

Elaboration of most efficient strategies of disease therapy has always been one of top priority trends in medicine. Growing risk of contracting bacterial and viral pathologies contributes to the relevance of this challenge.

Conventional vaccines incorporate viable attenuated and inactivated microorganisms plus components of microbial cells or viruses. Many live and even inactivated vaccines are not safe. New generation formulas (e. g. DNA and peptide vaccines) are more harmless but less immunogenic, necessitating concerted addition of immunity-enhancing agents – adjuvants to raise their efficiency.

The available adjuvants induce potent humoral and weak cellular immune response, urging the vital need to seek novel more effective substances.

In recent years research interest has been focused on nucleic acid compounds, particularly on prokaryotic DNA enriched with CpG-motifs and on cyclic dinucleotides (cyclic diGMP, cyclic diAMP, etc). They are capable to imitate pathogen attack and activate both humoral and cellular protection systems [1; 2]. The above-mentioned natural substances are relatively labile in blood stream and may be readily degraded by the enzymes. It was suggested to promote their stability by immobilization on nanoparticles composed of Mg, Al-layered double hydroxides [3].

Development of nano-size adjuvants based on nucleic acid compounds may provide the solution of numerous problems in contemporary medicine, like side-effects of many existing vaccines and inadequate immunogenicity of adjuvants toward T-cell immunity.

One of promising therapeutic strategies in oncology is the so-called vaccination *in situ* which consists of a combination of minor-dose irradiation (or chemotherapy) with the intratumoral introduction of CpG-DNA [4]. This procedure causes the release from the dead cancer cells of a full range of tumor-associated antigens. In turn, CpG-DNA conveys the alarm signal to the innate immunity system, resulting in activation of antigen-presenting cells. As a consequence, vaccination *in situ* eliminates the need to seek potential therapeutic antigen or antigen set for individual patient.

In our view, adjuvant system comprising constituents with different mechanism of action represented by plasmid CpG-DNA and cyclic dinucleotide (i. e. cyclic diGMP or cyclic diAMP) has demonstrated realistic, scientifically substantiated claim to be applied in formula of the vaccine capable upon intratumoral injection to induce a personalized therapeutic *in situ* «autovaccination» against individual tumor antigens of the patient.

#### BIBLIOGRAPHY

1. Krieg, A. M. CpG motifs in bacterial DNA and their immune effects / A. M. Krieg // Annu. Rev. Immunol. – 2002. – Vol. 20. – P. 709–760.
2. Jenal, U. Cyclic di-GMP: second messenger extraordinaire / U. Jenal, A. Reinders, C. Lori // Nature Rev. Microbiol. – 2017. – Vol. 15. – P. 271–284.
3. Intercalation and release of dinucleotides from a nanodimensional layered double hydroxide / A.S. Shchokolova [et al.] // Chapter 19. Chemical and Biochemical Physics: A Systematic Approach to Experiments, Evaluation, and Modeling / Eds: D. Schiraldi, G.E. Zaikov. – Apple Academic Press, Oakville (Canada). – 2016. – P. 317–327.
4. In-situ tumor vaccination: bringing the fight to the tumor / R. H. Pierce [et al.] // Hum. Vaccines Immunother. – 2015. – Vol. 11, No. 8. – P. 1901–1909.

#### THE ANALYSIS OF INCIDENCE OF PREGNANT WOMEN ON THE EXAMPLE OF FRUNZENSKY DISTRICT OF THE CITY OF MINSK

---

A. Sipach<sup>1</sup>, A. Kurepin<sup>2</sup>, V. Lemiasheuski<sup>1</sup>, V. Cheplya<sup>1</sup>

<sup>1</sup>Belarusian State University, ISEI BSU,  
Minsk, Republic of Belarus

<sup>2</sup>Scientific and Practical Center of the National Academy of Sciences of Belarus on Animal Husbandry  
Zhodino, Republic of Belarus  
arianna.sipach@mail.ru

Long time, influencing the nature, humanity has created environmental problems which have gained global character that has affected the state of health of all mankind. In particular, it became one of factors of incidence of pregnant women. It is known that the adverse state of environment in the different cities causes 20-30 % of complications during pregnancy.

