International Journal of
Molecular Sciences

MDPI

Article

Endothelin-2 and Its Association with Uric Acid Levels and Systemic Inflammation: Relevance to Chronic Kidney Disease Progression

Alexander Bozhidarov Blazhev [1,*,†], Krasimir Kostov [2,*,†], Borislav Ivanov Ignatov [2], Tsvetelina Eftimova [3], Tatyana Nedkova Simeonova [2] and Svetla Ognyanova Blazheva [4]

[1] Department of Biology, Medical University—Pleven, 1 Kliment Ohridski Str., 5800 Pleven, Bulgaria
[2] Department of Physiology and Pathophysiology, Medical University—Pleven, 1 Kliment Ohridski Str., 5800 Pleven, Bulgaria; dr_bignatov@abv.bg (B.I.I.); tatiana.simeonova@mu-pleven.bg (T.N.S.)
[3] Hemodialysis Unit, St. Marina Hospital, 5800 Pleven, Bulgaria; dr_eftimova@abv.bg
[4] Department of Clinical Laboratory, Allergology and Clinical Immunology, Medical University—Pleven, 5800 Pleven, Bulgaria; svetla.blajeva@mu-pleven.bg
* Correspondence: alexander.blazhev@mu-pleven.bg (A.B.B.); dr.krasi_kostov@abv.bg (K.K.)
† These authors contributed equally to this work.

Abstract

Chronic kidney disease (CKD) is associated with chronic inflammation and metabolic dysregulation. While endothelin-1 (ET-1) has been extensively studied, the role of endothelin-2 (ET-2) in CKD remains poorly understood. This cross-sectional study included 76 participants, 12 healthy controls and 64 CKD patients, stratified into three groups based on estimated glomerular filtration rate (eGFR): Group 1 (eGFR $\geq$ 90 mL/min/1.73 m^2), Group 2 (eGFR 45–89 mL/min/1.73 m^2), and Group 3 (eGFR 15–44 mL/min/1.73 m^2). Serum concentrations of ET-1, ET-2, ET-3, uric acid (UA), and inflammatory markers (hsCRP and IL-6) were measured. ET-2 levels were significantly higher in the advanced CKD group (median 24.49 pg/mL) compared to controls (median 19.32 pg/mL; $p = 0.030$). No significant differences were observed for ET-1 or ET-3 across groups. ET-2 levels positively correlated with UA (*rho* = 0.243, $p = 0.036$), hsCRP (*rho* = 0.241, $p = 0.039$), and IL-6 (*rho* = 0.244, $p = 0.038$). These findings suggest that ET-2 may represent a potential biomarker reflecting metabolic and inflammatory dysregulation in CKD and highlight its possible relevance in disease severity assessment.

Keywords: chronic kidney disease; endothelin-1; endothelin-2; endothelin-3; uric acid; systemic inflammation

Check for updates

Academic Editor: Marijn Speeckaert

Received: 8 December 2025
Revised: 29 December 2025
Accepted: 2 January 2026
Published: 5 January 2026

Copyright: © 2026 by the authors. Licensee MDPI, Basel, Switzerland. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license.

1. Introduction

Chronic kidney disease (CKD) is a major global public health problem, affecting approximately 10–15% of the adult population. It is characterized by a progressive decline in glomerular filtration rate (GFR), leading to the accumulation of metabolic waste products, disturbances in fluid and electrolyte balance, and increased cardiovascular morbidity and mortality [1,2]. The progression of CKD is influenced by multiple interrelated mechanisms, including systemic inflammation, oxidative stress, dysregulation of mineral metabolism, and activation of the renin–angiotensin–aldosterone system [3–5]. Identifying reliable biomarkers that can reflect or predict the rate of CKD progression remains a critical area of research.

https://doi.org/10.5272/jimab.2025311.6025

Journal of IMAB
ISSN: 1312-773X
https://www.journal-imab-bg.org

Journal of IMAB. 2025 Jan-Mar;31(1)

OPEN ACCESS

CC BY SA

Original article

THE ROLE OF SOME INFLAMMATORY BIOMARKERS IN ASSESSING THE SEVERITY AND COURSE OF CHRONIC OBSTRUCTIVE PULMONARY DISEASE

Elena Borisova[1], Snezhanka Ivankovska[1], Plamen Pavlov[1], Svetla Blazheva[2], Pavlina Glogovska[3],

1)Department of Pulmonology and Phthysiology, Faculty of Medicine, Medical University - Pleven, Bulgaria.

2)Department of Immunology and Allergology, Faculty of Medicine, Medical University Pleven, Bulgaria.

3)Department of Propaedeutics of Internal Diseases, Faculty of Medicine, Medical University - Pleven, Bulgaria.

SUMMARY:

Chronic obstructive pulmonary disease (COPD) is a heterogeneous disease with pulmonary and extrapulmonary involvement. The inflammatory process plays a role in the pathogenesis of COPD. Inflammation is local and systemic, involving many inflammatory biomarkers, mediators and cytokines.

Objective: To determine the relationship between the severity and course of COPD with the levels of some inflammatory biomarkers.

Materials and methods: Retrospective study in 85 outpatients with COPD for a six-month period in 2023. Patients were stratified by disease severity according to GOLD 2019 criteria.

COPD exacerbations in the previous year were tracked.

The levels of the main markers of inflammation in COPD - leukocytes, neutrophils, CRP and uric acid were studied, and those that were less frequently monitored in medical practice - IL-6, IL-8 and vitamin D. We studied their relationship with the severity and the course of the disease.

The survey data were processed using STAT GRAPHICS PLUS and EXCELL for Windows.

Results: We established: positive correlations between: the severity of COPD and high values of leukocytes ($p=0.002$) and uric acid (Pearsson $p<0.05$); exacerbations and high leukocyte values ($p=0.01$); the higher point score of CAT and high values of leukocytes ($p=0.008$) and IL $p<0.05$); leukocyte levels and mMRC score ($p=0.0005$), there is a negative correlation between vitamin D and mMRC ($p=0.02$).

Conclusion: Elevated levels of inflammatory biomarkers are associated with systemic inflammation in COPD, but there is no proven specific biomarker for the severity and course of the disease.

Keywords: COPD, inflammation, biomarkers, exacerbations

INTRODUCTION:

Knowledge about the etiology and pathogenesis of the chronic obstructive pulmonary disease (COPD) has significantly deepened in recent years. It is known that it is not only pulmonary, but a rather complex disease with a heterogeneous nature. It is defined as a complex syndrome with pulmonary and extrapulmonary involvement [1].

The fact that smoking is one of the main risk factors for the development and progression of the disease is indisputable. Along with various external damaging agents, it contributes to the progression of tissue inflammation involving cells and mediators of innate and adaptive immunity [2]. Inflammation in COPD is both local and systemic. Local inflammation is found in both large and small airways.

Several types of cells are involved in the inflammatory process in COPD, which affects the peripheral airways. Epithelial cells producing mucus, antioxidants, antiproteases, and defensins are responsible for a large part of the lung's protection against cigarette smoke, harmful gases, bacteria, fungi, and viruses. Epithelial cells activated by cigarette smoke produce inflammatory mediators such as TNF-α, IL-1β, IL-6, GM-CSF IL-8. Macrophages are of primary importance for the inflammatory process, which is proven by the correlation between their number in the parenchyma and the severity of emphysema [3]. Because COPD increases the redistribution of monocytes from the circulation in response to the action of selective chemokines, an increased number of macrophages in the lungs is found precisely in patients with COPD and in smokers. Activation of macrophages by cigarette smoke leads to the release of reactive oxygen radicals, TNF-α, IL-1, IL-8, LTB 4 and the secretion of various enzymes such as cathepsins and metalloproteinases [4]. Their main function is to phagocytose clear bacteria by apoptosis, but in COPD, it is somewhat limited, which is related to the colonization of microorganisms in the airways in the disease. Neutrophils mainly play a role in the inflammatory proc-

sciendo

10.2478/AMB-2023-0038

ORIGINAL ARTICLE

CHANGES OF SERUM ANGIOTENSIN PEPTIDES, PRO-ENDOTHELIN-1 LEVELS IN WOMEN ONE YEAR AFTER PREECLAMPSIA AND THEIR ASSOCIATION WITH CARDIOVASCULAR RISK FACTORS

N. Popovski[1], A. Nikolov[2], Ts. Lukanov[3], S. Blazheva[3], T. Totev[1]

[1]Clinic of Obstetrics and Gynaecology, University Hospital Pleven, Department of Obstetrics and Gynaecology, Medical University – Pleven, Bulgaria
[2]Department of Pre-clinical and Clinical Sciences, Faculty of Pharmacy, Medical University – Pleven, Bulgaria
[3]Department of Clinical Laboratory, Clinical Immunology and Allergology, Medical University – Pleven, Bulgaria

Abstract. Introduction: *Women who suffered preeclampsia (PE) have two to four times higher risk for development of cardiovascular disease (CVD) compared with women with a history of normotensive pregnancy. Microvascular and endothelial dysfunction, mediated by different vasoactive factors have been suggested as attainable pathophysiological pathways. The study aimed to: (1) determine changes in circulating levels of key vasoactive peptides in sera of women with history of PE and in women who had a normal pregnancy 1 year after delivery and (2) investigate whether an association exists between these molecules and cardiovascular risk factors.* ***Materials and methods:*** *The current research examined 32 women one year after preeclampsia (mean age 25.3 ± 6.3 years) and control group of 20 women one year after normal pregnancy (mean age 25.6 ± 5.6 years). The enzyme-linked immunosorbent assay (ELISA) was used to determine serum levels of angiotensin II (AngII), angiotensin-(1-7) [Ang-(1-7)] and pro-endothelin-1 (Pro-ET-1).* ***Results:*** *We found that at 1 year after delivery 38.46% of women who suffered PE have developed hypertension and 5.77% have developed diabetes mellitus. Women who had normal pregnancy developed neither hypertension, nor diabetes mellitus 1 year after delivery. Serum AngII levels in women one year after PE were statistically significantly lower than in women one year after normotensive pregnancy 0.9 (0.55÷1.7) vs. 2.3 pg/ml (2.0 ÷ 2.9) (KW = 20.849; p = 0.0001). Ang-(1-7) concentrations in women one year after PE were lower than in women one year after normal pregnancy, but not significantly 1.7 (0.3÷4.5) vs. 3.2 ng/ml (0.2÷8.0) (p>0.05). Levels of serum Pro-ET-1 in women one year after PE were statistically significantly higher than in women one year after normal pregnancy 322.65 (261.75÷391.85) vs. 248.7 pmol/L (231.05÷282.15) (KW = 6.639; p = 0.009). AngII showed correlation with AH grade (r = -0.33; 0.02), Ang-(1-7) (r = 0.27; 0.05), DBP (r = -0.28; p = 0.04), mean arterial pressure (r = -0.43; p = 0.002), pulse pressure (r = -0.28; p = 0.04), BMI (r = -0.30; p = 0.03), TC (r = -0.31; p = 0.03) and LDL (r = -0.30; p = 0.03). Pro-ET-1 correlated with age (r = 0.30; p = 0.03), mean arterial pressure (r = -0.25; p = 0.05) and pulse pressure (r = 0.41; p = 0.003).* ***Conclusion:*** *Our data showed an association between key vasoactive peptides and major CVD risk factors in women one year after PE. We suggest that imbalance between AngII, Ang-(1-7) and Pro-ET-1 could have a potential imply on the vascular wall after PE, reflecting persistent microvascular and endothelial*

injury/dysfunction postpartum. Further studies are warranted to clarify these vasoactive peptides' role in the ongoing vascular endothelial function after delivery and the pathogenic mechanisms determining development of CVD in previously PE women.

Key words: *angiotensin-II, angiotensin-(1-7), pro-endothelin-1, history of preeclampsia, cardiovascular risk factors*

Corresponding author: *Assoc. Prof. Asparuh Nikolov, MD, PhD, Department of Pre-clinical and Clinical Sciences, Faculty of Pharmacy, Medical University, 1, Sv. Kliment Ohridski Str., Bg – 5800 Pleven, tel. ++359 887100672, e-mail: a_nicoloff@yahoo.com*

Received: *15 June 2023;* ***Revised/Accepted:*** *12 July 2023*

INTRODUCTION

Preeclampsia (PE) is a hypertensive disorder of pregnancy, which globally affects about 8 million pregnancies [1]. It is a major cause of maternal and perinatal morbidity and mortality [2]. PE is defined by the occurrence of new-onset hypertension (140/90 mm Hg) and either proteinuria (0.3 g in a 24h urine sample) or end-organ dysfunction developing after 20 weeks of gestation [3]. According to the current understandings preeclampsia is a systemic disease with generalized endothelial cells injury/dysfunction and multi-organ involvement [4].

Evidence exists that women with a history of preeclampsia are at a 2-4 times greater risk for the development of cardiovascular disease (CVD) postpartum than women with a history of normotensive pregnancy. Moreover, previously PE women are significantly more likely to die of CVD compared with women who have had normal pregnancy [5]. It have been estimated that women with early-onset or severe preeclampsia have highest risk of CVD later in life [6-10]. The exact pathophysiological mechanisms leading to this increased CV risk still remains unclear and might in fact be multifactorial. It has been hypothesized that the initial vascular damage and dysfunction sustained during a pregnancy complicated by preeclampsia may persist chronically together with the compromised vascular endothelial function. Vasoactive peptides angiotensin II, angiotensin-(1-7) and pro-endothelin-1 have been suggested to play a key role in these processes.

