International Journal of Enhanced Research in Educational Development (IJERED)
ISSN: 2320-8708, Vol. 6 Issue 5, Sep-Oct, 2018, Impact Factor 3.275

Troponin T as the Best Biochemical Markers in Detection of Myocardial Infarction.

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ABSTRACT

This study was conducted in 6 different groups based on the level of serum troponin T. It was determined by means of a third generation assay (sandwich immuno assay) based on electrochemiluminescence (Elecsys, Roche Diagnostics). CK-MB was also determined on Coobas (Roche Diagnostics). According to the methods employed, control population should have troponin T levels <0.010 ng/ml and CKMB< 20U/L. Patients with symptoms of angina hadsignificantly higher troponin-T and CK-MB levels when compared to healthy controls (*P*<0.001). In the group 3 with 33 patients the troponin-T value (0.1-1.9mg/ml), p=0.363 (r=0.363). The value of TNT were not proportionately elevated with CK-MB value (5.8-18.2U/L), p=0.018 (r=0.338). In cases of severe heart attack myocardial coefficient of correlation between two parameters under consideration resulted r = 0.954, with signifikance *P*<0.01. cases of severe heart attack myocardial coefficient of correlation between two parameters under consideration resulted r = 0.954, with signifikance *P*<0.01. Troponin-T levels can be used to detect early andminimal myocardial injury, but CK-MB is not sensitive enough to diagnose this. Initial troponin-T determination drawn at the time of the patients' presentation is a powerful diagnostic tool for a rapid diagnosis rather than serial CKMB determination.

Keywords: TNT,CKMB, Angina Pectoris, Significantly , Electro chemioluminescence

INTRODUCTION

Troponin T is a very specific test compared with other tests such as CK-MB in identifying patients at risk for developing and managing their cardiac necrosis. of myocardial necrosis can be identified through blood liberation of various proteins, as a result of damage to myocites: Myoglobin, cardiac Troponin I and T, creatine kinase (CK-MB), lactate dehydrogenasa many other (Elisabeth).

Better biomarkers currently estimated cardiac Troponin (T and I), which has nearly absolute specificity, high sensitivity and enables the identification of microscopic necrosis. If troponin tests are not possible, alternative second best is to measure the level of CK-MB's. This analysis is less specific. The values of total CK is not recomended for routine diagnosis of IM, because the distribution of this enzyme has large tissues. Evaluation of a repeat infarction also is important as it gives information on the addedrisk to the patient (Jeremiah). However infarckt repeat is difficult to diagnose because troponinlevels may remain high for a long time, which makes it impossible to determine the second approximation infarction.

The Material and Working Method

During the period 2010-2011 are set Troponin values T and CK-MB in 155 patients submitted for examination in the cardiology clinic of University Hospital Center "Mother Teresa" in Tirana, with initial diagnosis of angina pectoris (chest pain). All patients were aged 53-75 years, of whom 93 were males and 62 females. After completion of consultation with the cardiologist, ECG examinations were performed at the Tirana University Hospital Center and biochemical Troponin T and CK-MB. For analysis venous blood was obtained through flebotom tubes. All examinations were performed within 2 hours of receiving the blood of patients. Troponin T is determined by measurements of third generation (sandwich immunological measurement) based on the principle of electro-chemioluminescence (Cobas apparatus 6000, Roche Diagnostic) That uses human cardiac Troponin T recombinantly as a reference standard. CK-MB also determinedin the Cobas6000. Together with the examination of biochemical parameters in patients above, we realized the measurement of these two parameters in a group of 50 normal individuals who control it as like a vacation. These are individuals who are submitted to the clinic to carry out a check-up-I, whose responses were normal. This group was chosen to determine normal values of CK-MB and Troponines T in our population according to the instructions of Roche Company, who rates it

recommends addition, each country or laboratory in accordance with its specifications, determine normal values in the population.

RESULTS

Troponin T is the most powerful marker, the sensitivity and specificity independently with the highest in the diagnosis of myocardial infarction. It is able to determine the minimal myocardial heart attacks which can not do markers used so far as CK-MB and ECG has. Diagnosis performed by this marker is not only correct but also quicker.

RESULTS AND DISCUSSION

Patients received the study were 155 of which 60% were male and 40% female. Troponin levels in them ranged from <0.01 mg / ml to 24.67 mg / ml and CK-MB values from 1.09 to 729.320-U /L (Tab 1). For ease of processing, values <0.01 were recorded as 0.009 mg / ml.

Table 1: Values of troponin T and CK-MB in the control group and patients with angina pectoris.

Parameter	Control (N = 50)	Patients (N = 155)
Troponin T (mg/ml)	0.009 – 0.03	0.009 – 24.67
CK-MB (U/L)	1.09 – 16.45	1.007 – 729.320

For convenience of study, since the number of patients is large and there are a variety of values, we have split into six groups, taking into account levels of Troponines T as in the following table (Tab 2). In addition to these six groups troponin values are also set the respective values of CK-MB-

Table 2: Grouping of patients according to the level of blood troponines.