**Keywords:** pregnant women, health, diseases, dynamics, analysis.

In the conditions of an adverse demographic situation in Republic of Belarus, and the introduction in reproductive age of girls from the small generations born in the 90s problems of a condition of reproductive health and reproduction of the population acquire special relevance and the medico-social importance [1; 2].

The high incidence of pregnant women predetermines the high incidence of newborns remaining in recent years, and as a result, is the adverse forecast for health of the nation. The reasons, the worsening health of women have medico-social, ecological and economic character [4].

The complication of pregnancy is given as chronic diseases of women which can become aggravated during incubation of a fetus, and arisen for the first time during pregnancy [5].

Diseases acquired during pregnancy are one of the frequent reasons of the pre-natal pathology leading to developing of malformations of a fetus and its death [3].

Purpose of work: analyze and follow the dynamics of the morbidity of pregnant women in the conditions of the Frunze district of Minsk for the period from 2014 to 2015.

For realization of a goal annual reports of antenatal clinic of "the 20th city polyclinic" of Minsk from 2014 for 2015 have been analysed.

It is established that in this temporary period overall picture of the end of pregnancies has improved.

The increase in number of urgent childbirth is noted (from 93,52 % to 95,72 %). The number of premature birth (from 3,45 % to 2,59 %), and abortions has decreased (from 3,03 % to 1,69 %).

It is defined that 2015 is characterized by the big level of birth rate (the number of live-born children has increased on 51), however at the same time the occurrence of congenital malformations of a fetus increases (from 0,5 % up to 0,9 %) that is connected both with endogenous, and with exogenous factors.

It has been revealed that main reason of pregnancy complication is development of anemia (2014 – 21,54 %, 2015 – 22,53 %), infectious and parasitic diseases (2014 – 17,4 %, 2015 – 18,22 %), infections of urinogenital ways is the leading reasons of a complication of pregnancy (2014 – 14,41 %, 2015 – 12,63 %).

In dynamics of a research at zero level there are such indicators as prenatal bleedings (0–0,14 %), a diabetes mellitus (0–0,29 %), illnesses of the blood circulatory system (0,57–0,57 %).

Health protection of women and children has important medico-social value, both for the present stage of development of society, and for the future of the country. Therefore protection of motherhood and the childhood becomes one of the main objectives of state policy, an important component of health care.

#### **BIBLIOGRAPHY**

1. *Абрамченко, В. В.* Беременность и роды высокого риска / В. В. Абрамченко. – Москва : МИА, 2004. – 400 с.
2. *Андреева, Н. Л.* Фетоплацентарный комплекс у женщин с бесплодием в анамнезе / Н. Л. Андреева // Медицинская панорама. – 2008. – № 8. – С. 33–37.
3. *Аржанова, Н. О.* Профилактика и лечение не вынашивания беременности: учебное пособие / Н. О. Аржанова, Н. Г. Кошелёва. – СПб, 2013. – 80 с.
4. *Макацария, А. Д.* Беременность высокого риска / А. Д. Макацария. – Москва : МИА, 2015. – 920 с.
5. *Стуколов, Н. И.* Анемии. Клиника, диагностика и лечение / Н. И. Стуколов. – Москва : МИА, 2013. – 264 с.

---

#### **IMMUNOPHENOTYPIC CHARACTERISTICS OF B-CELL NON-HODGKIN'S LYMPHOMAS**

---

**K. Skrechko, R. Smolyakova, K. Shpadaruk**

*Belarusian State University, ISEI BSU,  
Minsk, Republic of Belarus  
enyakim@mail.ru*

As a result of the research, the immunophenotypic characteristic was determined for diffuse large B-cell lymphoma and follicular B-cell lymphoma.

**Keywords:** non-Hodgkin's B-cell lymphomas, B-lymphocyte, immunophenotyping, clusters of differentiation, flow cytometry.

Nowadays the molecular-biological researches in the field of non-Hodgkin B-cellular lymphomas are developing at a rapid pace.