Normal pregnancy is characterized with hemodynamic changes which activate the renin angiotensin system (RAS), resulting in water and sodium retention and increased BMI. Angiotensin II (AngII) and angiotensin-(1-7) [Ang-(1-7)] are major components of RAS. They have counter-regulatory impact in the systemic circulation and in tissues important in cardiovascular regulation [11]. AngII is a potent vasoconstrictor, while Ang-(1-7) has antihypertensive actions via vasodilatory effects on vascular smooth muscle cells [12, 13]. Therefore, Ang-(1-7) is accepted as an endogenous counter-factor of AngII and balance of the two peptides may be required to regulate normal vascular activity. Dysregulation of AngII and Ang-(1-7) might be one of the possible reasons for development of cardiovascular and renal diseases. Large number of studies has demonstrated that circulating levels of AngII are lower in clinically manifested PE, compared with uncomplicated pregnancies [14-19]. It has also been revealed that concentrations of AngII are markedly diminished at diagnosis of PE and are closely associated with the severity of disease. Evidence exist that, AngII sensitivity of the vascular system is elevated in pregnancies at high risk for preeclampsia, long before PE is overt. Moreover, sensitivity of AngII remains higher in former-preeclamptic patients compared to normal pregnancies [20] and microvascular damage sustained during a preeclamptic pregnancy may persist postpartum in women with a history of PE [21]. It can be pointed-out that most researchers have evaluated concentrations of AngII and Ang-(1-7) pre-pregnancy or intrapartally. Interestingly, the balance between circulating AngII and Ang-(1-7) in PE women post-partum (where the residual effects of the preeclamptic pregnancy on vascular wall structure and function have been suggested to persist) has not been fully determined.

There is growing evidence for impaired endothelial function, generalized vascular constriction and increased resistance in PE pathophysiology. Hence, the reduced placental perfusion might be related with widespread dysfunction of the maternal vascular endothelium [22]. Considering that, Verhaar et al. (2001) demonstrated that women who have had PE have persistent microvascular dysfunction postpartum, mediated in part, by increased sensitivity to AngII [23]. Thus, maternal vascular endothelial cells are believed to take a central part in the pathogenesis of PE [23-28]. In this context, endothelins have been suggested to play key role in vascular function and

folia medica

Folia Medica 64(6):913-921
DOI: 10.3897/folmed.64.e70074

Original Article

Levels of Serum Podocalyxin in Preeclampsia and Relationship with Maternal Echocardiographic and Doppler Ultrasound Parameters

Asparuh G. Nikolov[1], Nikola K. Popovski[2,4], Svetla Blazheva[3]

[1] *Division of Medicine, Cardiovascular Research Working Group, Institute for Scientific Research, Medical University of Pleven, Pleven, Bulgaria*

[2] *Clinic of Obstetrics and Gynecology, University Hospital, Pleven, Bulgaria*

[3] *Department of Clinical Laboratory, Clinical Immunology and Allergology, Medical University of Pleven, Pleven, Bulgaria*

[4] *Department of Obstetrics and Gynecology, Medical University of Pleven, Pleven, Bulgaria*

Corresponding author: Asparuh G. Nikolov, Division of Medicine, Cardiovascular Research Working Group, Institute for Scientific Research, Medical University of Pleven, 1 St Kliment Ohridski St., 5800 Pleven, Bulgaria; E-mail: a_nicoloff@yahoo.com

Received: 12 June 2021 ♦ **Accepted:** 20 Sep 2021 ♦ **Published:** 31 Dec 2022

Citation: Nikolov AG, Popovski NK, Blazheva S. Levels of serum podocalyxin in preeclampsia and relationship with maternal echocardiographic and Doppler ultrasound parameters. Folia Med (Plovdiv) 2022;64(6):913-921. doi: 10.3897/folmed.64.e70074.

Abstract

Introduction: Podocalyxin (PCX) is an indicator of glomerular injury. Aside from the kidney, it is expressed in the endothelial cells of various organs. Echographic examinations are useful in assessing the alterations in cardiovascular structure and function during pregnancy.

Aim: The aim of the present study was to evaluate PCX concentrations in preeclampsia (PE) and to investigate the existence of association between PCX levels and maternal echocardiographic and Doppler ultrasound parameters.

Materials and methods: Fifty-five women with PE were examined. The mean age of patients was 24.9±6 years; and the mean age of the control group of 35 women with normal pregnancies was 24.7±5.4 years. ELISA was used to determine concentrations of PCX. Echocardiographic assessment of all subjects was performed. In addition, umbilical (UmA) and uterine (UtA) artery pulsatility indices (PI) were evaluated.

Results: The levels of serum PCX in PE women were statistically significantly higher than those in women with normal pregnancy: 2.66±0.67 vs. 2.40±0.33 ng/ml (p=0.03). Cut-off value at 3 ng/ml was obtained for podocalyxin in order to discriminate between PE and healthy pregnancy. Logistic regression model was statistically significant: OR=3.226, (95% CI 1.084–9.599); (p=0.019). PCX correlated with systolic blood pressure (r=0.30; p=0.004), diastolic blood pressure (r=0.35; p=0.0007), UtA PI (r=0.30; p=0.004), UmA PI (r=0.21; p=0.047), IVS (r=0.32; p=0.002), and LVPWD (r=0.28; p=0.007).

Conclusions: Healthy pregnant women with PCX levels above the cut-off value of 3 ng/ml are at a higher risk for developing preeclampsia. Elevated PCX levels indicate three times higher probability for PE development than women with values below the cut-off value. PCX might be a promising marker for diagnosis and prognosis of PE.

Keywords

diagnosis and prognosis, echography, podocalyxin, preeclampsia, serum levels

Copyright by authors. This is an open access article distributed under the terms of the Creative Commons Attribution License (CC-BY 4.0), which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

PENSOFT.

microorganisms

MDPI

Article

Prevalence of *Borrelia burgdorferi* Sensu Lato in *Ixodes ricinus* Ticks Collected from Kaylaka Park in Pleven, Bulgaria

Alexander Blazhev [1,*], Iskren Stanilov [2], Lyuba Dineva Miteva [2], Milena Atanasova [1], Svetla Blazheva [3] and Spaska Stanilova [2]

[1] Department of Biology, Medical University-Pleven, 1 Kliment Ohridski Str., 5800 Pleven, Bulgaria; milena.atanasova-radeva@mu-pleven.bg
[2] Department of Molecular Biology, Immunology and Medical Genetics, Medical Faculty, Trakia University, 6000 Stara Zagora, Bulgaria; iskren.stanilov@trakia-uni.bg (I.S.); lyuba.miteva@trakia-uni.bg (L.D.M.); spaska.stanilova@trakia-uni.bg (S.S.)
[3] Department of Immunology, University Hospital, 5800 Pleven, Bulgaria; svetlabl@abv.bg
* Correspondence: yalishanda9@gmail.com; Tel.: +359-988-986-865

Abstract: We aimed to determine the presence and distribution of *Borrelia burgdorferi* sensu lato (s.l.) in *Ixodes ricinus* ticks collected from urbanized and wild areas in Kaylaka Park (Bulgaria). A total of 546 ticks were collected over three years (2017–2019). The presence of *Borrelia* in 334 of the collected *I. ricinus* was detected by dark-field microscopy (DFM) and two nested PCRs (nPCR) targeting the borrelial 5S-23S rRNA intergenic spacer and Flagellin B (FlaB) gene. DFM was performed on a total of 215 ticks, of which 86 (40%) were positive. PCR was performed on 153 of the ticks. In total, 42.5% of the 5S-23S rRNA intergenic spacer and 49% of FlaB were positive. Considering as positive any single tick in which *Borrelia* sp. was detected regardless of the used method, the infection rate reached 37% (10/27) in the nymphs and 48.5% (149/307) in the adults (48.7% (77/158) females, 48.3% (72/149) males). The incidence of *B. burgdorferi* infection in *I. ricinus* did not differ statistically significantly between female, male, and nymph. This study provides evidence that Lyme disease spirochetes are present in various regions of Kaylaka Park with extremely high prevalence in their vectors.

Keywords: Ixodidae; vector surveillance; tick-borne disease; spirochetes; urban park

check for updates

Citation: Blazhev, A.; Stanilov, I.; Miteva, L.D.; Atanasova, M.; Blazheva, S.; Stanilova, S. Prevalence of *Borrelia burgdorferi* Sensu Lato in *Ixodes ricinus* Ticks Collected from Kaylaka Park in Pleven, Bulgaria. *Microorganisms* **2022**, *10*, 772.

insects

MDPI

Article

Estimation of *Ixodes ricinus* (Acari: Ixodidae) Populations of Kaylaka Park in the Town of Pleven, Bulgaria

Alexander Blazhev [1,*], Milena Atanasova [1], Krasimir Kostov [2], Tsetsa Doychinova [3], Svetla Blazheva [4] and Milena Karcheva [3]

[1] Department of Biology, Medical University-Pleven, 1 Kliment Ohridski Str., 5800 Pleven, Bulgaria; milena.atanasova-radeva@mu-pleven.bg
[2] Department of Pathophysiology, Medical University-Pleven, 1 Kliment Ohridski Str., 5800 Pleven, Bulgaria; dr.krasi_kostov@abv.bg
[3] Department of Infectious Diseases and Epidemiology, Medical University-Pleven, 1 Kliment Ohridski Str., 5800 Pleven, Bulgaria; doichinova_ceca@abv.bg (T.D.); milena_karcheva@abv.bg (M.K.)
[4] Department of Immunology, University Hospital, 5800 Pleven, Bulgaria; svetlabl@abv.bg
* Correspondence: yalishanda9@gmail.com; Tel.: +35-(99)-88986865

Simple Summary: Hard ticks transmit the etiological agents of numerous diseases. Kaylaka Park is a protected area, but part of it is designated for various outdoor activities. The aim of our study was to establish the presence of hard ticks in four urbanized areas and four areas that are not maintained and are natural wilderness areas (wild areas). The flagging method of collection was used. Temperature, relative humidity, both collection time and distance covered were measured during the sampling campaigns. The density of ticks collected was calculated, the number of ticks captured per minute was calculated and the results were compared between urban and wild areas over a five-year period (2016–2020). A total of 622 ticks were collected. All of them were identified as *Ixodes ricinus*. Significant differences between the urban and wild areas were observed in the number of ticks per minute and density of nymphs. The peak in questing tick activity has been established at the end of April. The highest yield was obtained at 20 °C and at 60% relative humidity. We found that the distribution of *Ixodes ricinus* ticks is widespread in Kaylaka Park. Their high density poses a serious risk to park visitors in both wild and maintained urban areas.

Abstract: (1) Background: Ticks are vectors of a large number of pathogenic microorganisms, which cause serious diseases in both humans and animals. Kaylaka Park is located in northern Bulgaria close to the city of Pleven. Part of the park is urbanized and visited daily by many citizens. The aim of our study was to determine the presence and distribution of hard ticks in the park area by surveying and comparing four urbanized with four wild areas. (2) Methods: Ticks were collected by flagging from 2016 to 2020 during the spring–summer season (March–July). Air temperature, relative humidity, collection time and flagging area were measured during the campaign. (3) Results: A total of 622 ticks were collected: 285 females (46%), 272 (44%) males and 64 (10%) nymphs. All were identified as *Ixodes ricinus*. Wild areas showed statistically significant higher values of ticks collected per minute ($p = 0.009$) and nymph densities ($p = 0.003$) compared to urbanized sampling sites. Other densities indices did not have a significant difference between urban and wild areas. Highest numbers of *Ixodes* ticks were collected at a temperature of 20 °C and at 60% relative humidity. The active questing began in March, peaked in end of April and declined in June. (4) Conclusions: In the present study, we found that ecological factors in the Kaylaka Park area are favourable for the development and distribution of tick populations. The results give us reason to consider that there is a high risk to visitors from tick bites in the Kaylaka Park area.

Keywords: *Ixodes ricinus*; tick collection; tick density; flagging; medical entomology; Kaylaka Park

check for updates

Citation: Blazhev, A.; Atanasova, M.; Kostov, K.; Doychinova, T.; Blazheva, S.; Karcheva, M. Estimation of *Ixodes ricinus* (Acari: Ixodidae) Populations of Kaylaka Park in the Town of Pleven, Bulgaria. *Insects* **2021**, *12*, 808. https://doi.org/10.3390/insects12090808

Academic Editors: Kirby C. Stafford III, Scott C. Williams and Megan A. Linske

Received: 22 June 2021
Accepted: 8 September 2021
Published: 9 September 2021

Publisher's Note: MDPI stays neutral with regard to jurisdictional claims in published maps and institutional affiliations.

