

Inter Collegas



Experientia docet

2016

N1(3)



INTER COLLEGAS JOURNAL

2016
Vol. 3 No.1

OFFICIAL JOURNAL OF
KHARKIV NATIONAL MEDICAL UNIVERSITY
ISSN 2409-9988

EDITOR-IN-CHIEF:

Vladimir Lesovoy,
MD, PhD, professor, rector of
KNMU

DEPUTY EDITOR:

Valeriy Myasoedov,
MD, PhD, professor,
vice-rector of KNMU

ASSOCIATE EDITORS:

Vitaliy Gargin,
MD, PhD, professor, KNMU

Volodimir Korobchanskiy,
MD, PhD, professor, KNMU

EXECUTIVE SECRETARY:

Tetyana Chaychenko,
MD, PhD, associate professor,
KNMU

Recommended for publishing
by Scientific Council of
Kharkiv National Medical
University

“ ___ ” _____ 201__

Correspondence address:

61022, Kharkiv,
Nauki Avenue, 4
e-mail: collegas@ukr.net
URL:
<http://inter.knmu.edu.ua/pub>

Periodicity:

4 times a year

EDITORIAL BOARD:

Tetiana Ashcheulova, MD, PhD, professor, KNMU

Valeriy Boyko, MD, PhD, professor, KNMU

Olga Kovalyova, MD, PhD, professor, FESC, KNMU

Volodymyr Korostiy, MD, PhD, professor, KNMU

Vitalii Makarov, MD, PhD, professor, KNMU

Olena Riga, MD, PhD, professor, KNMU

Evhen Ryabokon, MD, PhD, professor, KNMU

Igor Taraban, MD, PhD, professor, KNMU

Iryna Tuchkina, MD, PhD, professor, KNMU

Tetyana Chumachenko, MD, PhD, professor, KNMU

Igor Zavgorodnii, MD, PhD, professor, KNMU

Gulya Alimbayeva, MD, PhD, Associate professor, Kazakh National Medical University, Almaty, Kazakhstan

Irina Böckelmann, MD, PhD, professor, Otto-von-Guericke-Universität, Magdeburg, Deutschland

Ala Curteanu, MD, PhD, Associate professor, Mother And Child Institute, Chisinau, Moldova

Igor Huk, MD, PhD, professor Vienna General Hospital, University Medical School, Vienna, Austria

Birgitta Lytsy, MD, PhD, Uppsala University, Sweden

Ed Maes, MD, PhD, Centers for Disease Control and Prevention, Atlanta, Georgia, USA

Gayane G. Melik-Andreasyan, MD, PhD, professor, Director of Research Institute of Epidemiology, Virology and Medical Parasitology after A.B.Alexanian, Yerevan, Armenia

Branislav Milovanovic, MD, PhD, professor, University Hospital Bezanijska Kosa, Belgrade, Serbia

Peter Nilsson, MD, PhD, professor, Lund University, Malmo, Sweden.

Elmars Rancans, MD, PhD, professor, Riga Stradins University, Latvia

Adam Rzechonek, MD, PhD, Associate professor, Wroclaw Medical University, Poland

Milko Sirakov, MD, PhD, professor, President of European Association of Paediatric and Adolescent Gynaecology, Bulgaria

Arunas Valiulis, MD, PhD, professor, Clinic of Children's Diseases and Institute of Public Health, Vilnius University Medical Faculty, Vilnius, Lithuania

OBSTETRICS and GYNECOLOGY

THE DIAGNOSTIC ROLE OF CHANGES IN INDICATORS OF LOCAL AND SYSTEMIC IMMUNITY IN PREGNANT WOMEN WITH BACTERIAL INFECTION

PDF

Scs herbina I.M., Pkakhotnaya I.U., Kapustnik N.V., Dynnik O.O.

49-51

GYNECOLOGY

I.M.Shcherbina, I.U.Plakhotnaya, N.V.Kapustnik, O.O.Dynnik

DIAGNOSTIC ROLE OF CHANGES IN LOCAL AND SYSTEMIC IMMUNITY INDICES IN PREGNANT WOMEN WITH BACTERIAL INFECTIONS

Kharkiv National Medical University, Ukraine

Abstract: The article presents predictors of neonatal complications basing on comprehensive clinical and immunological examination of pregnant women. The study included 35 pregnant women, divided into two groups. The first (main) group comprised 25 patients with intrauterine infections (IUI) in newborns in the early neonatal period and the second (control) group amounted for 10 patients without IUI in newborns. Quantitative study of proinflammatory cytokine levels in the serum of pregnant and posterior vaginal vault content showed a significant increase in IL-8 (16.73 pg /ml, $p=0.021$) and IL-6 (38.4 pg /mL, $p=0.032$) in the blood serum of pregnant women ($p=0.032$), who gave birth to children with IUI. Cytokine levels in the contents of posterior vaginal vault was also increased in the first group of pregnant: IL-6 (89.41mg /g) and IL-1 β (157.2g / g) ($p < 0.05$). Therefore the results of studies to determine immunological markers of inflammation give a possibility to predict early neonatal complications in pregnant women who are at risk for IUI, thus reducing the risk of infection in newborns by timely preventive and therapeutic measures.

