



به نام خالق خون و حیات



Prognostic value of neutrophil to lymphocyte ratio for death in patients with venous thromboembolism

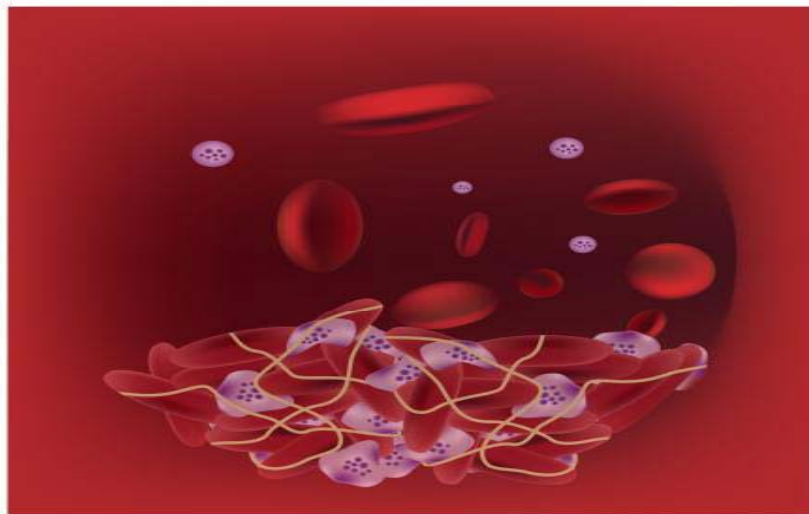
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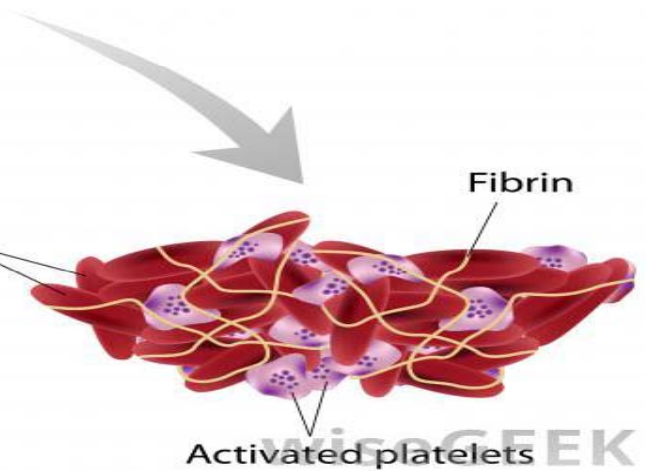
introduction

Venous Thromboembolism (VTE), that includes deep vein thrombosis (DVT), and pulmonary embolism (PE), is a common event with a mortality rate 15-20%.



Thrombosis

Red blood cells



Activated platelets

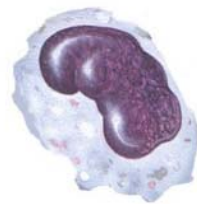
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Neutrophil to Lymphocyte Ratio (NLR), has been identified as a potentially useful marker to predicting clinical outcome in patient with various diseases and malignancies



Blood Cells



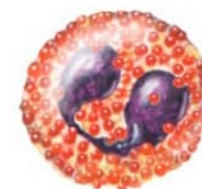
Monocyte



Lymphocyte



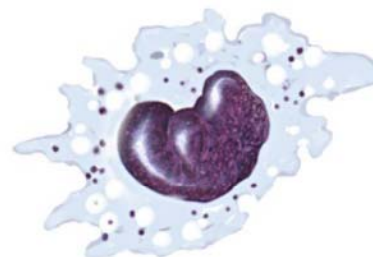
Neutrophil



Eosinophil



Basophil



Macrophage



Erythrocyte



Platelets

A vertical strip on the left side of the slide shows a microscopic view of red blood cells. One cell in the center is significantly larger and darker than the others, indicating a possible abnormality or inclusion criterion.