Copyright: © 2021 by the authors. Licensee MDPI, Basel, Switzerland. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (https://creativecommons.org/licenses/by/4.0/).

sciendo

10.2478/AMB-2021-0012

LEVELS OF LYMPHOCYTE SUBPOPULATIONS IN PERIPHERAL BLOOD AMONG PATIENTS WITH DIABETES

S Ganeva[1,3], K. Todorova[1,3], Ts. Lukanov[2,3], G. Rayanova[1,3], S. Blajeva[2,3]

[1]Clinic of Endocrinology and Metabolic Diseases, UMHAT "Dr. G. Stranski" – Pleven, Bulgaria
[2]Diagnostic Laboratory of Immunology, UMHAT "Dr. G. Stranski" – Pleven, Bulgaria
[3]Medical University – Pleven, Bulgaria

Abstract. *The* ***aim*** *of the study was to investigate the lymphocyte (lymph) subpopulations in peripheral blood as a part of the immune response among patients with diabetes mellitus type 1 (DMT1) and diabetes mellitus type 2 (DMT2).* ***Patients and methods:*** *A prospective, cross-sectional, comparative, "case-control" study was conducted among 22 patients with DMT1 and 70 patients with DMT2. The levels of lymph subtypes [general nonspecific T-lymph (CD3+); T-helper lymph (CD4+); T-cytotoxic lymph (CD8+), natural killers [NK cells (CD3\ CD16+/CD56)] and B-lymph (CD19+)] in blood was measured and compared by flow-cytometric analisys (FAC Sort, BD).* ***Results*** *were compared to those of 21 healthy persons. The data was processed using the statistics software. Results: Patients with DMT1 had longer duration of the disease, compared to patients with DMT2. No significant differences between arterial blood pressure, HѤA1c levels and lipid profile among the patients with DMT1 and DMT2 were present. There were no differences in the total leukocyte count between the groups (DMT1-6,91 ± 1,32.10^9/l; DMT2-7,28 ± 1,85.10^9/l; controls-6,89 ± 1,07.10^9/l). The results from the flowcytometric investigation showed significantly higher absolute number of T-all lymph (CD3+), Th lymph (CD4+) and all NK (CD3\ CD16+/CD56), as well as a lower absolute number of Ts (CD8+) and B (CD19+) lymph among the diabetic patients compared to healthy subjects. The Th/Ts ratio in patients with DMT1 (2,02 ± 0,44) and DMT2 (2,36 ± 0,37) was also significantly higher compared to ratio of controls (1,02 ± 0,06). No significant differences were noted in the lymph subpopulations between the two groups with DM.* ***Conclusions:*** *Changes of lymph types in peripheral blood in diabetic patients demonstrate immune activation and dysregulation among the two types of diabetes.*

Key words: *type 1 diabetes mellitus, type 2 diabetes mellitus, flow cytometry, lymphocytes*

Corresponding author: *Silviya Ganeva, Clinic of Endocrinology and Metabolic Diseases, UMHAT "Dr. G. Stranski", Pleven, 91 "Vladimir Vazov" Street, Bg – 5800 Pleven, E-mail: doctorganeva@gmail.com, tel.: +3590896678598*

ACCEPTED: *16 June 2020*

sciendo

10.2478/AMB-2021-0029

ASSOCIATION BETWEEN THE ANGIOTENSIN II/ANGIOTENSIN (1-7) IMBALANCE AND LEFT VENTRICULAR HYPERTROPHY IN PATIENTS WITH HEART FAILURE

ANGIOTENSIN RATIO AND LEFT VENTRICULAR HYPERTROPHY IN HEART FAILURE

A. Nikolov[1], M. Tzekova[2], K. Kostov[2], A. Kostadinovska[2], S. Blazheva[3]

[1]Division of Medicine, Cardiovascular Research Working Group, Institute for Scientific Research, Medical University – Pleven, Bulgaria
[2]Medical University – Pleven, Bulgaria
[3]Department of Clinical Laboratory, Clinical Immunology and Allergology, Medical University – Pleven, Bulgaria

Abstract. Introduction: *Angiotensin II (AngII) and angiotensin-(1-7) [Ang-(1-7)] are key components of the renin angiotensin system (RAS). They exhibit counter-regulatory effects in the systemic circulation, as well as in tissues important for cardiovascular regulation.* ***Aim:*** *To investigate the association between the AngII/Ang-(1-7) balance and left ventricular hypertrophy (LVH) in patients with heart failure and mid-range ejection fraction (HFmrEF).* ***Material and methods:*** *56 patients with HFmrEF were included, with a mean age of 65.62 ± 9.69 years and 22 age- and sex-matched healthy subjects, their mean age - 56.4 ± 5.53 years. The patients were divided in two subgroups: subjects with left ventricular hypertrophy (n = 32); (HFmrEF+LVH) and subjects without left ventricular hypertrophy (n = 24); (HFmrEF-LVH). AngII and Ang-(1-7) levels were measured with an ELISA kit.* ***Results:*** *Patients with HFmrEF+LVH showed significantly higher levels of AngII: 8.53 pg/mL (1.47 ÷ 13.0) than HFmrEF-LVH – 1.33 pg/mL (0.47 ÷ 6.93) and healthy controls – 1.53 pg/mL (0.27 ÷ 5.21); (KW = 3.48; p = 0.04). There was no significant difference between Ang-(1-7) levels in all patients compared to controls (p > 0.05). AngII/Ang-(1-7) ratio was significantly higher in all patients than controls: 3.81 (2.03 ÷ 6.66) vs. 1.5 (0.93 ÷ 2.06) (KW = 18.68; p < 0.001). Patients with HFmrEF+LVH showed statistically higher AngII/Ang-(1-7) ratio compared with controls (4.7 vs. 1.5). Moreover, subjects with LVH showed the highest AngII/Ang-(1-7) ratio among all particpants in the study. The AngII/Ang-(1-7) ratio correlated with LVH (r = -0.39; p = 0.03), DBP (r = 0.25; p = 0.04), HDL (r = 0.33; p = 0.01), SBP (r = 0.34; p = 0.01).* ***Conclusion:*** *Our study showed an association between AngII/Ang-(1-7) ratio, blood pressure and LVH. The imbalance between Ang-II and Ang-(1-7) could contribute to the mechanisms determining LVH in HFmrEF. Further studies are warranted to clarify whether evaluation of serum Ang-II/Ang-(1-7) ratio could predict LVH development in patients with HFmrEF.*

Key words: *heart failure, arterial hypertension, angiotensin, left ventricular hypertrophy, renin angiotensin system*

Corresponding author: *Assoc. Prof. Asparuh Nikolov MD, PhD, Division of Medicine, Cardiovascular Research Working Group, Institute for Scientific Research, Medical University, 1, Sv. Kliment Ohridski Street, Bg – 5800 Pleven, tel. +359 887100672, e-mail: a_nicoloff@yahoo.com*

RECEIVED: *13 June 2021;* ***REVISED:*** *17 July 2021;* ***ACCEPTED:*** *20 July 2021*

EBSCOhost | Connecting you to content on EBSCOhost
UNIVERSITÄT DORTMUND

← Results

Peer reviewed | Academic Journal

Първи резултати от въвеждането на Партньорска програма за диагностика и лечение на деца с отклонения в растежа от Плевенска област.

By: Халваджиян, И.; Йотова, В.; Петрова, Ч.; ... • **Published in:** Pediatria, 2021, v. 61, n. 2, p. 21

Authors
Халваджиян, И.; Йотова, В.; Петрова, Ч.; Недкова, В.; Елкина, С.; Галчева, С.; Ковачева, К.; Блажева, С.; Луканов, Ц.; Дончев, М.; Бочева, Я.; Новакова, М.; Цанков, Л.

Abstract
The construction of specialized programs of detection and treatment of children with growth deviations decreases the time to diagnosis and start of proper treatment. The aim of the current study is to present the implementation and the first results of the partnership program "Partners4Growth" on the territory of the Clinic of Pediatrics, University Hospital "G. Stranski" - Pleven under the active supervision of the Varna Expert Center of Rare Endocrine Diseases. Patients and methods: The implementation program for diagnosis and treatment of children with growth disorders started in Pleven in March 2018 with evaluation of the available resources and screening of children with growth deviations on an outpatient basis. Training and work on place followed. The diagnoses growth hormone deficiency (GHD), Turner syndrome (TS), Prader-Willi syndrome (PWS), Silver-Russell syndrome (SRS), Noonan syndrome were made at clinical settings based on a combination of history, physical status, auxological assessment, basal and stimulated hormonal tests, bone maturation, genetic testing and MRI imaging of the hypothalamo-pituitary region. Results: Prospectively, for a period of 18 months 128 children from Pleven region were evaluated, aged 7.94±5.2 years (0.5-17.7 years), consulted at an outpatient setting. Further hospitalbased diagnostic tests at the newly established center were assigned to 53 children aged 9.74±4.5 years (0.9-17.8 years, median 10.3), without gender difference, and coming mainly from cities. The distribution by diagnoses of the hospitalized children shows predominance of familial short stature (n=14, 26.4%), followed by constitutional growth delay (n=10, 18.9%), GHD, celiac disease, PWS, TS, Noonan's syndrome, etc. During the study, 11/53 children (20,8%) started treatment with GH at the age of 8.14±4.4 years. Conclusion: The presented implementation research results are pilot for Bulgaria. Wider implementation of such approach in our country will lead to faster overcoming of regional differences in the access to modern pediatric care in the field of rare endocrine diseases.

Publication
Pediatria, 2021, Vol 61, Issue 2, p21

ISSN
0479-7876

Publication type
Academic Journal

Access this record
Your institution:
UNIVERSITÄT DORTMUND
Access now | Choose another institution

4
2016

Педиатрия

www.spisanie-pediatria-bg.eu



Бъдещето на детето
започва от днес

Aptamil
Pronutra+

hormones (leptin, adiponectin), nutrition and obesity-related comorbidities mediating asthma symptoms is noted.

Asthma in the obese may represent a unique phenotype of asthma, with more severe disease which does not respond as well to conventional therapy. Differences in response to inhaled corticosteroid treatment between asthmatic obese and asthmatic non-obese children are discussed. Reduction of body weight improves lung function and asthma control.

Interventions that encourage daily physical activity, weight-loss and normalization of nutrient levels, should be considered by healthcare providers managing obese children with asthma.

Key words: *Asthma, Obesity, Children*

Address for correspondence:
Department of Pediatrics
8A G. Kochev str.
5800 Pleven
Bulgaria
e-mail: niya_krasteva@abv.bg

Humoral Immunity in Children with Type 1 Diabetes - Serum Levels of Immunoglobulins and Complement Component 3

S. Elkina, Ch. Petrova, S. Blajeva, B. Russeva, V. Botzova, N. Krasteva

The impaired immune response in type 1 diabetes (T1D) is considered as a risk factor for infections. Although disorders of both, cell-mediated and humoral immunity in patients with T1D have already been reported, the data concerning childhood are still incomplete and controversial.

Our aim is to study levels of serum immunoglobulins (Ig) and complement component 3 (C3) in diabetic children with genital candidiasis (GC) and to evaluate their association with candidiasis and metabolic control.

The study involved 95 children at the age of 8 to 18 years divided in two groups - 1st group: 65 children with T1D with two subgroups - patients with and without GC. Second group: 30 controls without diabetes and infection.

Serum levels of immunoglobulins and C3 in T1D were found within the lower part of the referent limits, and nonsignificant lower than those of control group: IgG - 1069+/-61 vs. 1168+/-82 mg/dL, IgA - 177+/-15 vs. 206+/-23 mg/dL, IgM - 107+/-9 vs. 114+/-7 mg/dL and C3 119+/-9 mg/dL vs. 126+/-9 mg/dL ($p>0,05$)

IgA T1D associated with GC (201+/-37 mg/dL) was significant higher than in diabetic patients without candidiasis (159+/-19 mg/dL) ($p=0,04$).

Although our analysis showed deficit of immunoglobulins mostly in pubertal girls with poor metabolic control and longer duration of T1D, no significant correlation between serum levels of immunoglobulins, C3 and longlasting hyperglycemia was found.

Conclusion: The mean serum level of IgG, IgA, IgM and C3 of studied children were found within the lower part of the referent limits, and nonsignificant lower than those of control group. No correlation with the metabolic control was found. Our results suppose that patients with T1D have adequate immune response.

Key words: *type 1 diabetes, immunoglobulins, complement, children, humoral immunity*

Address for correspondence:
Department of Pediatrics
UMHAT „Georgi Stranski"
8A, G. Kochev, Str.
5800, Pleven
Bulgaria
e-mail: st_elkina_bg@abv.bg

Serum 25-hydroxyvitamin D Levels in Children with Recurrent Wheezing

S. Mileva, M. Yankova, I. Galeva, S. Michailova

Objective: During the last years a number of epidemiological studies have associated low levels of 25-hydroxyvitamin D (25 (OH) D) with increased susceptibility for respiratory infections and asthma exacerbations.

The aim of this study was to assess the association between serum 25-hydroxyvitamin D (25(OH)D) concentration and risk of early-onset and recurrence of wheezing during the first five years of life.

Material and Methods: This was a prospective study that included a total of 129 children, aged 3-36 months (14,4 mo; SD 8,8), presenting with an acute episode of wheezing in Pediatric Clinic, Alexandrovska (may 2012- june 2013). Recurrent wheezing was defined as 3 episodes within 6 months (n=101), and one wheezing as only one episode of wheezing till 2 years of age(n=28). The children were followed up to 5 years age. Serum 25OHD concentrations were measured during the acute wheezing illness.

Results: Vit D deficiency (serum 25(OH)D <20ng/ml) had 28 children (22%), insufficient (serum 25(OH)D 21-29 ng/ml) were 63 (49%), and normal values (serum 25(OH)D >30 ng/ml) were detected in 38 (29%) of the children. Mean 25(OH) D concentrations were 24,19 ± 11,32 ng/ml and 27,14±9,78 for the first and recurrent wheezing group respectively. No association was found between low serum 25(OH)D levels and severity of clinical manifestation, atopy , risk of recurrence of wheezing, as well as persistence of symptoms during the next 3 years. Our data confirm the relationship between early age of wheezing and vit. D deficiency: age of first wheezing 8,75 mo for children with serum 25(OH)D <20ng/ml, 8,24mo with serum 25(OH)D 21- 29 ng/ml, and 10,95mo for those with normal values (serum 25(OH)D >30 ng/ml), $p=0,01$.

Conclusion: The present study demonstrates significant association between vitamin D status and age of first wheezing in infants, but not with persistence of symptoms.

The study was financially supported by research grant (2015), Medical University-Sofia.

