THE POSITIVE AND NEGATIVE CASES OF TROPONIN-I DIAGNOSTIC TEST IN PATIENTS REFERRING TO SHAHID-MOSTAFA KHOMEINI HOSPITAL, ILAM

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Abstract:

Cardiovascular diseases are nowadays included as one of the factors threatening health of all humans. In many countries of the world, including our country, they are known as an important mortality cause. Given the importance of heart attacks diagnosis in the early hours, the present research aims at studying positive and negative cases of Troponin-I diagnostic test in patients referring to Shahid Mostafa Khomeini Hospital of Ilam. The present study is a descriptive cross-sectional study conducted in 3 months from March to May 2015 on patients referring to the emergency department of Shahid Mostafa Khomeini Hospital of Ilam. The data collected were analyzed by SPSS version 18 through using descriptive-analytical statistics and chi-squared statistical test. Moreover, P<0.05 was considered as the significance level. From among 1420 patient studied, only 200 patients had the inclusion criteria for entering this study. From this number, 110 patients were male, and 90 patients were female with the mean age of 46.87±1.098. The job frequencies of the patients were as follows: 80 patients (40%) were office worker or had part-time jobs; 88 patients (44%) were either unemployed or housewives; and 32 patients (16%) were students. The incidence rate of positive troponin was four patients; three men and one woman. The findings of the present study indicate that over-prescription of Troponin test in unnecessary cases by the doctors is likely to impose high costs and stress on both the patient and the personnel of the laboratory. Thus, the doctors are recommended to be more cautious in prescribing this test. It is also recommended to change the method of the test from Troponin-I to Troponin-T.

Key Words: *Troponin-I, Diagnostic Test, Ilam, Iran.*

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INTRODUCTION:

Cardiovascular diseases are included as increasingly fatal diseases of industrial societies that are likely to affect the individual and social life of the individuals especially the elderly [1]. It is estimated that by the year 2020, cardiovascular disease will be the leading diseases reducing the individuals' performance owing to early disability and death [2]. According to the reports released by WHO, at least 15 million deaths have happened due to cardiovascular diseases. This rate is 30% of the entire mortality figures [3]. In Iran myocardial infraction (commonly known as heart attack) is the first mortality cause in individuals aged more than 35 years old [4]. Every day, a large number of patients refer to emergency departments complaining of chest pain. Acute coronary syndrome is one of the most important differential diagnoses for these patient and calls for its own diagnostic and therapeutic measures [5]. This syndrome includes a wide variety of clinical symptoms of acute cardiac ischemia such as myocardial infraction that is the main mortality causes in industrial countries and its early diagnosis is vital [6]. The diagnosis of myocardial lesions is not easily conducted by common histopathologic methods. For diagnosing myocardial infraction, in the primary stages, different morphological, histochemical, electronic microscope, and immunohistochemical methods. However, most of them are unreliable, non-specific, or hard [7]. Electrocardiography was the first diagnostic tool for patients suffering from thrombolysis, and it has a 55-75 sensitivity level for diagnosing myocardial infraction [8, 9]. Most of the patients that are hospitalized with the primary diagnosis of acute coronary syndrome do not suffer from ischemic heart disease. Troponin is a contractile protein and its high serum increase of cardiac form has a high sensitivity for diagnosing MI in the early stages [10]. In fact, cardiac troponins are proteins that exist in the myofibrils including Troponin C, I, and T. In patients with AMI, I and T cardiac troponins begin to increase in the first three hours after the AMI. Troponin-T will be high for 10-12 days and Troponin-I will remain high for 7-10 days [11-13]. The present research aims at studying positive and negative cases of Troponin-I diagnostic test in patients referring to Shahid Mostafa Khomeini Hospital of Ilam

MATERIALS AND METHODS:

The present study is a descriptive cross-sectional study conducted in 3 months from March to May 2015 on patients referring to the emergency department of Shahid Mostafa Khomeini Hospital of Ilam. For this purpose, the data was collected by using a researcher-made questionnaire whose validity and reliability had been confirmed by the experts. The information related to the patient included age, gender, job, and cause for referring. The inclusion criteria of the present study are referring to the laboratory with the prescription of Troponin test, lack of history for suffering from pulmonary and cardiac diseases, and pregnancy. The method for conducting the Troponin test was rapid-test. The data collected were analyzed by SPSS version 18 through using descriptive-analytical statistics and chi-squared statistical test [14,15]. Moreover, $P < 0.05$ was considered as the significance level.