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Exclusion Criteria

In this retrospective study that perform among the patients who were hospitalized between 1391-1394 in Shahid sayyad shirazi and Gorgan's 5th azar hospitals, from a total of 176 patients with VTE, 83 patients were eliminated than this study because of cancer and other malignancy, and the remaining 93 patients were enrolled



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Study Protocol

First screening with ICD-9 I26 and ICD-10 I80.2 code (n=342)

166 patient with doubting VTE

176 patient diagnosed as definitive PE and DVT by perfusion scintigraphy and color doppler respectively

83 patient excluded because of cancer, malignancy, renal disease, hematologic disease, liver disease, inflammatory disease, and trauma

hematological and biochemical parameters calculated for 93 qualified patients

30-days follow up

To assessment of predictors of mortality



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Materials and Methods

- we examined various blood and clinical biochemical parameters including systolic and diastolic blood pressure, Age, White blood cell, hemoglobin, Hematocrit, Neutrophil, Lymphocyte, NLR, Platelet, Platelet to Lymphocyte Ratio (PLR), creatinine kinase MB isoform(CK-MB),lactate dehydrogenase in VTE patients at the time of VTE confirmation



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- Clinical and demographical information of the patients in the admission day at hospital were extracted.
- Laboratory outcomes in emergence of hospital in the day of admission were recorded as basis for all of the patients.
- Data were analyzed using spss software version 16 and MedCalc.
- The distribution of the variables were analyzed with the Kolomogrov-Smirnow test and compares of means.
- The differences between the two groups were tested via independent student's t-test for normally distributed variables and Mann-Whitney U test was used for non-parametrically distributed variables.

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- Cox regression analysis was performed to determine independent predictors of 30-day mortality. CK-MB levels, Neutrophil and NLR values on admission were entered in this regression model as independent variables
- MedCalc (version 14.8.1, MedCalc Software) pocket program was used to obtain receiver operating curve (ROC) and to analyse specificity, sensitivity, negative and positive predictive values of NLR for the death.



MedCalc

Version 14.8.1



Results

- seventeen of 93 patient (18.3%) included in this study passed away during 30 days follow-up. Regarding the quantities of various blood and biochemical parameters, there was significant difference between two groups in Age, systolic blood pressure (BP), creatinine kinase MB, WBC, Neutrophil, Platelet, Lactate dehydrogenase (LDH) and NLR (p-value< 0.05)
- creatinine kinase MB isoform (CK-MB) and NLR with p-value< 0.0001 have most correlation to mortality
- in multivariate cox regression analysis for survival, only NLR had significantly correlated with mortality

9**Survivors(n=76)****Non-Survivors(n=17)****P-Value**

Demographic features

Age-year

54±2

66±6

0.01

Gender (male/female)

31/45

6/11

0.677

Hemodynamic parameters

Systolic BP (mmHg)

118.1±2.3

107.3±4.2

0.027

Diastolic BP (mmHg)

72.3±1.6

68.2±2.9

0.231

Laboratory findings

Hemoglobin (g/dL)

11.6±0.2

10.8±0.5

0.159

Hematocrit

36±0.7

33.5±1.5

0.116

White blood cell (10⁹/L)

9.8±0.4

13.2±1.9

0.045

Neutrophils (10⁹/L)

7.2±0.4

11.2±1.6

0.006

Lymphocytes (10⁹/L)

2.1±0.1

1.6±0.4

0.241

Platelets (10⁹/L)

217.5±9.2

148.5

0.001

NLR

4.2±0.3

10.1±1.6

<0.0001

PLR

124.6±9

218.5±68.5

0.404

CK-MB (ng/ml)

18.9±1.4

28±2

<0.0001

LDH (U/L)