Key words: *vitamin D, asthma*

Address for correspondence:
Pediatric Clinic, UMHAT „Aleksandrovska"
1, G. Sofiysky, Blvd.
1431, Sofia
Bulgaria
e-mail: sirmamileva@yahoo.com

ISSN 0324-0959

БЪЛГАРСКО НАУЧНО ДРУЖЕСТВО ПО АКУШЕРСТВО И ГИНЕКОЛОГИЯ
BULGARIAN SCIENTIFIC SOCIETY OF OBSTETRICS AND GYNECOLOGY

АКУШЕРСТВО И ГИНЕКОЛОГИЯ

ОРИГИНАЛНИ СТАТИИ

ВЛИЯНИЕ НА ПОЛОВИТЕ ХОРМОНИ ВЪРХУ БРОЯ НА ПЕРИФЕРНИТЕ NK КЛЕТКИ

Иванов П.[1,2], Е. Конова[2,3], Цв. Луканов[3], Св. Блажева[3], П. Ангелова[4], В. Георгиева[5], В. Тотев[6], Р. Комса – Пенкова[1]

[1] Сектор Биохимия, МУ – Плевен, Ръководител: доц Р. Комса- Пенкова
[2] Клиничен Институт по Репродуктивна Медицина, Плевен, Ръководител: доц Е. Конова
[3] Център по Клинична имунология, УМБАЛ „Г. Странски", Плевен, Управител: доц. Цв. Луканов
[4] Сектор Медицинска Генетика, МУ – Плевен, Ръководител: доц. М. Симеонова
[5] Катедра Акушерство и гинекология, МУ – Плевен, Ръководител: доц. Цветков
[6] СБАЛАГ „Света Марина", гр. Плевен, Управител: проф. Горчев

Резюме. *Правилното проследяване на динамиката на активност на имунологичните фактори свързани с бременността позволява правилна оценка на тяхното значение за риска от ранна фетална загуба. Броят и активността на периферните NK (pNK) клетки като ключов компонент свързан с регулацията на имунния отговор в ранна бременност се предполага, че са свързани с хормоналните промени по време на менструалния цикъл.*

В настоящето изследване проследихме промяната на броя на pNK в пролиферативна и средна лутеална фаза на менстралния цикъл при 63 жени без репродуктивни неудачи и имали раждане на поне един жив доносен плод.

Средния брой pNK клетки през пролиферативна фаза на цикъла бе 11,2% с вариация 4,7% под и над тази стойност. Медианата на изследвания брой бе 10,6%. В лутеална фаза на цикъла се

установи среден брой от 12,1%, вариация от 5,1% и медиана 11,8%. Не се установи статистически значима разлика в средната стойност на броя pNK в двете фази на менструалния цикъл (t-test, p<0,05) въпреки определения по-висок брой на pNK в лутеална фаза на цикъла.

Незначимото вариране на броя на pNK в различните фази на менструалния цикъл отхвърля предположението за изследването на този, свързан с бременността, имунологичен фактор в специфична фаза на цикъла.

Ключови думи: *NK клетки, менструален цикъл, естрадиол.*

Проучването е финансирано от Медицински Университет – Плевен.

SEX HORMONE INFLUENCE ON PERIPHERAL NATURAL KILLER CELLS COUNT

Ivanov P.[1,2], E Konova[2,4], Tsv. Lukanov[3], Sv. Blajeva[3], P. Angelova[4], V. Georgieva[5], V. Totev[6], R. Komsa-Penkova[1]

[1] Department of Biochemistry, Medical University, Pleven, Bulgaria
[2] Clinical Institute for Reproductive Medicine, Pleven, Bulgaria
[3] Center of Clinical Immunology, University Hospital of Pleven, Bulgaria
[4] Department of Medical genetics, Medical University, Pleven, Bulgaria
[5] Department of Obstetrics and Gynecology, Medical University of Pleven, Bulgaria
[6] SBALAG "St. Marina", Hospital, Pleven, Bulgaria

Summary. *Proper evaluation of immunological factors connected with pregnancy establishment increased the possibility for exact treatment in high risk gestation cases. Hormonal changes during an ovarian cycle may affect immune response, which is crucial for the embryonic implantation. Peripheral Natural killer (pNK) cells are key components of immune systems and their activities could be regulated by sex hormones.*

In the present study we investigated the effects of estrogen fluctuation on the number of NK cells in vivo during the early follicular and middle luteal phase of menstrual cycle.

In 63 healthy women with at least one full term pregnancy and regular menstrual cycle with duration between 24 and 32 days, blood samples have been collected twice for investigation of CD3/CD16/CD56 positive lymphocytes.

The mean pNK count in follicular phase was 11.6% with 4.7% variation. The median was 10.6%. The mean pNK count in luteal phase was 12.1% with 5.1% variation, respectively median for cell number 11.8% The two-tailed t-test comparison did not find any statistical difference despite the slight elevation of pNK cells count in luteal phase.

The insignificant variation in pNK cells count objected the suggestion to evaluate immunological status in women with adverse pregnancy outcome in specific phase of menstrual cycle.

Key words: *NK cells, menstrual cycle, estradiol.*

This investigation was supported by grant of University of Medicine – Pleven.

ВЪВЕДЕНИЕ

Част от неспецифичният имунен отговор при човека се оказва тясно свързан с възникването и развитието на ранната бременност. Natural killers (NK) клетки представляват основната част (около 70-80%) от левкоцитите в ендометриума, особено в неговата втора фаза – лутеална. Децидуалните или утеринни NK клетки (uNK клетки), които се определят като производни на периферните NK клетки (pNK клетки) са основен фактор в процеса на контролиране на трофобластната инфазия и ремоделирането на съдовото русло разположено в ендометриума и т.нар. junctional zone на миометриума. NK клетките чрез отделяните от тях цитокини и комуникацията с трофобластта имат ключова роля в развитието на имуносупресивни и имуномодулиращи процеси в ендометриума, които определят т.нар. Th2 имунен отговор, така важен за установяването и развитието на бременността между четвърта и десета гестационна седмица (1)

Регулацията на активността на pNK клетки се оказва свързана, както с имунни, така и фактори извън имунната система. Наред със значението на секретираните от В клетъчнат популация цитокини се счита че директно влияни върху броя и активността на NK клетките оказва женските полови хормони, в частност нивот на 17 бета естрадиола. При човека, както и пр повечето бозайници се установяват два основн вида естрадиолови рецептори: алфа и бета. женската полова система са заложени основн бета естрадиоловите рецептори. По същест те са структурно и функционално много подобн на другите рецептори за стероидни хормони

PHENOTYPIC AND METABOLIC FEATURES OF CD4 AND CD8 T CELLS OF AN ELITE CONTROLLER

A CASE REPORT

Damian Vangelov
Center of Competence "Immunopathogen" ,
National Center of Infectious and Parasitic Diseases
Author
https://orcid.org/0000-0002-1692-7295

Radoslava Emilova
National Center of Infectious and Parasitic Diseases
Author

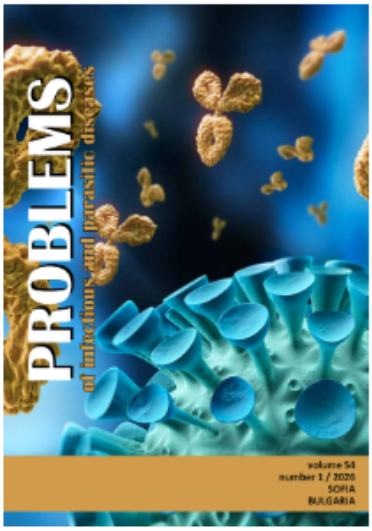
Yana Todorova
National Center of Infectious and Parasitic Diseases
Author

Svetla Blazheva
University Hospital Dr. Georgi Stranski
Author

Ivailo Alexiev
Center of Competence "Immunopathogen" ,
National Center of Infectious and Parasitic Diseases
Author

Tsetsa Doichinova
University Hospital Dr. Georgi Stranski
Author

Maria Nikolova
Center of Competence "Immunopathogen" ,
National Center of Infectious and Parasitic Diseases
Author



PDF

Published
2026-05-11

Issue
Vol. 54 No. 1 (2026)

Section
Articles

DOI: https://doi.org/10.58395/en47mb37

Keywords: HIV, ART, elite controllers, mitochondrial mass, mitochondrial membrane potential

Abstract

Background: People living with HIV (PLHIV) who are capable of long-term viral suppression in the absence of antiretroviral therapy (ART) are defined as elite controllers (EC). Although there is evidence of phenotypic and functional alterations of T-lymphocytes in EC, neither the mechanisms of viral control, nor the necessity and timing of ART in this particular population have been elucidated.

Case presentation: We report the case of untreated HIV+ patient with undetectable viral load (VL), and preserved CD4 T cell absolute count (AC) and CD4/CD8 ratio since diagnosis in 2018. The detailed phenotype of EC CD4 and CD8 T cell pools including differentiation, effector, activation, immunosenescence and exhaustion markers was distinct from sex- and age-matched ART+PLHIV with immune recovery, and close to HIV(-) healthy controls (HC), except for a temporary increase of CD57+ CD8 T cells in 2023. The only changing biomarkers were T cell mitochondrial mass (MM), slightly increased at the level of CD8 T cells in 2023, and drastically increased in both CD4 and CD8 T in 2025, together with the mitochondrial membrane potential (MMP), as compared to ART+PLHIV and HIV (-) HC.

Conclusions: CD4 and CD8 T cells of EC experience intensive oxidative stress and functional burden, possibly linked to the continuous effective HIV-specific immune response. CD4 and CD8 T cell MM may serve as a monitoring marker preceding the irreversible changes of immune profile and loss of viral control, and possibly predict the time for start of ART.

JBCR Journal of Biomedical & Clinical Research

Home Articles About

Review Article

Journal of Biomedical and Clinical Research 18: 331-334
https://doi.org/10.3897/jbcr.e172498 (19 Dec 2025)

Association of oxidative stress biomarkers with gene aberrations in chronic lymphocytic leukaemia

Viktoriya Varbanova, Margarita Alexandrova, Vanya Slavcheva, Svetla Blazheva

Abstract

Chronic lymphocytic leukaemia (CLL) is one of the most common leukaemias in adults. Although extensive data on its pathogenesis and progression have accumulated, the disease remains chronic and incurable. Marked heterogeneity at every stage of CLL development limits the usefulness of routinely applied risk-stratification criteria. Published research suggests that the course of the disease is associated with oxidative stress and an increased frequency of cytogenetic aberrations. However, current evidence is insufficient to establish a causal relationship between these two factors. CLL patients exhibit a distinct antioxidant profile and decreased intracellular reducing potential. Moreover, levels of both early and late oxidative damage products are higher than normal. Concentrations of malondialdehyde and 8-oxo-dG have been reported to correlate with specific FISH-detected chromosomal aberrations. Future studies are needed to determine the extent to which oxidative biomarkers can improve the diagnostic and prognostic performance of routinely used biochemical and cytogenetic indicators in patients with CLL.

Keywords

Antioxidants, chromosomal aberrations, CLL, mutagenesis, oxidative damage

Original scientific article/Izvorni znanstveni članak

doi: 10.21860/medflum2022_271160

Association between atherogenic index of plasma and left ventricular hypertrophy in patients with chronic heart failure with mid-range ejection fraction

Povezanost aterogenog indeksa plazme i hipertrofije lijeve klijetke u bolesnika sa zatajivanjem srca s ejekcijskom frakcijom srednjeg raspona

Asparuh Nikolov[1*], Maria Tzekova[2], Konstantin Kostov[2], Ana Kostadinovska[2], Svetla Blazheva[3]

[1] Division of Medicine, Cardiovascular Research Working Group, Institute for Scientific Research, Medical University, Pleven, Bulgaria

[2] Medical University, Pleven, Bulgaria

[3] Department of Clinical laboratory, clinical immunology and allergology, Medical University, Pleven, Bulgaria

Abstract. ***Aim:*** The aim of the present study was to investigate whether an association between lipid indices- atherogenic index of plasma (AIP), Castelli Risk Index I (CRI-I), Castelli Risk Index II (CRI-II) and triglyceride index (TGL-index) and the development of left ventricular hypertrophy exists in patients with heart failure with mid-range ejection fraction (HFmrEF). ***Material and methods:*** The study involved 56 patients with HFmrEF and normal lipid profile, median age 64 (47-84) and 22 healthy subjects, median age 58 (51-69). The patients were divided in two subgroups: subjects with left ventricular hypertrophy (n=32); (HFmrEF+LVH) and subjects without left ventricular hypertrophy (n=24); (HFmrEF-LVH). The lipid profile was measured by laboratory, while lipid indices were calculated, using the established formulas. ***Results:*** There was not statistically significant difference between the lipid indices in patients with heart failure with mid-range ejection fraction compared to healthy controls (p>0.05). HFmrEF+LVH patients showed statistically significantly higher values of atherogenic index of plasma than HFrEF-LVH patients: 0.16 (0.05÷0.37) vs. 0.04 (0.01÷0.11); (KW=5.80; p=0.02). TC/HDL, LDL/HDL and TG/HDL values were not significantly higher in HFmrHEF+LVH than HFmrEF-LVH patients: 4.8 (3.98÷5.75) vs. 4.49 (3.58÷5.63); 2.91 (2.1÷4.0) vs. 2.9 (2.5÷4.25) and 1.36 (1.11÷2.08) vs. 1.13 (0.9÷1.53), respectively (p>0.05). No significant gender differences between lipid indices were found. Atherogenic index of plasma showed correlation with LVH (r=0.45; p=0.01) and interventricular septum thickness (r=0.55; p=0.002). ***Conclusion:*** Our findings show an association between atherogenic index of plasma and LVH in patients with HFmrEF with normal lipid profile. Further studies are warranted to confirm whether determination of AIP may be used for monitoring development and progression of left ventricular hypertrophy in heart failure with mid-range ejection fraction.