Key Words: cytokines, intrauterine infection, C-reactive protein, immunological markers.



INTRODUCTION

Reproductive loss and miscarriage in intrauterine infection are one of the pressing challenges in perinatology. Risk factors for abnormal conditions in fetus include infectious and inflammatory diseases of women during pregnancy. Intrauterine infection (IUI) is often caused by specific flora in the birth canal of the mother [1].

The role of the immune system in vaginal infection currently remains disputable. As the number of studies suggest, changes in vaginal infections occur in various parts of the immune system [3]. Chronic persistent infection in the mother's body helps to maintain a consistently high level of innate immune protection factors in an active state due to exposure to Toll-receptor system cells. Receptors activation triggers cytokine cascade which starts inflammatory response [5].

Despite recent advances in prevention and treatment, IUI incidence in infants continues to grow. Early diagnosis is not always possible. Symptoms of infection are often non-specific and laboratory diagnosis is time-consuming.

Thus, timely prediction, diagnosis and treatment can significantly reduce the risk of serious complications in infants with IUI.

2 PURPOSES, SUBJECTS AND METHODS:

2.1 Purpose

Prediction of neonatal complications based on a comprehensive clinical and immunological examination of pregnant women.

2.2 Subjects

The study included 35 pregnant women, divided into two groups. The first (main) group comprised 25 patients with IUI in newborns in the early neonatal period; the second (control) group amounted for 10 patients without IUI in newborns.

2.3 Methods

All the patients underwent conventional range of examina-

• **Corresponding Author:**

Oleksandra Dynnik, MD, PhD, Department of Obstetrics and Gynecology № 1, Kharkiv National Medical University, Ukraine. E-mail: aleksa_dynnik@rambler.ru

tions. The state of innate immunity was assessed by the content of cytokines in serum and discharge from the posterior vaginal vault. Venous blood was analyzed for acute phase proteins (C-reactive protein (CRP), procalcitonin). The study implied the employment of enzyme immunoassay. Optical density was analyzed with "Microplate reader Model 550" photometer.

Conflict of interests

There is no conflict of interests.

2 RESULTS AND DISCUSSION

Proinflammatory cytokines, particularly IL-1 β , (TNF) α , IL-6, IL-8, IL-10, were also evaluated.

The age of pregnant women under investigation ranged from 22 to 39 years and averaged 31 ± 0.5 and 28 ± 0.5 , respectively. Examination for extragenital diseases showed a statistically significant increase in the incidence of chronic ENT diseases (32.3%), chronic kidney diseases (25.1%), cystitis (30.2%) ($p < 0.05$).

The main group patients were more often found to have opportunistic vulvovaginal infection (43.5%), herpes simplex virus carrier status (42.1%), candidiasis (35%), ureaplasma (36.4%) ($p < 0.05$). Evaluation of IUI rate in the first group showed such severe conditions as congenital pneumonia (60.3%) and sepsis (14%).

Quantitative study of proinflammatory cytokine levels in the serum of pregnant and posterior vaginal vault content showed a significant increase in IL-8 (16.73 pg/ml, $p = 0.021$) and IL-6 (38.4 pg/mL, $p = 0.032$) in the blood serum of pregnant women ($p = 0.032$), who gave birth to children with IUI.

Cytokine levels in the contents of posterior vaginal vault were also increased in the first group of pregnant: IL-6 (89.41 mg/g) and IL-1 β (157.2 g/g) ($p < 0.05$).

Evaluation of the content of acute phase proteins showed an increase in CRP to 19.7 mg/ml ($p = 0.07$), while in the second group its level was 2.6 mg/ml, which corresponds to the normal physiological range. Acute phase protein content was also found to be increased in the first group newborns, amounting to 12.1 mg/L. CRP indices in the sec-

ond group corresponded to age norm, and did not exceed 5 mg/l.

4 CONCLUSIONS

The immune system in pregnant should be adapted to semi-allogenic fetus and be active against different pathogens of bacterial and viral infections [3]. Cytokines perform one of the important functions of the immune responses, as they are one of the earliest mediators of inflammation being produced in the foci of inflammation for a long time [2].

Our study shows an increase in pro-inflammatory cytokines IL-6, IL-8, and the local IL-1 β , IL-6 at the system level. Furthermore, 48% of pregnant women with premature abortion were found to have increased IL-6, IL-8, IL-1 β content [4].

Thus, our findings concerning determination of immunological markers of inflammation give a possibility to predict the development of early neonatal complications in pregnant women who are at risk for IUI, consequently reducing the risk of infection in newborns by means of timely preventive and therapeutic measures.

