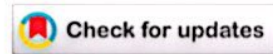


(RESEARCH ARTICLE)



Complex arrhythmias in pregnant women

Uzakova M. K* and Babajanova G. S

Tashkent Medical Academy, Tashkent, Uzbekistan.

Magna Scientia Advanced Research and Reviews, 2023, 08(01), 065-067

Publication history: Received on 18 April 2023; revised on 24 May 2023; accepted on 27 May 2023

Article DOI: <https://doi.org/10.30574/msarr.2023.8.1.0070>

Abstract

Actuality: NT-B-type natriuretic peptide (BNP) has been recognized as a powerful cardiovascular biomarker for a number of disease states, specifically heart failure.

Objective: To analyze the specifics of clinical course of pregnancy in women with cardiac diseases.

Material and methods: The level of N-terminal brain natriuretic peptide (NT-proBNP) was measured by electrochemiluminiscent analyzer Cobas e411 (Roche, Swiss) at 34±6 week of pregnancy.

Results: Level of NTproBNP was higher than 125 pg/mL in 12 patients (21,4%) and its mean value was 330,3±54,7 pg/mL; in women with increased NT-proBNP complications in cardiovascular system developed 3 times more often.

Conclusion: NT-proBNP have established guideline-recommended roles in the diagnosis and prognosis of patients with suspected or known heart failure

Keywords: Arrhythmias; Pregnancy; Brain natriuretic peptide; Cardiovascular disease

1. Introduction

In recent years, among somatic pathologies, CKD is becoming more common, and the frequency of occurrence in young pregnant women is also increasing. These include congenital and acquired heart defects and various arrhythmias. However, in some cases, cardiovascular disease is not detected during pregnancy for the first time in previously healthy women [1,4]. Most of such women have a history of physiological pregnancy and child birth. Post my cardiac atherosclerosis, acquired heart defects, and myocarditis are common among heart pathologies. The danger of such pathologies is that they complicate the course of pregnancy, and are complicated by severe manifestations such as severe preeclampsia, eclampsia, thrombophilic conditions, especially thromboembolism of the pulmonary artery. [1,2]. Women with an anamnesis of heart pathology, especially congenital heart defects, aggravate the course of the disease when accompanied by pregnancy. [3]. The developing complications of cardiovascular activity, especially in the III trimester of pregnancy, in many cases indicate an early delivery with a surgical method, as a result of which it leads to the birth of a premature child with a high risk of perinatal morbidity or death.

Purpose

To study the nature of heart rhythm disorders in pregnant women and evaluate the role of NT proBNP.

* Corresponding author: Uzakova M. K

2. Material and methods

60 pregnant women in the II and III trimesters of pregnancy, average age 27.1 ± 5.7 , treated in 9 medical centers and who signed the consent letter for the examination were included in the study. All patients underwent a biochemical blood analysis to determine thyroid hormones triiodothyronine (T3), thyroxine (T4), thyrotropin hormones (TTG), echocardiography (ExoKG) on a Vivid 7 GE device based on a standard protocol, and electrocardiography (ECG) on an EK-1200 device. The amount of N-terminal natriuretic propeptide was determined by the IFA method on the Stat fax 2100 analyzer in the 3rd trimester of pregnancy. The obtained test results were statistically processed using the standard methods of Student's criterion and variance statistics using the SPSS program.

3. Results

40 of the examined patients were diagnosed with complex heart rhythm disorders (main group), and the remaining 10 patients were registered with physiological sinus rhythm (control group). All pregnant women with cardiovascular pathology were divided into 3 groups depending on the presence or absence of arrhythmia. 1 group (n=20) included women with organic changes in the UQTT and heart rhythm disturbances. 20 patients were included in the II group, when they were examined, no organic pathology was detected in the UQTT, endocrine system, gastrointestinal tract, and the heart rhythm disorder was characterized as idiopathic arrhythmia. Control group III (n=10) includes practically healthy women of the same gestational age with sinus rhythm. During pregnancy, 3 patients (5.4%) had increased panting, decreased exercise tolerance, and increased NT-proBNP levels. The mean NT-proBNP level was 177.7 ± 36.1 pg/ml, and 12 patients (21.4%) had an increase in NT-proBNP level of 125 pg/ml and the mean level was 330.3 ± 54.7 pg/ml. Interestingly, women with high levels of NT-proBNP had 3 times more cardiovascular complications than women with normal levels. (42% vs. 13%). However, obstetric complications did not increase in women with high NT-proBNP levels. According to the results of the examination, the amount of pro-BNP in group 1 recorded a high result of 382 ± 3.8 p/ml. 236 ± 2.4 and 162 ± 4.2 p/ml were detected in groups 2 and 3, respectively.

