

Utility of Cardiac Biomarkers in Combination with Exercise Stress Testing in Patients with Suspected Ischemic Heart Disease

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Abstract : Eighty patients with suspected ischemic heart disease were enrolled in the present study. They were classified into two groups: patients with positive exercise stress test results (n=40) and control group with negative exercise stress test results (n=40). Serum concentration of troponin I, Heart-type Fatty Acid Binding Protein (H-FABP) and Ischemia Modified Albumin (IMA) were measured one hour after performing stress test. Enzyme Linked Immunosorbent Assay was used to measure both troponin I, H-FABP levels, while IMA levels were measured by albumin cobalt binding test. There was no statistically significant difference in the mean concentration of troponin I between two groups ($0.75 \pm 0.55 \text{ ng/ml}$) for patients with positive test result vs. ($0.71 \pm 0.55 \text{ ng/ml}$) for negative test result group with $P > 0.05$. Contrary to our expectation, mean IMA level was slightly higher among control group ($70.88 \pm 39.76 \text{ U/ml}$) compared to ($62.7 \pm 51.9 \text{ U/ml}$) in positive test result group, but still with no statistically significant difference ($P > 0.05$). Median H-FABP level was also higher among negative exercise stress testing group compared the positive one (2 ng/ml vs. 1.9 ng/ml respectively), but failed to reach statistically significant difference ($P > 0.05$). When quartiles model used to explore the possible association between each study biomarkers with the others; serum H-FABP level was lowest (1.7 ng/ml) in highest quartile of IMA and lowest H-FABP (1.8 ng/ml) in highest quartile of troponin I but with no statistically significant association ($P > 0.05$). Myocardial ischemia, more likely occurred after exercise stress test, is not capable of causing troponin I release. Furthermore, an increase in H-FABP and IMA levels after stress test are not reflecting myocardial ischemia. Moreover, the combination of troponin I, H-FABP and IMA after measuring their post exercise levels does not improve the diagnostic utility of exercise stress test enormously.

Keywords : cardiac biomarkers, ischemic heart disease, troponin I, ischemia modified albumin, heart-type fatty acid binding protein, exercise stress testing

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