671.5±26.7

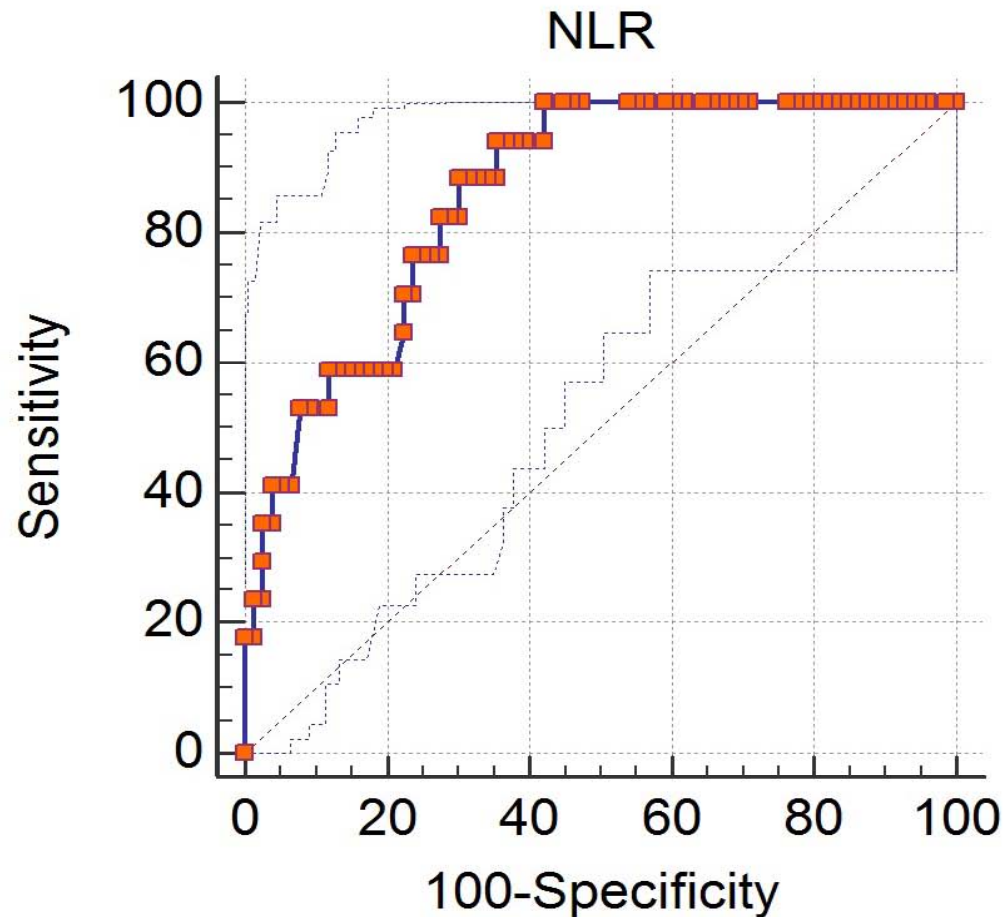
915.9±106

0.012

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- An optimal cut-off value for $NLR > 3.95$ had a sensitivity, specificity, positive predictive value, and negative predictive value of 94.1%, 63.2%, 36.4% and 97.9%, respectively.



Discussion

- The present study examined the prognostic value of NLR at hospital admission in patients with VTE. NLR was significantly increased in non-survivor group compared with survivor group
- This study demonstrated that increased NLR was due to an increase in neutrophil count
- It was demonstrated that increased NLR was connected with increased rate of intracoronary thrombus presence. In lot of investigates guided on cancer patients, NLR was also discovered to be related to early mortality
- This study revealed that NLR can be introduced as a useful parameter in prediction of 30-day mortality in patients with Venous Thromboembolism

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❖ با تشکر از:

- ❖ پرسنل بخش بایگانی و اسناد پزشکی بیمارستان پنج آذر شهر گرگان الخصوص خانم شجاعی
- ❖ پرسنل بخش بایگانی و اسناد پزشکی بیمارستان شهید صیاد شیرازی شهر گرگان خانم ها مسلمی، عظیمی و شاهی
- ❖ بخش هماتولوژی بیمارستان شهید صیاد شیرازی
- ❖ خانم حانیه تیموری
- ❖ آقای دکتر امیر هوشنگ پورخانی

Thanks for your attention

