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Research Article

**EVALUATION OF POSITIVE AND NEGATIVE D-DIMER DIAGNOSTIC
TEST IN PATIENTS ADMITTED TO SHAHID-MOSTAFA HOSPITAL,
ILAM, IRAN**Mohamad Reza Havasian¹, Sepideh Amouzadeh², Jafar Panahi^{3*}¹ Department of Periodontics, School of Dentistry, Ilam University of Medical Sciences, Ilam, Iran.² Student Research of Committee, Ilam University of Medical Sciences, Ilam, Iran.³ Ilam University of Medical Sciences, Ilam, Iran.**Abstract:**

D-Dimer Plasma Level Measurement is an easy and effective way of rejecting deep vein thrombosis in patients with lower limb defects, pulmonary embolism, and coagulation test disorders. The purpose of this study was to investigate the positive and negative cases of D-Dimer diagnostic test in patients referred to Mustafa Hospital in 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 [8-10]. Moreover, $P < 0.05$ was considered as the significance level. From among 638 patients studied, only 100 patients had the inclusion criteria for entering this study. From this number, 57(57%) patients were male, and 90(43%) patients were female with the mean age of 44.71 ± 1.077 . The job frequency of the patients were as follows: 37(37%) patients were office worker or had part-time jobs; 51(51%) patients were either unemployed or housewives; and 12(12%) patients were students. The results of the study showed that the D-Dimer test is important if the patients refers with heart problems; however, the over-administration of this test in unnecessary cases by general practitioners can be an additional burden of cost and stress on the patient, patient's family and laboratory staff. It is recommended that doctors use this test more cautiously and use the ELISA method to perform this test.

Keywords: Positive, Negative, D-Dimer, Ilam, Iran.**Corresponding author:****Jafar Panahi,**

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INTRODUCTION:

Despite causing many positive changes in the lives of people, scientific and technological advancements have had destructive effects, one of which is the widespread outbreak of low mobility, and its negative impact on, in the modern society [1]. Currently, the biggest health problems seem to be the widespread outbreak of cardiovascular disease, which is a major cause of disability and mortality throughout the world and imposes huge costs on people. Cardiovascular diseases, especially atherosclerosis, are the main cause of lowering the age of mortality in developing countries in Asia [2, 3]. D-Dimer was described in 1970 and was used as a diagnostic method in 1990. The proteolytic action of plasmin on the fibrin or fibrinogen results in the formation of a group of products derived from γ , δ , α of the FDP (Fibrin Degradation-Products)[4]. The destruction of the fibrin has successive steps and the size of the molecule formed will vary depending on the duration of the plasmin action. When Fibrin has stable cross-linking by Factor-XIII, the intermediate components called D-Dimer [5] are created, if the plasmin affects it. Normally, D-Dimer does not exist in the blood plasma unless there is a coagulation system activated; several diagnostic kits are available, all based on the monoclonal antibody against D-Dimer; additionally, the antibody binding is quantitatively measured in laboratory methods [6]. D-Dimer is a product of fibrin degradation in the blood that occurs after a fibrinolysis of the clot, which results in a negative result of the thrombosis [7]. Considering the importance of the diagnosis of cardio-pulmonary disease in early stages, and the sensitivity of this test for diagnosis, positive and negative cases of D-Dimer diagnostic test are reviewed in the current study in patients referred to Shahid-Mustafa 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 main exclusion criteria included pregnancy, history of surgery, malignancy, trauma, and the use of anti-coagulants. In order to measure D-Dimer 9, blood volume was added to 1 volume of citrate and dissolved from plasma in NycoCard 2500 rpm centrifuge device for 15 minutes. Also, the range of 0.2mg/lit and smaller was considered negative and 0.3 mg/lit and more was considered D-Dimer positive. The data collected were analyzed by SPSS version 18 through using descriptive-analytical statistics and chi-squared statistical test [8-10]. Moreover, $P < 0.05$ was considered as the significance level.

FINDINGS:

From among 638 patients studied, only 100 patients had the inclusion criteria for entering this study. From this number, 57(57%) patients were male, and 43(43%) patients were female with the mean age of 44.71 ± 1.077 . The job frequency of the patients were as follows: 37(37%) patients were office worker or had part-time jobs; 51(51%) patients were either unemployed or housewives; and 12(12%) patients were students. The most frequent type of complication and the reason for referring to the hospital was dyspnea, and pain in the left chest and left hand (Table 1). The incidence of D-Dimer positive was seen in 3 patients, with 1 male and 2 female BMI. Patient follow-up showed that of these 3 patients with D-Dimer positive, 2 patients were transferred to CCU and 1 patient was transferred to ICU.

Table 1: Frequency of type of symptom in investigated patients

Type of Symptom	Frequency (Percent)	P-value
Shortness of Breath	67 (67%)	0.027
Chest Pain	20 (20%)	0.037
Pain in the Left Hand and Arm	9 (9%)	0.137
Nausea and Vomiting	2 (2%)	0.124
Cold Sweating	1 (1%)	0.274
Faint	1 (1%)	0.297

DISCUSSION:

Deep vein thrombosis and lung embolism are both preventable complications, leading to death, in the surgical procedure [11]. Despite the fact that a significant percentage of pulmonary embolism can be asymptomatic, it still has a high mortality rate of about 30% [12, 13]. In fact, the predisposing factors for venous thrombosis are stasis, vascular injury, and aggravation, with a combination of clinical conditions associated with an increased risk of developing venous thrombosis [14]; surgery, neoplasm, trauma, immobilization, and cartilage are the most common risk factors for the incidence of venous thrombosis [15]. Considering the importance of the diagnosis of cardio-pulmonary disease in early stages, and the sensitivity of this test for diagnosis, positive and negative cases of D-Dimer diagnostic test are reviewed in the current study in patients referred to Mustafa Hospital of Ilam. According to the findings of the present study, cardiovascular disorders have a high incidence rate in Ilam province. Also, the rate of increase in factors in men and women was approximately the same ($P > 0.05$), and the incidence of complications in housewives was higher than those employed ($P < 0.05$). Of the 100 patients surveyed, only 3 patients were positive in D-Dimer, indicating overreliance of doctors on this test which could result in a high cost for the treatment system. The results of Namazi *et al* study (2007), in which the D-Dimer test was performed to detect atrial fibrillation in patients with atrial fibrillation, showed that this test failed in detecting thrombosis due to high consumption of warfarin in patients and false results [16]. However, the results of Omranipour *et al* study (2007), which was conducted to evaluate a number of other blood factors in Patient with Gastric Cancer and its comparison with a control group at Imam Khomeini Hospital during 2007-2008, showed that D-Dimer test is an efficient diagnostic and predictor factor for advanced tumor stomach [17]. The results of another study, which was conducted to investigate the correlation between pre-eclampsia and D-Dimer test, showed that D-Dimer can be a useful biochemical indicator for identifying hematological changes and reducing the risk and adverse effects of Pre-eclampsia [18].

CONCLUSION:

The results of the study showed that the D-Dimer test is important for a clinic if there are signs of heart disease when the patient arrives at the clinic, but the over-administration of this test in unnecessary cases by general practitioners can be an additional burden of cost and stress on the patient, patient's family and laboratory staff. It is recommended that doctors use

this test more cautiously and use the ELISA method to perform this test.

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