Key words: heart failure; hypertrophy, left ventricular; lipids

Sažetak. ***Cilj:*** Cilj ove studije bio je istražiti postoji li povezanost između lipidnih indeksa – aterogeni indeks plazme (engl. *atherogenic index of plasma*; AIP), Castellijev indeks rizika I (engl. *Castelli Risk Index I*; CRI-I), Castellijev indeks rizika II (engl. *Castelli Risk Index II*; CRI-II) i trigliceridni indeks (engl. *triglyceride index*; TGL-index), i razvoja hipertrofije lijeve klijetke u bolesnika sa zatajivanjem srca s umjereno smanjenom ejekcijskom frakcijom (HFmrEF). ***Materijali i metode***: Ispitano je 56 bolesnika s HFmrEF s normalnim lipidnim profilom, prosječne dobi 64 (47 – 84) godine i 22 zdrava ispitanika prosječne dobi 58 (51 – 69). Pacijenti su podijeljeni u dvije podskupine: ispitanici s hipertrofijom lijeve klijetke (n = 32) (HFmrEF+LVH) i ispitanici bez hipertrofije lijeve klijetke (n = 24) (HFmrEF-LVH). Profil lipida mjeren je laboratorijski, dok su indeksi lipida izračunati pomoću ustaljenih formula. ***Rezultati:*** Nije bilo statistički značajne razlike između indeksa lipida u bolesnika sa srčanim zatajenjem s izbacivačkom frakcijom srednjeg opsega u usporedbi sa zdravim kontrolama (p > 0,05). Pacijenti s HFmrEF+LVH pokazali su statistički značajno veće vrijednosti

***Corresponding author:**
Assoc. Prof. Asparuh Nikolov M.D., Ph.D.
Division of Medicine, Cardiovascular Research Working Group, Institute for Scientific Research, Medical University
1, St. Kliment Ohridski Str., 5800 Pleven, Bulgaria
E-mail: a_nicoloff@yahoo.com

sciendo

J Biomed Clin Res Volume 14 Number 2, 2021

10.2478/jbcr-2021-0020

Original Article

RELATIONSHIP BETWEEN ELEVATED MATERNAL SERUM PODOCALYXIN CONCENTRATIONS WITH BLOOD PRESSURE VALUES AND ROUTINE LABORATORY PARAMETERS IN PREECLAMPSIA

Nikola K. Popovski[1], Asparuh G. Nikolov[2], Yordan D. Popov[1], Svetla O. Blazheva[3]

Clinic of Obstetrics and Gynecology, University Hospital - Pleven
[1]Department of Obstetrics and Gynaecology, Medical University - Pleven
[2]Division of Medicine, Cardiovascular Research Working Group, Institute for Scientific Research, Medical University - Pleven
[3]Department of Clinical Laboratory, Clinical Immunology and Allergology, Medical University - Pleven

Corresponding Author:
Asparuh Nikolov

Summary

Podocalyxin (PCX) is a glycoprotein member of the CD34 transmembrane sialomucin family and covers the surface of podocytes. It is assumed to be a marker of glomerular endothelial injury. In conditions, podocalyxin excretion in the urine is increased as a result of podocyte injury. Recent studies show that PCX is expressed not only in kidneys but also in the endothelial cells of other organs. Preeclampsia (PE) is characterized by new-onset hypertension, generalized endothelial injury, and glomerular alteration. Having this in mind, in the present study, we aimed to: (1) determine circulating PCX levels in sera of women with preeclampsia and normal pregnancy; (2) explore for an association between PCX and blood pressure and (3) investigate a possible relationship between PCX and routine laboratory markers of cardiac and renal injury/dysfunction. Fifty-five women with preeclampsia were examined. The mean age of patients was 24.9±6 years, and the mean age of the control group of 35 women with normal pregnancies was 24.7±5.4 years. The enzyme-linked immunosorbent assay (ELISA) was used to determine concentrations of PCX. Levels of serum PCX in preeclamptic women were statistically significantly higher than those in women with normal pregnancy: 2.66±0.67 vs. 2.40±0.33 ng/ml (p=0.03). Podocalyxin correlated with SBP (r=0.30; p=0.004), DBP (r=0.35; p=0.0007), uric acid (r=0.32; p=0.002), CPK (r=0.22; 0.03) and its isoenzyme CK-MB (r=0.21; p=0.04). Our results showed significantly higher levels of serum PCX in women with preeclampsia than in healthy pregnancy. Elevated podocalyxin levels are associated with an increase in blood pressure in preeclampsia. We found a relationship between PCX and routine laboratory indicators of cardiac (CPK and CK-MB) and renal injury/dysfunction (uric acid). PCX has the potential as a future preeclampsia diagnostic biomarker.

Keywords: podocalyxin, blood pressure, preeclampsia, laboratory markers of cardiac and renal injury/dysfunction

sciendo

J Biomed Clin Res Volume 14 Number 2, 2021

10.2478/jbcr-2021-0012

Original Article

THE ROLE OF TRIGLYCERIDE TO HDL CHOLESTEROL RATIO IN SERA AS A CLINICAL SURROGATE MARKER FOR CARDIOVASCULAR RISK AND INSULIN RESISTANCE IN PATIENTS WITH METABOLIC SYNDROME

Silviya S. Ganeva,
Ginka H. Rayanova,
Katya N. Todorova,
Tzvetan H. Lukanov[1],
Svetla O. Blazheva[1]

Clinic of Endocrinology and Metabolic Diseases,
Dr. Georgi Stranski University Hospital - Pleven
[1]Medico-Diagnostic Laboratory of Immunology,
Dr. Georgi Stranski University Hospital - Pleven

Corresponding Author:
Silviya Ganeva
Dr. Georgi Stranski University Hospital - Pleven,
Clinic of Endocrinology and Metabolic Diseases
91, Vladimir Vazov Str.
Pleven, 5800

Summary

The study aimed to investigate the triglycerides to HDL-cholesterol ratio (Tg/HDL) and the interaction of this ratio with insulin resistance (IR) and insulin secretion indices, with the levels of interleukin - 1(IL-1), interleukin-6 (Il-6), and tumour necrotic factor- α (TNF-α) in sera among patients with metabolic syndrome (MS). A prospective, cross-sectional, comparative study was conducted on 45 patients with MS without data for hyperglycemia and 21 metabolically healthy non-obese controls. The levels of fasting and postprandial glucose, immunoreactive insulin (IRI), total cholesterol, triglycerides (Tg), IL-1, IL-6, and TNF-α were measured in all the participants. We calculated the LDL cholesterol levels, Tg/HDL ratio, homeostatic model of insulin resistance (HOMA-IR), and the homeostatic model of β-cell function (HOMA-b). Patients with MS had higher BMI (38.73±1.84 vs. 24.32±2.71 kg/m2; p<0.05) and waist circumference (115.56 ±4.7 vs. 81.1±8.4cm; p<0.05) than non-obese controls. The same patients had higher LDL cholesterol levels (3.42±0.3 vs. 2.63±0.66 mmol/l; p<0.05) and Tg (1.59±0.22 vs. 1.08±0.31mmol/l; p<0.05), as well as lower levels of HDL-cholesterol (1.03±0.09 vs. 1.27 ± 0.24mmol/l; p<0.05) compared to the controls. The Tg/HDL ratio was 2.03±0.87 among the patients with MS and 0.88±0.27 in controls; p<0.05. The plasma levels of basal IRI (19.32±3.22 mIU/l vs. 9.13±0.73mIU/l; p<0.05), HOMA-IR (4.02 vs. 1.97; p<0.05) and HOMA-b (258.77±57.76 vs. 183.31±17.52; p<0.05) were significantly higher in the MS group. The same patients with MS had higher concentrations of IL-1 (18.37±4.28pg/ml vs. 7.12±1.74pg/ml; p<0.05), IL-6 (1.01±0.3pg/ml vs. 0.1±0.3pg/ml; p<0.05) and TNF-α (2.13±1.43 pg/ml vs. 1.82±0.94pg/ml; p=0.24) too. Positive correlations between the levels of IL- 1 and Tg/HDL ratio (r= 0.46; p=0.008), IL-1 and HOMA-%B (r=0.47; p=0.005) were found. The Tg/HDL ratio is a potential, cheap and available surrogate marker for screening for cardiovascular risk and insulin resistance in patients with MS in clinical practice.

Keywords: metabolic syndrome, insulin resistance, atherogenic index, cytokines.

sciendo

J Biomed Clin Res Volume 14 Number 1, 2021

10.2478/jbcr-2021-0005

Original Article

GRANULOCYTIC EXPRESSION OF CD11B/CD18 AND THROMBOTIC RISK IN PATIENTS WITH MYELOPROLIFERATIVE NEOPLASMS

Doroteya K. Todorieva-Todorova,
Katya S. Kovacheva[1],
Nikolay T. Tzvetkov,
Svetla O. Blazheva[2],
Tzvetan H. Lukanov[2]

Hematology Division,
Medical University – Pleven
[1]Medical Genetics Section,
Medical University – Pleven
[2]Laboratory of Clinical Immunology,
Dr. Georgi Stranski University Hospital – Pleven

Corresponding Author:
Doroteya K. Todorieva-Todorova
Hematology Division,
Medical University – Pleven
8A, Georgi Kochev Str.
Pleven, 5800
Bulgaria
e-mail: credentia@abv.bg

Received: September 03, 2020
Revision received: January 01, 2021
Accepted: April 22, 2021

Summary

Myeloproliferative neoplasms (MPN) are clonal hematological conditions characterized by excessive production of one or more cell lines in the bone marrow. The blood cells produced are often hyperactive in their functions, which could lead to complications in the disorder's clinical course. We aimed to define the role of granulocytic CD11b/CD18 expression for the thrombotic risk in MPN patients. We investigated 110 patients with a histologically confirmed diagnosis of a myeloproliferative disease and a control group of 46 healthy volunteers. In the patient group, we found an average expression 4.59 times higher than in the control group. The highest expression was found in a subgroup of patients with polycythemia vera – 71.55% of the patients' neutrophils. In each subgroup with essential thrombocythemia, myelofibrosis, and chronic myeloid leukemia, the patients with a history of thrombotic complication had a higher expression than the patients without such complications.

Keywords: CD11b/CD18 granulocytic expression, myeloproliferative neoplasms, thrombotic complications

Introduction

Myeloproliferative neoplasms (MPN) are hematological diseases with clonal hematopoiesis and increased cell line proliferation. Classical MPNs include chronic myeloid leukemia (CML), polycythemia vera (PV), essential thrombocythemia (ET), and myelofibrosis (MF). These can be divided into two main groups, depending on the presence of Philadelphia chromosome t(9;22)(q34;q11) – Philadelphia-positive CML, and the rest of the Philadelphia-negative diseases. A point mutation V617F (G -> T, leading to dispositioning of phenylalanine with valine on the 617 position) of the JAK2 gene (encoding Janus kinase) is typical for the second group. Its prevalence is about 95% in PV and about 50-60% in ET and MF [1-9]. Mutation can be found in hematopoietic cells, leading to excessive cell proliferation and survival benefit by activating Janus kinase and increasing signal transduction in the JAK-STAT signal pathway [8]. Often, MPNs are associated with a higher thrombotic risk with multifactorial genesis: patient-related factors, genetic factors, abnormal coagulation, blood cell variations, and

© Medical University Pleven

folia medica

Folia Medica 63(4):519-26
DOI: 10.3897/folmed.63.e60249

Original Article

Comparison of Serum Levels of Collagen Type I Turnover Markers in Early-Onset Preeclampsia and Healthy Pregnant Women

Asparuh G. Nikolov[1], Nikola K. Popovski[2], Alexander B. Blazhev[3], Svetla Blazheva[4]

[1] *Division of Medicine, Cardiovascular Research Working Group, Institute for Scientific Research, Medical University of Pleven, Pleven, Bulgaria*

[2] *Clinic of Obstetrics and Gynecology, University Hospital, Department of Obstetrics and Gynaecology, Medical University of Pleven, Pleven, Bulgaria*

[3] *Division of Biology, Medical University of Pleven, Pleven, Bulgaria*

[4] *Department of Clinical Laboratory, Clinical Immunology and Allergology, Medical University of Pleven, Pleven, Bulgaria*

Corresponding author: Asparuh G. Nikolov, Division of Medicine, Cardiovascular Research Working Group, Institute for Scientific Research, Medical University of Pleven, 1 St Kliment Ohridski St., 5800 Pleven, Bulgaria; E-mail: a_nicoloff@yahoo.com; Tel.:+359 887 100 672

Received: 1 Nov 2020 ♦ **Accepted:** 1 Dec 2020 ♦ **Published:** 31 Aug 2021

Citation: Nikolov AG, Popovski NK, Blazhev AB, Blazheva S. Comparison of serum levels of collagen type I turnover markers in early-onset preeclampsia and healthy pregnant women. Folia Med (Plovdiv) 2021;63(4):519-26. doi: 10.3897/folmed.63.e60249.

Abstract

Introduction: Collagen type I is a major structural component of human uterus. Recent studies have found that collagen type I turnover is altered in preeclampsia and imbalance occurs between collagen synthesis and degradation processes. This acts as a stimulus for abnormal changes in the concentrations of collagen type I derived products in circulating blood.

Aim: Having in mind the pathological collagen type I turnover in preeclampisa, the aim of the present study was to determine the levels of N-terminal propeptide of collagen type I (PINP), C-terminal propeptide of collagen type I (PICP): both markers of collagen type I synthesis and levels of matrix metalloproteinase-1 (MMP-1): marker of collagen type I degradation in sera of women with early-onset preeclampsia.

Materials and methods: Thirty-two patients with early-onset preeclampsia were examined. The mean age of the patients was 28.8±5.5 years; and the mean age of 22 age-matched healthy pregnant women was 28.5±6.0 years. The enzyme-linked immunosorbent assay (ELISA) was used for measuring serum levels of PINP, PICP and MMP-1.

Results: There were no statistically significant differences between levels of PINP, PICP and MMP-1 in the sera of women with preeclampsia and healthy pregnancies: 16.991 (15.41÷21.143) vs. 17.189 (15.805÷20.747) μg/L (KW=0.02; $p>0.05$), 10.929 (8.7÷13.937) vs. 11.474 (7.369÷11.932) μg/L (KW=0.026; $p>0.05$), and 2.097 (1.384÷2.923) vs. 2.589 (1.41÷4.533) μg/L (KW=0.238; $p>0.05$), respectively. There were statistically significantly higher number of patients from the preeclampsia group than healthy pregnant women with BMI≥25 (23/32 vs. 4/22) and abnormal UAD (18/32 vs. 2/22) ($p<0.05$).

Conclusions: Our results did not show significant differences between serum levels of PINP, PICP and MMP-1 (markers of collagen type I turnover) in women with early-onset preeclampsia and healthy pregnancy. Further studies with more specific methods and larger sample size are required to assess changes in the serum levels of PINP, PICP and MMP-1 in early-onset preeclampsia.

Keywords

extracellular matrix, markers of collagen type I turnover, preeclampsia

Copyright by authors. This is an open access article distributed under the terms of the Creative Commons Attribution License (CC-BY 4.0), which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

PENSOFT.