FINDINGS:

From among 1420 patient studied, only 200 patients had the inclusion criteria for entering this study. From this number, 110 patients were male, and 90 patients were female with the mean age of 46.87 ± 1.098. The job frequency of the patients were as follows: 80 patients (40%) were office worker or had part-time jobs; 88 patients (44%) were either unemployed or housewives; and 32 patients (16%) were students. The most frequent type of complication and the reason for referring to the hospital were the pain in the left chest as well as left hand and arm (Table 1). The incidence rate of positive troponin was four patients; three men and one woman. The status follow-up of the patients indicate that from these 4 patients with positive Troponin, 3 patients were hospitalized in the emergency department; two of them were transferred to CCU and one was transferred to men's section. Moreover, a female patient was discharged with personal consent. The subsequent follow-up indicated that she referred to hospitals outside Ilam province.

Table 1: Frequency of type of symptom in investigated patients

Type of Symptom	Frequency (Percent)	P-value
Chest Pain	145 (72.5%)	0.031
Pain in the Left Hand and Arm	37 (18.5%)	0.064
Shortness of Breath	10 (5%)	0.112
Nausea and Vomiting	5 (2.5%)	0.178
Cold Sweating	1 (0.5)	0.328
Faint	2 (1)	0.214

DISCUSSION:

Lifestyle is a unique pattern of characteristics, behaviors, and habits of an individual. If lifestyle changes, the individual is likely to be at risk of diseases or events [16]. Cardiovascular diseases are included among the diseases that account for the most important mortality cause in the world [17]. The achievements in promoting the health system and controlling contagious diseases, urban development, living in an industrial world with changes in the age structure of an aging society have all resulted in an increase prevalence of non-contagious diseases; cardiovascular disease, accidents, and different kinds of caner are ranked first to third of mortality causes [18, 19]. The most important principle for preventing the incidence of severe symptoms in heart attacks is rapid early diagnosis. In the present research, it was attempted to study positive and negative cases of Troponin-I diagnostic test in patients referring to Shahid Mostafa Khomeini Hospital of Ilam. The findings of the present study indicate a high prevalence of complications related to cardiac diseases in Ilam province. Moreover, the incidence rate of diseases in men and women as well as employed and housewife were almost the same (P>0.05). In the present study, from among the individuals studies, 4 patients had positive Troponin. This indicates that the doctors rely too much on this test and overprescribe it. This can impose high costs on both the medical system and patients. However, in the study conducted by Salehi-Omran et al (2004) "The measurement of cardiac Troponin-I and Troponin-T in patients with acute myocardial infraction", it was indicated that for AMI diagnosis, cardiac Troponin-T has a higher sensitivity in comparison to other cardiac markers. Given this, the low diagnosis rate of the present study is likely owing to the low sensitivity of this test in diagnosing myocardial infraction [20]. Moreover, in other studies, the high sensitivity of this test has been confirmed for the posthumous diagnosis of MI for the corpses transferred to Legal Medicine Organization [21]. In the study conducted by Sabzghabaei et al (2016), it has been asserted that, the serum level of troponin of around 70% of the patients (transferred to CCU with a cardiac origin) were reported to be positive within 72 hours after the admission. In 37% of these patients, Troponin test was positive when they were admitted for the unit [22].

CONCLUSION:

The findings of the present study indicate that conducting Troponin test is of high importance in case of observing cardiac symptoms when the patient enters the clinic. However, overprescribing this test in unnecessary cases by doctors can impose high costs as well as stress on the patients, their families, and the laboratory staff. The doctors are thus recommended to be more cautious in prescribing this test. Moreover, it is also recommended to change the method of test from Troponin-I to Troponin-T.

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