4. Discussion

The large experience accumulated at the moment has shown that the changes of the heart rhythm are diverse and have not been fully studied to the end. An important factor in the adaptation of the heart blood vessel to pregnancy is systemic vasodilatation, the increase in nitric oxide secretion and other vasodilating factors play an important role in its development, but the increase in the amount of estrogen and progesterone leads to an increase in the sensitivity of adrenoceptors to the hormones of the sympathoadrenal system. [3] As shown above, we can consider NT-proBNP as a marker that predicts the development of complications in fetuses with cardiovascular pathology. [7,8]. Data from this study confirm that NT-proBNP can be used to assess the risk of cardiac complications in fetuses with cardiac pathology. [8, 9]. Autonomic dysfunction in PMK patients is associated with increased ectopic activity, and mitral regurgitation without hemodynamic changes is considered normal by cardiologists and sometimes requires treatment. It is known that PMK is a genetically determined defect of collagen synthesis, the amount of magnesium in the tissue is reduced, and mitral valve fibroblasts produce immature collagen due to lack of magnesium. Clinical PMK sometimes leads to a violation of the autonomic regulation of the heart rhythm, and its frequency exceeds 70%. [4]. During pregnancy, even a practically healthy woman can develop symptoms of autonomic dysfunction in the form of hypersympatheticotonia [5,6] and in patients with PMK, it is obvious and leads to a decrease in the quality of life.

5. Conclusion

Thus, the results of the investigation indicate that the higher than normal concentration of NT-proBNP can be used as a marker of complications of the cardiovascular system during pregnancy.

Compliance with ethical standards

Acknowledgments

The authors thank to the Tashkent Medical Academy for technical support.

Disclosure of conflict of interest

The authors have nothing to declare in relation to this article.

Statement of ethical approval

The study has been approved at the Tashkent Medical Academy ethical committee on 02.01.2020.

Statement of informed consent

Informed consent was obtained from all individual participants included in the study.

References

- [1] Alyavi B, Uzokov J, Abdullaev A, Payziev D and Muxitdinova O. Influence of Diet with Low Glycemic Index on Pro-inflammatory Interleukins in Patients with Metabolic Syndrome and Coronary Artery Disease. *Metabolism-Clinical and Experimental*. 2021; 116.
- [2] Bekbaulieva GN, Abduraimova GA, Razzakova NS, Uzokov J. Influence of technologies of effective perinatal care on operating indicators of obstetric complexes. *Journal of Critical Reviews*. 2020; 7(9): 1182-1184.
- [3] J. Roos-Hesselink et al., "Pregnancy outcomes in women with cardiovascular disease: Evolving trends over 10 years in the ESC Registry of Pregnancy and Cardiac disease (ROPAC)," *Eur. Heart J.*, vol. 40, no. 47, 2019, doi: 10.1093/eurheartj/ehz136.
- [4] K. Adam, "Pregnancy in Women with Cardiovascular Diseases," *Methodist DeBaakey cardiovascular journal*, vol. 13, no. 4. 2017, doi: 10.14797/mdcj-13-4-209.
- [5] Y. Emmanuel and S. A. Thorne, "Heart disease in pregnancy," *Best Pract. Res. Clin. Obstet. Gynaecol.*, vol. 29, no. 5, pp. 579–597, Jul. 2015, doi: 10.1016/j.BPOBGYN.2015.04.002.
- [6] Uzokov JK, Alyavi BA, Abdullaev AX. Assessment of the clopidogrel action with regard to CYP2C19 gene polymorphisms in patients with coronary artery disease after implantation of des stents. *Euroasian Card J*. 2019; S2: 309-309.
- [7] P. Pillutla, T. Nguyen, D. Markovic, M. Canobbio, B. J. Koos, and J. A. Aboulhosn, "Cardiovascular and Neonatal Outcomes in Pregnant Women With High-Risk Congenital Heart Disease," *Am. J. Cardiol.*, vol. 117, no. 10, pp. 1672–1677, May 2016, doi: 10.1016/j.AMJCARD.2016.02.045.
- [8] Kampman MA, Balci A, van Veldhuisen DJ, et al. N-terminal pro-B-type natriuretic peptide predicts cardiovascular complications in pregnant women with congenital heart disease. *Eur Heart J*. 2014; 35(11): 708-15. doi:10.1093/eurheartj/ehz526.
- [9] Tanous D, Siu SC, Mason J, et al. B-type natriuretic peptide in pregnant women with heart disease. *J Am Coll Cardiol*. 2010; 56(15): 1247-53. doi: 10.1016/j.jacc.2010.02.076.