ДОКАЗВАНЕ НА ЧЕСТОТАТА НА ХЕРПЕСНИ ВИРУСИ В ЕНДОМЕТРИУМА ПРИ ЖЕНИ С РЕПРОДУКТИВНИ ПРОБЛЕМИ

БлажеваС[1,2], С. Пачкова[1], Д. Гинчева[1], П. Иванов[1], И. Генчева[2], Е. Конова[1,2]

[1] Медицински център Клиничен институт за репродуктивна медицина – Плевен
[2] Катедра „Клинична имунология, алергология и клинична лаборатория" – Плевен

Въведение: *Херпесните вируси могат да засегнат гениталния тракт и да доведат до хронично възпаление в половата система. Те са представени от над 100 различни вида, от които 8 засягат човека. След първоначалното инфектиране, всички херпесни вируси обикновено преминават в латентен стадий като интегрирана ДНК или като извън-хромозомна форма. Съществуват различни причини, които водят до реактивация на херпесните вируси в гениталния тракт като понижена имунна реактивност, циклични хормонални промени свързани с менструлния цикъл, телесна хипотермия или хипертермия, други инфекции, инвазивни гинекологични интервенции, нарушен психо-емоционален статус и др. Това може да доведе до развитие на трайни хронични инфекции в ендометриалната лигавица, което да е причина за репродуктивни неуспехи.*

Благодарение на молекулярно-генетичните методи за доказване на херпесни инфекции е възможно да се проучи значението им в етиологията на хроничния ендометрит при жени с репродуктивни проблеми.

Цел: *Да се проучи честотата на разпространение на херпесните вируси HSV-1,2, CMV и EBV в ендометриалната лигавица при жени с репродуктивни проблеми.*

Материали и Методи: *За период от 1 година (м.февруари 2018 г. – м. февруари 2019 г.) в Медицински център Клиничен институт за репродуктивна медицина в град Плевен са изследвани*

общо 32 жени (средна възраст 35.59 ± 5.17 години) с най-малко две неуспешни асист репродуктивни процедури или жени с повтарящи се спонтанни аборти. Бяха изкл всички други причини за загуба на бременността и репродуктивни проблеми. Ендометриа биопсия беше хомогенизирана чрез автоматичен хомогенизатор (DAKO Medimac Херпесното носителство беше доказано с помощта на Real time - PCR в проба от ендометр биопсия.

Резултати: *Установени бяха следните резултати: от всички изследвани жени (n=32) при 4 (12,5%) се положителен резултат за херпесни вируси в проба от ендометриална биопсия. Две бяха положите HSV-2, една – за EBV и една – за CMV.*

Заключение: *Въпреки недостатъчния брой пациенти резултатите от това проу показват, че при 12.5% от жените с репродуктивни проблеми се установяват херпесни вир ендометриалната лигавица.*

Доказването на херпесни вируси в ендометриална биопсия при жени с репродуктивни проблеми на специалиста по Асистирана репродукция към евентуалната причина за загуба на бременността и пом изготвяне и предприемане на правилна стратегия при следващи бременности. Изследването на ендомет биопсия може да улесни избора на антибактериална или антивирусна терапия, което помага за огранич на антибиотичното влияние върху баланса на микроорганизмите формиращи гениталния микробиом.

Ключови думи: *Херпесни вируси, хроничен ендометрит, репродуктивни проблеми.*

СЕРОЛОГИЧНИ ИЗСЛЕДВАНИЯ ЗА ЛАЙМСКА БОРЕЛИОЗА

А. Блажев[1], М. Карчева[2], А. Ценова[3], С. Блажева[4], К. Костов[5]

[1]Сектор „Биология", Медицински университет – Плевен

[2]Сектор „Епидемиология, паразитология и тропическа медицина", Медицински университет – Плевен

[3]Регионална здравна инспекция – Плевен

[4]Сектор „Клинична имунология и алергология", Медицински университет – Плевен

[5]Сектор „Патофизиология", Медицински университет – Плевен

SEROLOGICAL TESTS FOR LYME BORRELIOSIS

A. Blazhev[1], M. Karcheva[2], A. Tsenova[3], S. Blazheva[4], K. Kostov[5]

[1]Department of Biology, Medical University – Pleven

[2]Department of Epidemiology, Parasitology and Tropical medicine, Medical University – Pleven

[3]Regional Health Inspection – Pleven

[4]Department of Clinical Immunology and Allergology, Medical University – Pleven

[5]Department of Pathological Physiology, Medical University – Pleven

Резюме. *Лаймската борелиоза (ЛБ) е най-разпространената векторно преносима болест в Европа. Заразяването на хората с причинителя B. burgdorferi се реализира чрез ухапване от инфектиран кърлеж. Целта на настоящото проучване е да се оцени рискът от ЛБ в Плевен и региона въз основа на сероепидемиологични данни от регионалната здравна инспекция. Представени са данни от серологични изследвания за антиборелийни антитела за лаймска борелиоза, извършени в РЗИ – Плевен (2015-2017 г.). Приложени са следните серологични методи – ELISA IgM/IgG и имуноблот (Westernblot, WB IgM/IgG). Анамнестичните данни са набрани посредством анкетно проучване. За периода 2015-2017 г. в РЗИ – Плевен, са изследвани 181 серума от лица, претърпели ухапване от кърлеж. Месечното разпределение на постъпилите в лабораторията проби показва постепенно нарастване на броя им през летните месеци с пик през м. юли (n = 42). Половината (n = 85) от серумните проби, постъпили за изследване на ELISA IgM, са позитивни. Потвърдителен WB IgM тест е извършен на 76 проби, от които 10 (13.16%) са позитивни. Серопозитивни за ELISA IgG са 5/79 (6.33%) от изследваните проби. Надеждната лабораторна диагностика е от съществено значение за ранно откриване, наблюдение и контрол на заболяването.*

Ключови думи: *лаймска борелиоза, серологични тестове, ELISA IgM/IgG, WB IgM/IgG*

Abstract. *Lyme borreliosis (LB) is one of the most prevalent vector-borne diseases in Europe. The infection of humans with the B. burgdorferi agent is accomplished by biting from an infected tick. The purpose of this study was to assess the risk of LB in Pleven and the region based on sero-epidemiological data from the Regional Health Inspection. Data from serological tests for anti-borrelia antibodies were presented from the Regional Health Inspection-Pleven. The following serological methods - ELISA IgM/IgG and Immunoblot (Western blot, WB IgM/IgG) are applied. Anamnestic data were collected through a questionnaire. For the period 2015-2017, 181 sera of subjects with a tick bite were examined in Regional Health Inspection – Pleven. The monthly distribution of the samples received in the laboratory shows a gradual increase in their number in the summer months with a peak in July (n = 42). Half (n = 85) of the serum samples received for ELISA IgM testing were positive. A confirmatory WB IgM test was performed on 76 samples, of which 10 (13.16%) were positive. Seropositive for ELISA IgG were 5/79 (6.33%) of the tested samples. Interpretation of serological assays in context of clinical symptom is important for early detection, monitoring and control of the disease.*

Key words: *Lyme borreliosis, serological tests, ELISA IgM/IgG, WB IgM/IgG*

Journal of IMAB
ISSN: 1312-773X
https://www.journal-imab-bg.org

OPEN ACCESS

https://doi.org/10.5272/jimab.2018241.1883

Journal of IMAB - *Annual Proceeding (Scientific Papers).* 2018 Jan-Mar;24(1)

Original article

STUDY OF THE IMMUNOLOGICAL MARKERS CD49d AND CD38 IN EARLY-STAGE B-CLL PATIENTS

Vanya Popova[1], Svetla Blazheva[2], Tsvetan Lukanov[2], Silvia Naneva[1], Nikolay Tzvetkov[1]

1) Clinic of Haematology, University hospital, Medical University, Pleven, Bulgaria.

2) Immunological laboratory, University hospital, Medical University, Pleven, Bulgaria.

SUMMARY:

Chronic lymphocytic leukemia (CLL) is characterized by the accumulation of B- lymphocytes into the blood stream, primary and secondary lymphoid organs as a consequence of defect in the apoptosis. Most frequently it affects people aged 67- 72. The greater part of CLL patients are in the early stage of the disease at the time of diagnosis, which gives a chance to delay the therapy. In 2008 the diagnostic criteria for CLL were revised. New prognostic and predictive factors were added in order to make the indications for starting the treatment more precise

The aims of our study were: to determine the frequency of monoclonal B-cell lymphocytosis (MBL) in the subjects with absolute lymphocytosis, to establish a relationship between the flow cytometric markers CD49d and CD38 in patients with early stages Rai O-II / Binet A. To distinguish the patients with B- CLL from MBL as well as to define the expression of immunological markers we used flow cytometric analysis of peripheral blood.

The results of our study have shown that a small number of patients met the criteria for MBL. Flow cytometric markers CD49d and CD38 associated with unfavorable prognosis were negative in most of the early stage patients.

Keywords: leukemia, integrin, stage,

INTRODUCTION:

Chronic lymphocytic leukemia is a clonal disorder. It is characterized by accumulation of small B-lymphocytes (90% of cases) [1] The disease has a variable clinical course, and it is an ideal model for personalized medicine [2]

Since 1970 up to the present day reliable prognostic factors have been looked for in order an adequate assessment of the risk categories of patients to be made and consequently the right therapeutic regime to be chosen.

According to literature, the two Rai / Binet clinical staging systems alone are not able to predict the outcome of the disease as well as to discriminate patients with the stable course of the disease.

In recent years, in the quest for a better understanding of the disease biology, new laboratory prognostic factors have been added, divided by most authors into four major groups: clinical, cytogenetic, serum and flow cytometric

The presented different results from the clinical studies on the prognostic value of the flow cytometric markers CD38 and CD49d led us to look for a correlation between the two markers and the early stage of the disease. According to some authors the different results related to the prognostic value of CD38 could be explained with the lack of standardized laboratory methods for the evaluation of the marker and its change during the course of the disease [3, 4]. Based on the study reports unlike CD38, the level of CD49 remains unchanged in the course of the disease which makes it reliable prognostic factor. [5]

PATIENTS AND METHODS:

The cohort included 28 patients who were not treated and were followed-up for 24 months. All patients signed an informed consent to participate in the trial, which was approved by the local ethics committee.

To make B- CLL diagnosis, as well as to distinguish CD38 positive patients flow cytometric analysis of peripheral blood was carried out, using FAC Sort/ Becton-Dickinson/ and software product Cell Quest CD 45/ CD 14/ CD 19CD 20/ CD 5 / CD 22/CD 23/ CD 10/HLA-DR/ CD 25/CD 11c/ CD 11a/ CD38/CD 3 / CD 4/ CD 8 / CD 2 /s Ig D / s Ig G / s Ig M/kappa/ lambda. Fresh venous blood was drawn into sodium-heparin tubes, and the results were obtained within 2 hours. Leukocytes were analysed by using a dual-laser FACS Calibur cytometer (Becton Dickinson, Heidelberg, Germany) and Cell Quest Pro software (Becton Dickinson). Briefly, blood cells were stained with fluorescence-conjugated antibodies (FITC and PE). After lysis of erythrocytes (Lysis buffer; Becton Dickinson) and two washes, stained PBMC were re-suspended and fixed with CellFIX (BD Biosciences). Ten thousands of lymphocytes were selected in a forward scat-

Особености на клетъчния имунитет при инфекциозна мононуклеоза

С. Блажева[1], Ц. Дойчинова[2]

1 Катедра „Клинична лаборатория, клинична имунология и алергология“, сектор „Клинична имунология и алергология“ на Медицински университет – Плевен, гр. Плевен

2 Клиника по инфекциозни болести, УМБАЛ „д-р Георги Странски“- ЕАД, гр. Плевен

Резюме

Въведение: Инфекциозната мононуклеоза (ИМ), причинена от Epstein–Barr virus (EBV), се характеризира с изразен клетъчно-медииран имунен отговор, включващ промени в разпределението на лимфоцитните субпопулации.

Цел: Да се проследи динамиката на основните лимфоцитни субпопулации при пациенти с ИМ в острата фаза и при последващо изследване.

Материал и методи: Анализирани са осем клинични случая на пациенти на възраст от 4 до 20 години, хоспитализирани с диагноза и лечение на ИМ. Чрез флоуцитометрия са изследвани Т-лимфоцити, Т-хелперни лимфоцити, Т-цитотоксични лимфоцити, В-лимфоцити и NK-клетки в острата фаза и приблизително 30 дни след дехоспитализацията. Сравнителният статистически анализ е извършен при петима пациенти с пълни двойки измервания, като е използван двустранен точен тест на Wilcoxon за свързани извадки.

Резултати: При контролното изследване се наблюдава тенденция към намаляване на абсолютния брой и относителния дял на $CD8^+$ Т-лимфоцитите, увеличение на относителния дял на $CD4^+$ Т-лимфоцитите и повишаване на съотношението Th/Tc. Не са установени статистически значими разлики в изследваните показатели ($p \geq 0{,}063$). При един пациент с последващо развитие на варицела имунологичните резултати са представени отделно.

Заключение: Наблюдаваната динамика е съвместима с постепенно изменение на Т-клетъчния отговор в хода на възстановяването след ИМ. Поради малкия брой пациенти резултатите имат описателен характер и изискват потвърждение в по-големи проучвания.

