TWO BIOMARKERS FOR THE SCREENING OF CARDIAC RISK AMONG RUNNERS?

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Background:

Heart-type fatty acid-binding protein (H-FABP) is a low molecular weight protein involved in the intracellular uptake and buffering of long chain fatty in the myocardium. Troponin T is a component of the contractile apparatus of the striated musculature. Both are early markers for acute coronary syndrome.

Objective:

The aim of our study was to compare the results obtained with the H-FABP and the highly sensitive cardiac troponins (hsTnT) and to test their cardiospecificity in healthy runners

Design: Prospective, cohort study. Setting; Amateur marathon runner.

Methods:

Twenty three runners (marathon) (44,1 ± 8,37 years old) were enrolled.
We drowned blood samples at three times: just before (T0), just after (T1), and three hours after the end of the race (T3).

Main outcome measurements: H-FABP and hs-TnT were performed according to the manufacturer's instructions. A linear regression was calculated to observe if there is any correlation between the two biomarkers. Values above the 95th percentile for H-FABP (2.5 ng/mL) and the 99th percentile for hsTnT (14 ng/L) were considered as positive.

Results:

At T0, none of the subjects were positive for hsTnT but 35% were positive for H-FABP;
at T1, 83% for hsTnT and 100% for H-FABP; at T3, 83% for hsTnT and 96% for H-FABP (table 1).

At T0, the regression equation was H-FABP T0 = 3.9454 – 0.1001 x hsTnT T0; at T1: H-FABP T1 = 51.838 – 1.7026 x hsTnT T1; at T3: H-FABP T3 = 47.977 – 1.6193 x hsTnT T3 (figure 1). No correlation was observed between the two biomarkers at the different time.

TnThs T0	TnThs T1	TnThs T3	hfabp T0	hfabp T1	hfabp T3
0,011	0,132	0,093	2,58	43,93	37,26
0,005	0,031	0,068	2,16	8,27	6,9
0,009	0,058	0,062	2,24	33,06	31,87
0.005	0,117	0,1	1,57	50,62	41,07
0,007	0,054	0,038	3,01	33,38	22,07
0.005	0,068	0,038	1,65	8,78	6,01
0.005	0,041	0,063	1,93	21,56	38,25
0,008	0,065	0,127	4,12	17,73	13,83
0,007	0,02	0,076	1,93	9,53	9,25
0,008	0,16	0,088	3,86	79,5	47,07
0.005	0,057	0,039	2,47	120	120
0.005	0,07	0,065	3,06	64,67	53,1
0,006	0,144		1,83	7,06	
0,005	0,058	0,04	1,65	7,69	3,5
0,008	0,105	0,079	1,83	5,86	3,55
0,007	0,108	0,088	2,11	10,55	5,35
0,006	0,012	0,018	3,42	5,25	4,73
0.005	0,007	0,01	1,67	6,27	7,34
0.005	0,015	0,015	1,72	21,75	30,79
0,005	0,013	0,014	0,77	2,99	2,32
0,005	0,016	0,013	1,47	4,4	2,76
0.005	0.005	0.005	2,73	35,54	23,3
0.005	0,011	0,007	2,21	14,95	10,03

Table 1: results

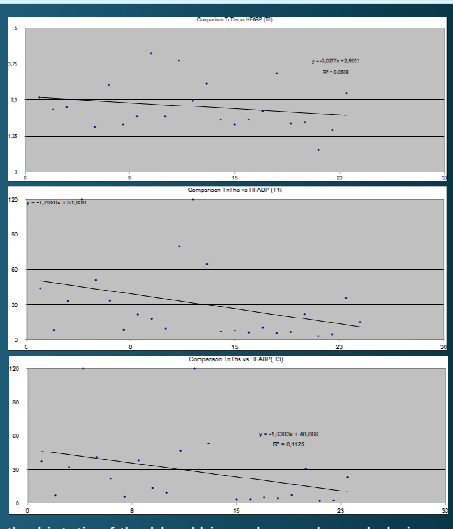

Fig. 1: the kintetic of the blood biomarkers released during an international cycling race

Conclusions:

We observed a significant increase of H-FABP and hsTnT in runners. These markers are independent to each other. These values could biologically correspond to a heart ischemia. These biomarkers could be helpful for the screening of cardiac risk among runners.

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