بسم الله الرحمن الرحيم

الآية

قال الله تبارك وتعالى :

﴿ اقْرَأْ بِاسْمِ رَبِّكَ الَّذِي خَلَقَ(1)خَلَـقَ الإِنسَـانَ مِـنْ عَلَـقٍ(2)اقْـرَأْ وَرَبُّكَ الأَكْرَمُ(3)الَّذِي عَلَّمَ بِالْقَلَمِ(4)عَلَّمَ الإِنسَانَ مَا لَـمْ يَعْلَـمْ(5) ﴾

العلق

Dedication

To my father

To my mother

To my brother

To my sisters

To my friends

To you …

Hussam

Acknowledgement

To the light, Allah, who guide me through the way.
My Thanks extended to Dr. Elshazali, for his great efforts of supervising and leading to accomplish this work and Dr. Mudather for his patience, guidance and valuable comments.
Lastly I would Thanks every person gave me something to light my pathway, I thank them for believing in me.

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List of abbreviations

CBC: Complete Blood Count

CRP: C reactive protein

Hb: Hemoglobin

HbA1c: Hemoglobin A1c

K_3EDTA: Tripottasium Ethylene diamine tetra-acetic acid

NLR: Neutrophil to lymphocyte ratio

PLTs: Platelets

RBCs: Red Blood Cells

SD: Standard deviation

SPSS: Statistical Package for Social Sciences

WBCs: White Blood Cells

Abstract

Background: Diabetes mellitus (DM), with the cost of treatment and complications causes the increasing economic burden. Macrovascular complications of diabetes, diabetic foot ulcers and amputations consequently reduce quality of life. Recently, it has been reported that neutrophil/lymphocyte ratio (NLR) is a cheap and accessible indicator of the inflammatory condition, this was case control study aimed to evaluate neutrophil to lymphocyte ratio as a marker of systemic inflammation in patients with diabetics foot ulcer. It was conducted in Khartoum State at the period from May to .September 2015

Materials and Methods: One hundred patients with type 2 diabetics patients recorded in this study (50 diabetics with foot ulcer, 50 diabetics without foot ulcer) from each 2.5 ml venous blood sample was collected. Complete Blood Count (CBC) was performed using Sysmex KX-21N, and HbA1c and CRP were measured using fluorescence immunoassay. Then Statistical Package for Social Sciences (SPSS) was used to analyze the data.

Results: The mean age for diabetics with foot ulcer and diabetic without food ulcer was 57.92±10.8 and 57.38±10.9 years, respectively .

Statistically significant differences was observed in study groups according to TWBCs (*P.value* 0.000), absolute lymphocyte (*P.value* 0.000), absolute neutrophil (*P.value* 0.000), NLR (*P.value* 0.000), HbA1c (*P.value* 0.002), and CRP (*P.value* 0.000). In patients with

diabetics foot ulcer pearson correlation analysis revealed that NLR was positively correlated with age (r =0.259, *P.value* = 0.045), TWBC (r = 0.650, *P.value* = 0.001), absolute neutrophil count (r = 0.817, *P.value* = 0.001) and CRP (r = 0.441, *P.value* = 0.002), and negatively correlated with absolute lymphocyte count (r = -0.553, *P.value* = 0.001).

Conclusion: Neutrophil to Lymphocyte Ratio is a simple, rapid and reliable method for evaluation of the extent of systemic inflammation. NLR is significantly higher in Diabetics with foot ulcer than those without foot ulcer, NLR is positively correlated with age, total leukocyte, absolute neutrophil count and CRP, and negatively correlated with absolute lymphocyte count.

ملخص الأطروحة

الخلفيـة: يعتـبر داء السـكري مـن اكـثر الامـراض انتشـارا و مـع تكـاليف العلاج والمضاعافات الناتجة يشكل عبئا اقتصـاديا متزايـدا ومـن مضـاعافاته قرحـة القـدم السكرية التي قد تؤدي الى البتر . في الاونة الاخيرة توصلت بعـض الدراسـات الـى ان نسبة الخلايا التعادلية الي اللمفاوية يمكن ان تكون مؤشر رخيص وسهل لحالات الالتهاب . هدفت هذه الدراسـة الـي تقييـم معـدل الخلايـا التعادليـة الـي اللمفاويـة كمؤشر لوجود ألتهاب جهـازي لـدي المرضـي المصـابين بقرحـة القـدم السـكرية , اجريت هذه الدراسة بولاية الخرطوم في الفترة من مايو حتي سبتمبر 2015 .

المواد والطرق المستخدمة: اجريت الدراسة بين مرضـى السـكري مـن النـوع الثاني و تضمنت مائة مريض (50 يعانون من قرحـة القـدم السـكرية و 50 دونهـا) حيث تم جمع 2.5 مل مـن الـدم , و بعـدها تـم تحليـل كامـل للـدم بواسـطة جهـاز Sysmex KX-21N وتحليل نسبة خض اب الـ دم السـ كري والـ بروتين المتفاع ل C بواسطة جهاز fluorescence immunoassay تم اسـ تخدام الحزمـ ة الاحصـ ائية للعلوم الاجتماعية (SPSS) لتحليل البيانات .

النتيجة: وقد اظهرت النتائج أن معدل العمر للمرضي ذوي قرحة القـدم السـكرية والمرضي بدون القرحة 57.92±10.8و 57.38±10.9 على التـوالي ولـم يكـن هذا اختلاف ذو دلالـة احصـائية, امـا بالنسـبة لتعـداد كريـات الـدم البيضـاء والخلايـا التعادلية واللمفاوية وخضاب الدم السكري و الـبروتين المتفاعـل C وكـ انت قيمـ ة (P.value) 0.000 ماعدا لخضاب الدم السكري كانت 0.002 (P.value) و وجد

ارتباط ايضا مابين نسبة الخلايا التعادلية الى اللمفاوية و تعداد كريات الدم البيضاء والبروتين المتفاعل C والعمر .

الخلاصة: نستخلص من هذه الدراسة أن نسبة الخلايا التعادلية الي اللمفاوية هي طريقة بسيطة وسريعة وموثوق بها لتقييم مدى الالتهابات , وهي مرتفعة في المرضي الذين يعانون قرحة القدم السكرية دون الذين لا يعانون , كما وجدت علاقة موجبة بين نسب الخلايا التعادلية الي اللمفاوية وكل من اعمار المرضي, كريات الدم البيضاء, ونسبة البروتين التفاعلي سي .