Group	I	II	III	IV	V	VI
Troponin(mg/ml)	<0.03	0.03-0.1	0.1-1.9	1.9-4.1	4.1-7.3	7.3-24.67
CK-MB(U/L)	1.007-10.73	3.12-7.41	5.8-18.12	14.02-68.12	45.91-235.09	168.98- 729.32
No. Patients	83	11	33	8	3	17

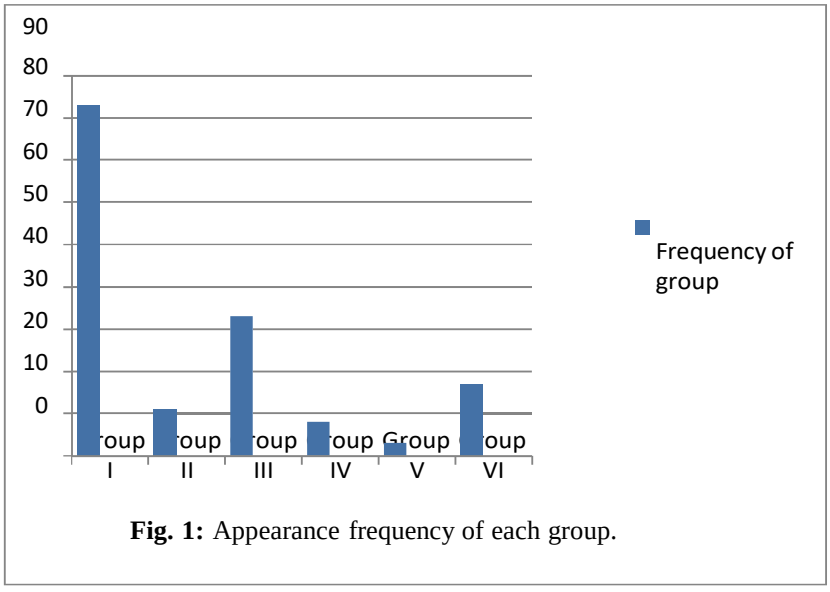

Fig. 1: Appearance frequency of each group.

The first group includes those patients who are characterized not only by low levels of troponin, but also by low levels of CK-MB of blood. By examining elektrokardiografik and cardiology consultations, test results fall after initial diagnosis with which they were presented at the cardiology clinic. Exclude this group of patients from the study because the entity arising out of our study.

The second group includes those patients in whom T troponin levels are much less mature, but not really related to cardiac necrosis. The reason for the increase of T Troponin trumpet comes from the formation of a plaque arthrosklerotike destroyed. The appearance of increased levels of troponin trumpet cardiac moderately. This is due to the destruction of the left artery circulation (Tucher).

The third group represents the largest group of cases with cardiac problems, provides patients with pathological values Troponin T, and CK- MB values are unchangeable. In order to prove that Troponin level changes between control group and third group are significant, we realized the statistical processing of correlation Sperman by SPSS program [3]. It realized the same thing for CK-MB-in.

Concerning the possible correlation of CK-MB levels and Troponin T between the third and the control, the statistical processing of data obtained showed that: significant between control group and third group troponin T, resulting the value p= 0.363, coefficient value of correlation r = 0.33, which shows no correlation between them. For this group Troponines T values are very different from the control group. Otherwise occurs in the case of comparing the values of CK-MB of thethird group with those of CK-MB of the control group, where r = 0.338 and *P*= 0.018 significant of order (*P*<0.05) .

While Troponines T levelsrise above the norm up to 1.9 mg / ml, CK-MB values remain similar to those of the control group. Precisely this is the group which emerges more Troponin T value compared to CK-MB-in. While Troponina T is able to detect minimal myocardial heart attacks, CK-MB has not been able to do it (Elisabeth). If we had used only the analysis of CK-MB of only as a diagnostic criterion for assessing the degree of myocardial damage, 21.29% (33/155) of cases had not been diagnosed (found). T Troponins analysis enabled diagnosis and appropriate therapy, helping direct their quality of life.

In the fourth group we compared the values of CK-MB and T Troponin respective control groups. The processing of data obtained turnedout: the value of *P*= 0.244 troponin and r = -0.334, while for CK-MB *P*= 0.632 and r = 0.140. In the group of fifth and sixth, based onsignificantly increased levels Troponin T andCK-MB, compared with control groups, to lookbeat porting the correlation between these levels,the computed value of the correlation coefficient .In cases of severe heart attack myocardialcoefficient of correlation between two parametersunder consideration resulted r = 0.954, withsignificance *P*<0.01. This shows that the level of troponin -T, powerful correlated CK-MB level inthese two groups.

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