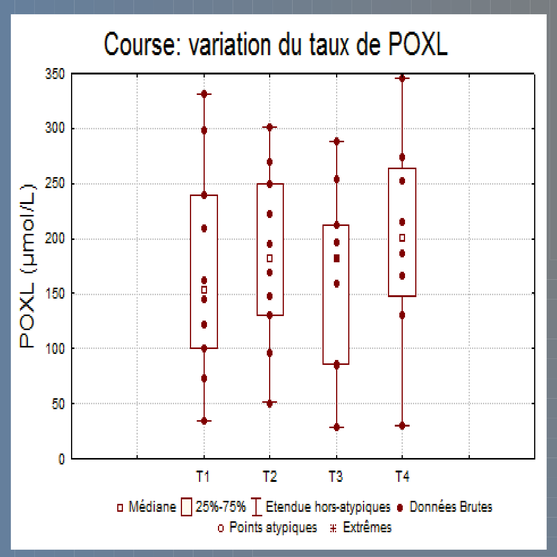

Fig. 3: Variation of POXL with time

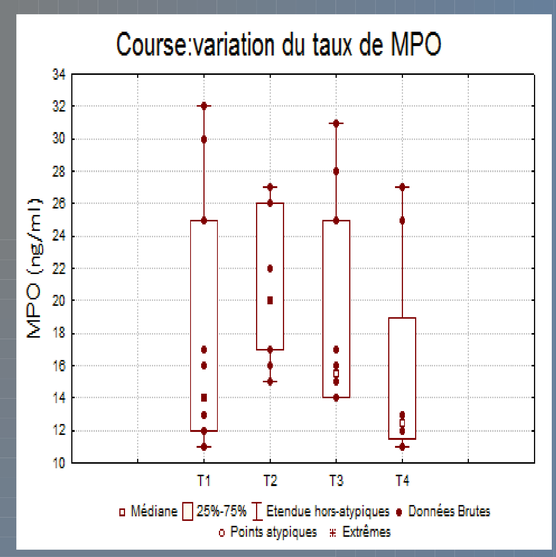

Fig. 4: Variation of MPO with time

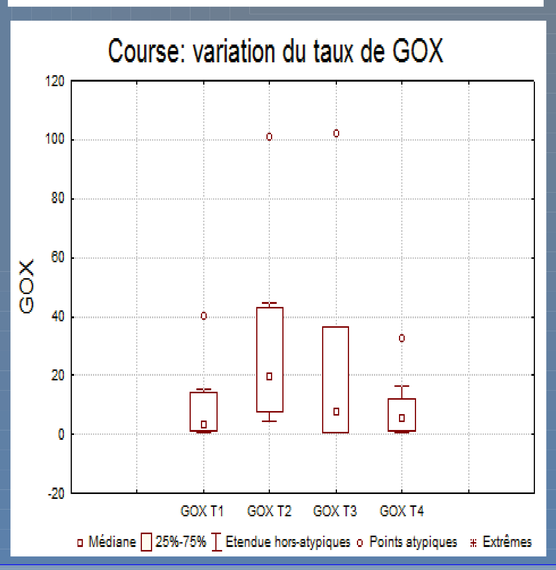

Fig. 5: Variation of GOX with time

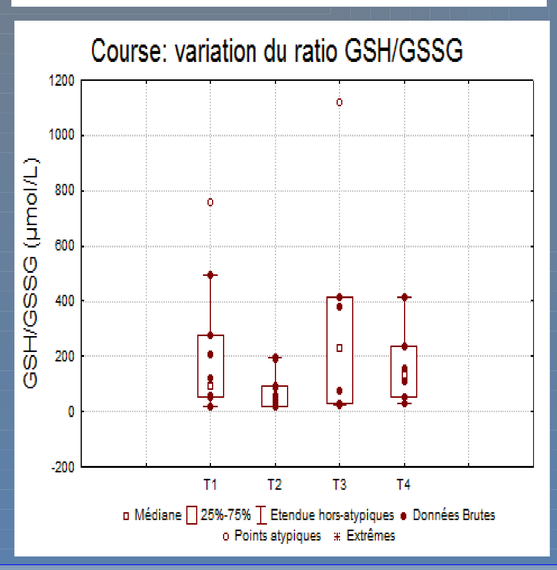

Fig. 6: Variation of GSH/GSSG with time

Conclusion:

This work enabled us to deduce that the aerobic exercise produces an oxidative stress which continues in the 24 hours following the effort. No antioxidant adaptation was observed. Cardiac markers showed a cardiac stress in the 3 hours following exercise.

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