REFERENCES

1. Sidorova I.S. (2012) Intrauterine infection: prenatal care, delivery and postpartum period, M.: MEDpressinform, 160.
2. Carrol E.D., Payton A., Payene D., Miyajima F., Chaponda M., Mankhambo L.A. et al. (2014) The IL1RN promoters 4251961 correlates with IL-1 receptors antagonist concentrations in human infection and is differentially regulated by GATA-1 J. Immunol. 2014; 186(4):2329-35.
3. Cardenas I., Aldo P., Koga K., Means R., Lang S.H., Mor G. (2011) Subclinical viral infection in pregnancy lead to inflammatory process at the placenta with non-lethal fetal damage. Am. J. Reprod. Immunol. 2011; 64: 425, adstr. S314.
4. Mc.Cormick J., Bocking A., Reid G. Importance of vaginal microbes in reproductive health. Reprod.

Sci. 2012; 19(3): 235-42.

5. Schaaf B.M., Boehmke F., Esnaashari H., Seitzer U., Kothe H., Maas M. Et al. Pneumococcal septic shock is associated with the interleukin -10-1082 gene promoter polymorphism. Am. J. Respir. Crit. CareMed. 2010; 178(4): 435-78.

РЕЗЮМЕ

Щербіна І.М., Плахотна І.Ю., Капустник М.И.,
Динник О.О.

ДІАГНОСТИЧНА РОЛЬ ЗМІН ПОКАЗНИКІВ МІСЦЕВОГО І СИСТЕМНОГО ІМУНІТЕТУ У ВАГІТНИХ ЖІНОК З БАКТЕРІАЛЬНОЮ ІНФЕКЦІЄЮ

Харківський національний медичний університет

У статті описується прогнозування неонатальних ускладнень на основі комплексного клінічного та імунологічного обстеження вагітних жінок. У дослідження були включені 35 вагітних жінок, які були розділені на дві групи. У першу групу (основну) були включені 25 пацієнтів з внутрішньоутробними інфекціями (ВУІ) у новонароджених в ранньому неонатальному періоді, у другу (контрольну) - 10 пацієнтів без реалізації ВУІ у новонароджених. Кількісне дослідження рівня прозапальних цитокінів в сироватці крові вагітної та вмісті заднього склепіння піхви показали значне збільшення ІЛ-8 (16.73 пг / мл, $p = 0,021$) і ІЛ - 6 (38,4 пг / мл, $p = 0,032$) у сироватці крові вагітних жінок ($p = 0,032$), які народили дітей з ВУІ. Рівень цитокінів у вмісті заднього склепіння піхви також був збільшений в першій групі вагітних: ІЛ-6 (89, 41 мг / г) та ІЛ-1В (157,2 г / г) ($p < 0,05$). Отже результати дослідження з визначення імунологічних маркерів запалення дозволяють прогнозувати виникнення ранніх неонатальних ускладнень у вагітних, що знаходяться в групі ризику по розвитку ВУІ, що дозволяє знизити ризик інфекційних ускладнень у новонароджених шляхом проведення своєчасних профілактичних і лікувальних заходів.

Ключові слова: цитокіни, внутрішньоутробна інфекція, С-реактивний білок, імунологічні маркери.

РЕЗЮМЕ

Щербина И.М., Плахотная И.Ю., Капустник Н.И.,
Динник О.О.

ДИАГНОСТИЧЕСКАЯ РОЛЬ ИЗМЕНЕНИЙ ПОКАЗАТЕЛЕЙ МЕСТНОГО И СИСТЕМНОГО ИММУНИТЕТА У БЕРЕМЕННЫХ ЖЕНЩИН С БАКТЕРИАЛЬНОЙ ИНФЕКЦИЕЙ

Харьковский национальный медицинский
университет

В статье описывается прогнозирование неонатальных осложнений на основе комплексного клинического и иммунологического обследования беременных женщин. В исследование были включены 35 беременных женщин, которые были разделены на две группы. В первую группу (основную) были включены 25 пациентов с ВУИ у новорожденных в раннем неонатальном периоде, во вторую (контрольную) - 10 пациентов без реализации ВУИ у новорожденных. Количественное исследование уровня провоспалительных цитокинов в сыворотке крови беременной и содержанием заднего свода влагалища показали значительное увеличение ІЛ-8 (16.73 пг / мл, $p = 0,021$) и ІЛ - 6 (38,4 пг / мл, $p = 0,032$) в сыворотке крови беременных женщин ($p = 0,032$), которые родили детей с ВУИ. Уровень цитокинов в содержимом заднего свода влагалища также был увеличен в первой группе беременных: ІЛ-6 (89, 41 мг / г) и ІЛ-1В (157,2 г/г) ($p < 0,05$). Результаты исследования по определению иммунологических маркеров воспаления позволяют прогнозировать возникновение ранних неонатальных осложнений у беременных, находящихся в группе риска по развитию ВУИ, что позволяет снизить риск инфекционных осложнений у новорожденных путем проведения своевременных профилактических и лечебных мероприятий.

Ключевые слова: цитокины, внутриутробная инфекция, С-реактивный белок, иммунологические маркеры.

Received: 27-Feb. - 2016

Accepted: 30-Mar. - 2016