Ключови думи: $CD4^+$ Т-лимфоцити, $CD8^+$ Т-лимфоцити, Epstein–Barr virus, инфекциозна мононуклеоза, клетъчен имунитет, лимфоцитни субпопулации

ВИСШЕ ВОЕННОВЪЗДУШНО УЧИЛИЩЕ „ГЕОРГИ БЕНКОВСКИ“
ГОДИШНА МЕЖДУНАРОДНА НАУЧНА КОНФЕРЕНЦИЯ
на 23 октомври 2026 г., ИКАО - гр. ПЛЕВЕН

АНТИНУКЛЕАРНИ АНТИТЕЛА И ИМПЛАНТАЦИОНЕН АВТОИМУНИТЕТ ПРИ ЖЕНИ С РЕПРОДУКТИВНИ НЕУСПЕХИ

Светла Огнянова Блажева[1], Милена Робертова Ценкова[2]

1 Факултет „Здравни грижи“, Медицински Университет - Плевен, гр. Плевен, България, svetlabl@abv.bg
2 Медицински университет - Плевен, Медицински колеж, Катедра „Медико-диагностични дейности“, гр. Плевен, България
tsenkovamilena@yahoo.com

ANTINUCLEAR ANTIBODIES AND IMPLANTATION AUTOIMMUNITY IN WOMEN WITH REPRODUCTIVE FAILURE

Svetla Ognyanova Blazheva[1] Milena Robertova Tsenkova[2]

1 Faculty of Health Care, Medical University – Pleven, Pleven, Bulgaria, svetlabl@abv.bg
2 Medical University - Pleven, Medical College, Department of Medical Diagnostic Activities, Pleven, Bulgaria, tsenkovamilena@yahoo.com

Abstract:

Introduction: *Standardized algorithms for evaluating immune dysregulation in women with reproductive failure remain unestablished. Indirect immunofluorescence (IIF) on HEp-2 cells is the gold standard for antinuclear antibody (ANA) screening, yet it is not routinely applied in reproductive medicine.*
Aim: *To evaluate ANA titers, ICAP staining patterns, and implantation autoantibody panel status in patients with recurrent pregnancy loss (RPL), recurrent implantation failure (RIF), and primary infertility (PI).*
Methods: *Thirty-four women (mean age 35.26 ± 5.86 years) were examined. ANA was determined by IIF on HEp-2 substrate, and implantation autoantibodies were assessed using Spot-ELISA.*
Results: *Clinically significant ANA titers (≥1:160) were detected in 52.9% (n = 18) of patients. The predominant ICAP pattern was AC-X (29.6%). Implantation panel autoantibodies were identified in 14.7% (n = 5) of women, showing reactivity against anti-zona pellucida (AZPA) and/or anti-trophoblast (ATA) antibodies.*
Conclusion: *Over half of the patients displayed clinically significant ANA titers. These findings support integrating combined HEp-2 IIF ANA screening and an implantation autoimmune panel into the diagnostic workup for reproductive failures.*

Keywords: *antinuclear antibodies, implantation autoimmune panel, RPL, RIF, primary infertility*

С. Блажева[1], И. Генчева[1], А. Блажев[2], Ц. Дойчинова[3]
[1]Катедра „Клинична лаборатория, клинична имунология и алергология", МУ – Плевен
[2]Сектор „Биология", МУ – Плевен
[3]Клиника по инфекциозни болести, УМБАЛ „Д-р Г. Странски" – Плевен

Проучване на лимфоцитните популации при пациенти с Корона-вирусна инфекция

Повече от три години от живота на човечеството преминаха под знака на пандемията от COVID-19 като над 695 781 740 милиона се заразиха, някои преболедуваха - 627 110 498, но около 6 919 573 загубиха битката за живота си. В България са заразени общо 1 327 375 човека (от тях 26 571 медицински персонал), излекувани са над 1 288 123 пациенти, но 38 608 са починали. Цената, свързана със загубата на човешки живот по време на пандемията от COVID-19, е значителна като абсолютна стойност – милионите смъртни случаи, в допълнение към разходите, свързани с повишаващите се равнища на бедност, разрушени животи, дестабилизирана кариера и увеличаване на социалните тревоги. Световната наука разгада почти напълно структурата на този колкото стар, толкова и нов и непознат вирус – SARS-CoV-2, разшифровани са най-важните етапи в патогенезата, продължават клиничните проучвания за нови антивирусни медикаменти и ваксини.

ВЛИЯНИЕ НА ПОЛОВИТЕ ХОРМОНИ ВЪРХУ БРОЯ НА ПЕРИФЕРНИТЕ NK КЛЕТКИ

Иванов П.[1,2], Е. Конова[2,3], Цв. Луканов[3], Св. Блажева[3], П. Ангелова[4], В. Георгиева[5], В. Тотев[6], Р. Комса – Пенкова[1]

[1] Сектор Биохимия, МУ – Плевен, Ръководител: доц Р. Комса- Пенкова
[2] Клиничен Институт по Репродуктивна Медицина, Плевен, Ръководител: доц Е. Конова
[3] Център по Клинична имунология, УМБАЛ „Г. Странски", Плевен, Управител: доц. Цв. Луканов
[4] Сектор Медицинска Генетика, МУ – Плевен, Ръководител: доц. М. Симеонова
[5] Катедра Акушерство и гинекология, МУ – Плевен, Ръководител: доц. Цветков
[6] СБАЛАГ „Света Марина", гр. Плевен, Управител: проф. Горчев

Резюме. *Правилното проследяване на динамиката на активност на имунологичните фактори свързани с бременността позволява правилна оценка на тяхното значение за риска от ранна фетална загуба. Броят и активността на периферните NK (pNK) клетки като ключов компонент свързан с регулацията на имунния отговор в ранна бременност се предполага, че са свързани с хормоналните промени по време на менструалния цикъл.*

В настоящето изследване проследихме промяната на броя на pNK в пролиферативна и средна лутеална фаза на менстралния цикъл при 63 жени без репродуктивни неудачи и имали раждане на поне един жив доносен плод.

Средния брой pNK клетки през пролиферативна фаза на цикъла бе 11,2% с вариация 4,7% под и над тази стойност. Медианата на изследвания брой бе 10,6%. В лутеална фаза на цикъла се

установи среден брой от 12,1%, вариация от 5,1% и медиана 11,8%. Не се установи статистически значима разлика в средната стойност на броя pNK в двете фази на менструалния цикъл (t-test, p<0,05) въпреки определения по-висок брой на pNK в лутеална фаза на цикъла.

Незначимото вариране на броя на pNK в различните фази на менструалния цикъл отхвърля предположението за изследването на този, свързан с бременността, имунологичен фактор в специфична фаза на цикъла.

Ключови думи: *NK клетки, менструален цикъл, естрадиол.*

Проучването е финансирано от Медицински Университет – Плевен.

PERIOPERATIVE MONITORING AND ASSESSMENT OF STRESS-RELATED MARKERS IN GYNECOLOGICAL SURGERY

Stavrova-Hristova R., Dermentli A., Lukanov Ts., Blazheva S., Yolova S., Gencheva R
Dr. Georgi Stranski University Hospital Pleven

Abstract

The study addressed perioperative monitoring and interpretation of stress-related markers in gynecological surgery. The study included 48 patients, divided into two groups, undergoing gynecological operations. The first group (n=26) were patients operated by open laparotomy while the second group (n=22) patients operated by laparoscopic technique. Total cholesterol, cortisol, thyroid-stimulating hormone (TSH), thyroxine (FT4) were monitored. The results showed comparable changes in the two groups, with more significant deviations from the baseline values observed in the first group.

Key words: *cholesterol, cortisol, gynecological operations*

ОПИТ В ИЗПОЛЗВАНЕТО НА ИНДИРЕКТНАТА ИМУНОФЛУОРЕСЦЕТНА МИКРОСКОПИЯ ПРИ ОПРЕДЕЛЯНЕ НА АВТОАНТИТЕЛА СРЕЩУ ДВОЙНОВЕРИЖНА ДНК, ЧРЕЗ ОТЧИТАНЕ НА СВЕТЕНЕ В КИНЕТОПЛАСТА НА ФЛАГЕЛАТНИЯ ПАРАЗИТ *CRITHIDIA LUCILIAE*

К. Каменова[1], М. Панова[2], Ст. Генев[3], Св. Блажева[4], Н. Радулова[5], Цв. Луканов[6], Ив. Иванов[7]

[1,2] Медицински колеж към Медицински университет – Плевен, катедра „Медико-диагностични изследвания“, специалност „Медицински лаборант“,
[4,5,6] Катедра „Клинична лаборатория, клинична имунология и алергология“, сектор „Имунология“, Медицински университет – Плевен,
[3] Лаборатория по Клинична имунология, УМБАЛ „Д-р Георги Странски”, гр. Плевен
[7] Катедра „Патоанатомия“ към Медицински университет – Плевен

OUR EXPERIENCE WITH THE APPLICATION OF THE INDIRECT IMMUNOFLUORESCENCE TEST FOR *CRITHIDIA LUCILIAE* USED FOR EVALUATION OF ANTI-DOUBLESTRANDED DNA ANTIBODIES

K. Kamenova[1], M. Panova[1], St. Genev[3], Sv. Blazheva[4], N. Radulova[5], Tz. Lukanov[6], Iv. Ivanov[7]

[1,2] Medical College of Medical University – Pleven, Medico-diagnostic Investigations, Medical Laboratory Technician
[4,5,6] Department Clinical Immunology, Medical University –Pleven
[3] Laboratory of Clinical Immunology, University Hospital „Dr. Georgi Stranski“, Pleven
[7] Department of Patoanatomy, Medical University – Pleven

ABSTRACT: *Systemic lupus erythematosus (SLE) is an autoimmune disease in which are formed anti-nuclear autoantibodies (ANA). They are a heterogeneous group with over 100 different types. Antibodies directed against double-stranded DNA (dsDNA) are most commonly found in patients with this disease. They are the main diagnostic marker for the disease and can be tested by various methods.*

Aim: To compare indirect immunofluorescence microscopy (IIF) and chemiluminescence immunoassay (CLIA) methods by examining antibodies against dsDNA in serum.

Materials and methods: Sera from 15 SLE patients were examined. Each serum was analyzed independently by the two used methods. For the determination of antibodies against dsDNA by IIF, each serum was tested in three working dilutions: 1/10, 1/20 and 1/40. Titres above 1:10 where there is staining in the kinetoplast are considered as positive. Jenamed-2 microscope was used. For determination of antibodies against dsDNA by CLIA, undiluted sera were used, Malugmi 800 analyser.

Results: Compared with the results of chemiluminescence analysis showed 60,00% overlap at titer 1/40; 20,00% at titer 1/20 and 20,00% samples with normal values, at titer 1/10.

Discussion: The indirect immunofluorescence microscopy technique for detection of anti-dsDNA by reading the glow of the kinetoplast in the flagellum Crithidia luciliae is a reliable screening test in SLE.

Keywords: screening, antichromatin autoantibodies, systemic lupus erythematosus

СРАВНЕНИЕ НА СЕРУМНИТЕ НИВА НА MMP-2,-9,-8,-13 И ТЕХНИТЕ ИНХИБИТОРИ: TIMP-1 И TIMP-2 ПРИ ЖЕНИ С ПРЕЕКЛАМПСИЯ И НОРМАЛНА БРЕМЕННОСТ

Поповски Н. [1], А. Николов[2], Й. Попов[1], С. Блажева[3]

[1]Катедра Акушерство и гинекология, Медицински Университет, Плевен
[2]Научно-изследователски институт, Медицински Университет, Плевен
[3]Катедра Клинична лаборатория, клинична имунология и алергология, Медицински Университет, Плевен

Резюме

Въведение: *Матриксните металопротеинази (MMPs) играят ключова роля в процесите на разграждане на голяма част от компонентите на маточният екстрацелуларен матрикс, докато регулацията на активността на MMPs се осъществява посредством тъканните инхибитори на матриксните металопротеинази (TIMPs). Нормалната бременност е свързана с изразени промени в утеринната съдова хемодинамика и структурата матката, които позволяват адекватен утероплацентарен кръвоток и разширяване на матката за растящия плод..* **Цел:** *Съдовите и структурните маточни промени, свързани с бременността, включват значително утроплацентарно и васкуларно ремоделиране. Матриксните металопротеинази-2,-9,-8,-13 и тъканните инхибитори на матриксните металопротеинази-1 и -2 са важни регулатори на съдовото и*

маточното ремоделиране при нормална бременност. Добре известен факт е че, прееклампсията е свързана с нарушена регулация на тези механизми. Целта на нашето проучване беше да се изследват серумните нива на показателите на колагеновата тип I, III и IV обмяна: MMP-2,-9,-8,-13; и техните инхибитори TIMP-1,-2 при прееклампсия и при жени с нормална бременност. **Материал и методи:** *В настоящето проучване бяха изследвани петдесет и пет жени с прееклампсия. Средната възраст на пациентките беше 24.9±6 години; а средната възраст на контролната група от 35 жени с нормална бременност беше 24.7±5.4 години. Ензим-свързаната имуносорбентна проба (ELISA) беше използвана за определяне серумните нива на MMP-2,-9,-8,-13 и на техните инхибитори: TIMP-1 и -2.* **Резултати:** *Серумните нива на MMP-2 при жените с прееклампсия бяха статистически значимо по-високи отколокото при жените с нормална бременност 11.7 (9.1÷15.5) vs. 7.7 ng/ml (6.5÷13.4) (KW=5.66; p=0.02). Серумните нива на MMP-9,-8,-13 и TIMP-1 и -2 не показаха статистически значима разлика при пациентите, спрямо контролите (p>0.05). MMP-2 показа корелация със средният пулсативен индекс на артерия утерина (UtA) (r=0.21; p=0.04). Беше осъществен линеарен регресионен анализ, който потвърди съществуващата статистически значима връзка между MMP-2 и UtA на доверително ниво 95% (r=0.21; p=0.04).* **Заключение:** *Серумните нива на MMP-2 са завишени при прееклампсия спрямо нормална бременност. MMP-2 играе важна роля в патогенезата на прееклампсията, защото с нарастването на серумната MMP-2 концентрация се увеличава и UtA PI, което показва ускорена колагенова тип IV деградация, благоприятстстваща повишението на съдовата резистентност, вазоконстрикция, плацентарна исхемия, развитие на хипертония и прееклампсия. Определянето на серумните нива на MMP-2 може да бъде полезен индикатор за поява и проследяване развитието на прееклампсия.*

Ключови думи: *MMP-2,-9,-8,-13; TIMP-1,-2; прееклампсия, пулсативен индекс на артерия утерина*

РЕЦИДИВИРАЩА ГЕНИТАЛНА КАНДИДОЗА ПРИ ДИАБЕТ ТИП 1 В ДЕТСКА ВЪЗРАСТ. АНАЛИЗ НА ПЕТ КЛИНИЧНИ СЛУЧАЯ

Ст. Елкина[1], Св. Блажева[2], В. Боцова[1], И. Халваджиян[1], Б. Русева[3], Ч. Петрова[1]
[1]Катедра по детски болести, МУ – Плевен
[2]Катедра по клинична лаборатория, имунология и алергология, МУ – Плевен
[3]Катедра по физиология и патофизиология, МУ – Плевен

Диабет тип 1 (Т1Д) е най-честото хронично метаболитно заболяване в детството с непрекъснато нарастваща честота и клинична изява във все по-ранна възраст. Чувствителността на диабетиците към инфекции е по-голяма поради нарушения в определени имунни механизми [2, 3]. Понижената обща и локална лигавична резистентност, персистиращата глюкозурия и лошият метаболитен контрол създават предпоставки за инвазия на различни патогенни микроорганизми. Според литературните данни най-честата локализация на инфекции при диабетици е уро-генталният тракт, а най-честият причинител са гъбичките от Candida spp. [2, 4]. Според различни проучвания основният представител от тази група, изолиран у пациенти с диабет, е Candida albicans. [4, 6, 8]. Има съобщения, според които през последните години нараства честотата и на non-albicans кандидозата – както в общата популация, така и при диабетици [5]. Инфекцията може да протече асимптомно (silent микоза), да се изяви със симптоми от засегнатата област или да се разпространи чрез хематогенна дисеминация до други органи и системи [4, 8]. На фона на диабета кандидозата обикновено протича по-тежко, изисква продължително лечение, като често е резистентна на конвенционалната терапия и крие по-голям риск от усложнения [8].

Причините за по-честото развитие на гъбични инфекции при диабет остават ненапълно изяснени, но се подозират някои промени в клетъчния и от части в хуморалния имунитет. Според редица проучвания хипергликемията инхибира функциите на неутрофилите, макрофагите и моноцитите, подтиска хемотаксиса, фагоцитозата и отговора на Т-клетките към патогена [8]. Повишеното ниво на глюкоза в лигавиците благоприятства адхезията и растежа на фунгите [5]. Други локални фактори, улесняващи инвазията при диабетици, са намаленият кръвен поток от съдовите усложнения и полиневропатията [7].

Гениталните инфекции при диабетици могат да протекат асимптомно или с хиперемия, сърбеж, парене при уриниране и секрет [4]. Гениталната кандидоза (ГК) според някои проучвания в до 80% от случаите е причинена от C. albicans, а според други – от C. glabrata и C. tropicalis [5, 6, 11].

Данните в световната литература относно връзката на ГК с метаболитния контрол и имунологичните промени в хода на Т1Д са противоречиви и недостатъчни. При българските деца проведенитте проучвания са единични и датират от края на 90-те години на миналия век [1]. Необходимостта от съвременни данни с насоченост към рецидивиращите форми на генитални инфекциите при диабет и предразполагащите към тях фактори изисква допълнителни проучвания. С оглед на това представяме няколко клинични случая на рекурентна генитална кандидоза при деца с Т1Д, придружени с анализ на индивидуалните рискови фактори.

Клиничен случай 1

Генитална кандидоза – първи симптом на новооткрит диабет с протрахирано начало

Момиче, възраст 9 год. и 3 мес., с новооткрит Т1Д, дебютирал с генитална кандидоза. Пет месеца преди поставяне на диагнозата детето е с клинично изявена и микробиологично доказана бактериална инфекция на външните гениталии, лекувана амбулаторно с локален антибиотик до изчезване на симптомите. След спиране на лечението последват два рецидива на генитална инфкция, придружени с дневна и нощна енуреза, които се третират симптоматично с временен ефект. Три седмици преди хоспитализацията в Детска клиника – Плевен стартира полидипсо-полиуричен синдром, със загуба на тегло и пореден рецидив на ГК. Появата на коремни болки, гадене и повръщане налагат постъпването на пациентката за болнично лечение по спешност със симптоми на диабетна кетоацидоза. До този момент не е измервана плазмена глюкоза.

При микробиологично изследване на секрет от външни гениталии се изолира Candida tropicalis.

Не се установяват отклонения в изследваните параметри на хуморалния имунитет (табл. 1), но се откриват отклонения в клетъчния имунитет. От проведената флоуцитометрия се доказват нормални стойности на Ts и NK клетки, с известно активиране на адаптивния имунитет с повишени лимфоцити, общи T-Ly и Th на фона на понижени B-лимфоцити. (Табл. 2)

Клиничен случай 2

Генитална кандидоза в съчетание с бактериална вагиноза

Момиче, възраст 16 год., от малцинствен произход, с давност на

DE GRUYTER OPEN

J Biomed Clin Res Volume 10 Number 2, 2017

DOI: 10.1515/jbcr-2017-0022

Original Articles

PROGNOSTIC BIOMARKERS IN EARLY-STAGE B-CLL PATIENTS

Vanya S. Popova,
Svetla O. Blajeva[1],
Margarita L. Alexandrova[2],
Tsvetan H. Lukanov[1],
Silvia Y. Naneva,
Nikolay T. Tzvetkov

Division of Haematology, Medical University – Pleven, Bulgaria
[1]Department of Clinical Laboratory, Clinical Immunology and Allergology, Medical University – Pleven, Bulgaria
[2]Department of Physics and Biophysics, Preclinical and Clinical Sciences, Medical University – Pleven, Bulgaria

Summary

Chronic lymphocytic leukemia is one of the most common types of leukemia in adults. It belongs to the group of indolent lymphoproliferative disorders and has a slow clinical course. Approximately 50% of newly diagnosed patients do not require treatment for years. A better understanding of the pathophysiology of the disease has led to the development of models for assessment of the risk.

Our study aimed to evaluate the prognostic significance of the serum marker beta-2 microglobulin (B2M) and the flow cytometric marker CD49d in patients with early-stage of B-chronic lymphocytic leukemia (B-CLL) as well as look for a correlation between CD 49d and the early stages of the disease. For this purpose, analysis of 30 untreated patients with known and newly diagnosed B-CLL was carried out. The following methods were used: documentary, flow cytometric analysis of peripheral blood, Rai staging system and chi-square test of independence (Fisher's Exact Test). The results from our study showed that a small number of patients in the early stage of the disease have high levels of CD49d expression and beta-2 microglobulins. In eight of 29 patients, the flow cytometric marker was higher than 30%, and in ten out of 29 patients, the B2M was above the reference range. No significant correlation between the two markers in early stage B-CLL patients was found.

Key words: microglobulin, leukemia, stage, Rai, risk

SMU Medical Journal

ISSN : 2349 – 1604 (Volume – 4, No. 1, January 2017) Research Article

Indexed in SIS (USA), ASI (Germany), I2OR & i-Scholar (India), SJIF (Morocco) and Cosmos Foundation (Germany) databases. Impact Factor: 3.835 (SJIF)

B-Lymphocytes level in Peripheral Blood among Patients with Metabolic Syndrome and Diabetes Mellitus Type 2

Ganeva Silviya[1*], Todorova Katya[1], Lukanov Tsvetan, [2] Rayanova Ginka[1], Blajeva Svetla[2] , Tsvyatkovska Tsvetomira[1]

[1]Medical University Pleven, UMHAT "D-r G. Stranski", Clinic of endocrinology and metabolic diseases. [2]Medical University Pleven, UMHAT "D-r G. Stranski", Medico-diagnostic laboratory of immunology. Bulgaria.

*Corresponding author

Manuscript received: 29.11.2016
Manuscript accepted: 17.12.2016

Abstract

A considerable suggestion exists between the leukocyte count, lymphocyte (lymph) dysfunction and the possibility of developing DMt2. Aim of the study was to investigate the CD19 +expression of B- lymph in peripheral blood in patients with metabolic syndrome (MS) without and with Diabetes mellitus type 2 (DMt2). A prospective, one-year, comparative, observational study was performed. In 26 MS patients without DMt2 (n_1=26) and 69 with DMt2 (n_2=69) were measured and compared the levels of leucocytes and CD19+ B- lymph subtypes in peripheral blood by flow-cytometric analysis. The leucocytes count is in normal range in both groups with MS. DMt2 patients have a higher leucocytes count (n_1=6.93±1.92.10^9 vs n_2=7.27±1.85.10^9; p= 0,04) in the referent range. The percentage of the

common lymphocytes population was also higher among n_1 patients compared to n_2, but without significant difference in their absolute count [(n_1=38,26%±7,43% vs. n_2=33,42%±7,08%) and (n_1=2.58±0.8.10^9 vs. n_2=3,45±0,67.10^9)]. The percentage ratio and absolute count of CD19+ B- lymphocytes subtypes in patients from both groups was lower than referent values, but without significant difference between the two groups.The levels of CD19+B-lymphocytes in peripheral blood are lower in patients with MS irrespective of the level of glycaemia.

Key words: Metabolic syndrome, B- lymphocytes, type 2 diabetes mellitus risk, flow – cytometry.

Introduction

During the last 30 years the stereotypical concept for DMt2 has changed: from a classic metabolic to a multifactor chronic inflammatory disease. Abdominal obesity has not been only a major factor for the progress of insulin resistance (IR), but also responsible for the activation and persistence of low-grade chronic inflammation among patients with MS and DMt2 [1]. Adipose tissue macrophages have kept the persistency of the chronic inflammatory response. The ongoing inflammatory state has been a result of disturbance in the balance between anti-inflammatory and pro-inflammatory cytokines which are under a genetic control.

Some uncertainity exists concerning the causative role of chronic subclinical inflammation in the pathogenesis of the DMt2. One supposed mechanism involved in IR could be the ability of inflammation *per se* to interrupt the insulin signaling in the liver by pro- inflammatory molecules. The other suggestion has been directed to the manifestation of B-cells dysfunction by the possibility of inflammation to promote the pancreatic beta-cells death. It is thought that pro-inflammatory cytokines such as interleukin (IL) -6 and tumor necrosis factor-α (TNF-α) activate immunologic reactions, which may shift to specific autoimmune phenomena [2].

The role of anti-inflammatory molecules has also been an area of specific interest. One of them, IL-10 is an important anti-inflammatory cytokine involved in the regulation of innate

Случай на церебрална криптококоза при пациент с ХИВ

Ц. Дойчинова[1], Ив. Паков[1], Г. Ганчева[1], В. Едрева[1], Св. Блажева[2], Ив. Алексиев[1], Е. Шикова[3]

[1]Катедра по инфекциозни болести, епидемиология, паразитология и тропическа медицина при МУ - Плевен; [2]Лаборатория по имунология при УМБАЛ „Д-р Г. Странски" – Плевен; [3]Катедра по микробиология, вирусология и медицинска генетика при МУ – Плевен; [4]Вирусологична лаборатория ХИВ/СПИН при НЦЗПБ – София; [5]Лаборатория по херпесни вируси при НЦЗПБ – София

Криптококозата е честа инфекция при пациенти с тежък имунен дефицит и представлява животозастрашаващо заболяване, особено при развитие на менингит или менингоенцефалит. **Материал и методи:** Представяме случай на криптококов менингоенцефалит при 43-годишна жена, лекувана в Инфекциозна клиника на УМБАЛ „Д-р Г. Странски" - Плевен през м.май 2017 г. При пациентката се доказа ХИВ инфекция като се установиха 11.40% CD4 (абсолютен брой 34), 54.41% CD8 (абсолютен брой 131) и коефициент CD4/CD8 0.20. Cryptococcus neofrmans доказан в ликвора. Не се започна АРТ, поради тежкото общо състояние и бързо настъпилия летален изход.

Проучване на лимфоцитен имунофенотип при пациенти с остри инфекциозни заболявания

С. Блажева[1], Ц. Дойчинова[2], Ц. Луканов[1], А. Блажев[3]
[1]Медико-диагностична лаборатория по имунология, УМБАЛ „Д-р Г. Странски" ЕАД – Плевен, Катедра „Клинична лаборатория, клинична имунология и алергология"
[2]Клиника по инфекциозни болести, УМБАЛ „Д-р Г. Странски" ЕАД – Плевен, Катедра „Инфекциозни болести, епидемиология, паразитология и тропическа медицина"
[3]Сектор „Биология", Катедра „Анатомия, хистология, цитология и биология", МУ – Плевен

Популярно е схващането, че първоначално имунната система се е развила като защитна система на организма, насочена срещу заобикалящите го микроорганизми, с цел опазването на неговата хомеостаза. В тази сложна защитна система се включват както неимунологични механизми, така и факторите на неспецифичния вроден и специфичния придобит имунен отговор. Координацията между всички тези защитни фактори намира своя израз в процеса на възпаление, който води до неутрализиране на патогенния агент.

Четири главни компонента на имунната система предпазват индивидите от непрекъснатата атака на вирусни, бактериални, гъбични и паразитни патогени. Тези компоненти включват фагоцитна и комплементна система като част от вродената имунна защита, а антитяло-медиираната (В-лимфоцити) и клетъчно-медиираната (Т-лимфоцити) система като част от придобитата имунна защита. Всяка система може да действа независимо или в комбинация (1).

Възможността на имунната система да генерира подходящ имунен отговор срещу антигенен стимул/патоген определя индивидуалната имунокомпетентност. Сред част от пациентите, постъпващи за лечение на остро инфекциозно заболяване, се наблюдават и такива, при които е налице определен вид имунна недостатъчност (имуносупресирани). Редица състояния и фактори могат да доведат до супресия или дефицит. Докато вродените дефицити се дължат на генетични и ембрионални аномалии, ензимни дефекти или непознати причини, то вторичните имунни дефицити или свързаните с определена степен на супресия се срещат много по-често и се дължат на разнообразни етиологични фактори.