

Conclusions: Having analyzed the relationship between the state of hemodynamic properties of the aorta and metabolic disorders in COPD, we came to the following conclusions: in general, the aortic stiffness indices closely correlate with the levels of ABP, BMI, glycated hemoglobin, endothelin-1, systemic inflammation, which, in our opinion, is a reflection of the unidirectional influence of these factors on the walls of aortic and carotid arteries in this comorbid pathology and the reflection of their important role in the formation of excessive arterial stiffness. Thus, only early diagnosis of hemodynamic abnormalities using the method of volumetric sphygmography and a comprehensive approach for correction of ABP, systemic subclinical inflammation, insulin resistance, lipid and carbohydrate spectra in patients with COPD associated with the metabolic syndrome can promote the improvement of endothelial function, arterial stiffness and consequently, reducing the risk of developing and progressing cardiovascular accidents.

#### Reference list:

1. Dedov I.I. Morbid obesity. Moscow: Medical Information Agency, 2014. 608 p.
2. Ovcharenko S.I., Galetskaya Ya.K. Roflumilast in Treatment of Patients With Severe Chronic Obstructive Pulmonary Disease Combined With Multimorbid Pathology // Attending Medical Doctor. 2015. № 5. P. 74-78.
3. Pavlenko V.I., Kolosov V.P., Naryshkina S.V. Features of Comorbid Course, Prediction and Treatment of Chronic Obstructive Pulmonary Disease and Coronary Heart Disease. Blagoveschensk, 2014. 260 p.
4. Tanchenko O.A., Naryshkina S.V., Sivyakova O.N. Ursodeoxycholic Acid in Combination Treatment of Patients With Metabolic Syndrome // Russian Journal of Gastroenterology, Hepatology, Coloproctology. 2012. Vol. 22, № 1. P. 82-86.
5. Tanchenko O.A., Naryshkina S.V. Characteristics of Immune Status of Patients With Metabolic Syndrome // Far-Eastern Medical Journal. 2014. № 2. P. 20-23.
6. Chuchalin A.G., Tseimakh I.Ya. Changes in Systemic Inflammatory and Hemostatic Reactions in Patients With Recurrence of Chronic Obstructive Pulmonary Disease With Concomitant Congestive Heart Failure and Obesity // Pulmonology. 2014. № 6. P. 25-32.
7. Wedzicha J.A., Seemungal T.A. COPD exacerbations: defining their cause and prevention // Lancet. 2013. Vol. 370. P. 786-796.
8. Wells C.E., Bacer E.H. Metabolic syndrome and diabetes mellitus in COPD // Eur. Respir. Monograph. 2013. Vol. 59. P. 117-134.

UDC 616.248 – 084:618.2 – 06 DOI 10.22448/AMJ.2017.3.146-148

### **PECULIARITIES OF RENAL HEMODYNAMICS IN PREGNANT WOMEN WITH BRONCHIAL ASTHMA**

**Zenkina A.S., Prikhodko O.B., Romantsova E.B., Kostrova I.V.**

Amur state medical academy, Blagoveshchensk, Russian Federation

Abstracts. The incidence of bronchial asthma (BA) in the world is from 4 to 10% of the population; In the Russian Federation, prevalence of adult ranges from 2.2 to 5-7%. At pregnant women, asthma is the most common disease of the pulmonary system, the frequency of diagnosis in the world ranges from 1 to 4%, in Russia - from 0.4 to 1%. The aim of the study was to study the peculiarities of renal hemodynamics in pregnant women with bronchial asthma.

Key words: bronchial asthma, pregnancy, renal hemodynamics

Pregnancy affects the course of asthma differently. Changes in the course of the disease range in a fairly wide range: improvement - in 18-69% of women, worsening - in 22-44%, the lack of influence of pregnancy on BA is revealed in 27-43% of cases. This is due, on the one hand, to multidirectional dynamics in patients with varying degrees of severity of asthma (with mild and moderate severity, the deterioration of asthma is observed in 15-22%, improvement in 12-22%), on the other hand - inadequate diagnosis and not always the right therapy. In practice, asthma is often diagnosed only in the late stages of the disease. In addition, if its onset coincides with the gestational period, the disease may remain unrecognized, since the observed breathing disorders are often attributed to changes due to pregnancy.

Material and methods. Clinical and functional features of the course, pregnancy, delivery and status of newborns in 35 patients with bronchial asthma were analyzed. The observed patients were of mature childbearing age - the average age was  $25 \pm 1.7$  years. Hereditary complication in allergic diseases was traced in 8 (22.8%) women, while in the BA - in 3 (8.6%), all - on the maternal line. A mild course of asthma (BALT) was noted in 24 (68.5%) patients, moderate (BAST) - in 10 (28.8%), severe (BATT) - in 1 (2.9%). According to the clinical forms of the disease, the patients are distributed as follows. In 23 (65.7%) patients, the allergic form of asthma was diagnosed, in 2 (5.7%) was non-allergic, in 10 (28.8%) was mixed. The duration of asthma, on average, was  $9.5 \pm 1.3$  years.

Results and discussion. Dynamics of the course of asthma in the dynamics of pregnancy was determined: 22 (62.9%) had deterioration, with no control in the gestational period, 8 (22.9%) had no significant dynamics, 5 (14.3%) had a lighter process. It was noted that the weighting of the symptoms of the disease during pregnancy was in patients with non-allergic and mixed forms of moderate and severe asthma. Among the specific cause-significant factors, polyvalent sensitization to epidermal, medicinal and pollen allergens was more often observed, from non-specific allergens, A.R.W.I., psy-

choemotional and physical stress, weather conditions. In the structure of extrapulmonary diseases of the atopic circle, urticaria was noted in 8 (22.9%), atopic dermatitis in 4 (11.4%), pollinosis in 6 (17.1%), allergic rhinitis in 5 (14, 3%) patients.

Exacerbations of asthma during pregnancy were noted in 16 (45.7%) patients. At the same time, uncontrolled asthma during one trimester was in 10 (62.5%) of them, in 2 trimesters - in 4 (11.4%), during all 3 trimesters - in 2 (12, 5%).

For the statistical processing of materials, the following methods were used: statistical analysis of qualitative data using the exact Fisher test. Differences between mean values were considered statistically significant at  $p < 0.05$ . The statistical analysis was carried out using the STATISTICA 6.1 program.

The study of blood flow in renal vessels in pregnant women with asthma revealed, in comparison with a healthy group, a decrease in the parameters: peak velocities of systolic (up to 25%) and diastolic flow (up to 32%), at the level of the main, segmental, arched and interlobular arteries; and an increase in RI and PI at the levels of the arc and interlobular arteries ( $p < 0.05$ ).

With ultrasound diagnosis of changes in utero-placental hemodynamics, a difference in the state of vascular resistance in the basin of the uterine artery in terms of 20-24 weeks of gestation was revealed. The intensity of blood flow was lower in the observation group, which was expressed in an increase in the values of the resistance index to an average of  $0.64 \pm 0.05$  ( $p < 0.05$ ). Comparison of the values of the resistance index in the umbilical cord in pregnant women with asthma and the comparison group showed that a significant difference in the indices was noted only in the period of 30-34 weeks. The resistance index in pregnant women with bronchial asthma was  $0.65 \pm 0.05$ , while in the comparison group  $0.58 \pm 0.04$  ( $p < 0.05$ ). To determine the degree of disturbance of fetal hemodynamics and compensatory possibilities of the fetus in pregnant women with asthma, an evaluation of dopplerometric parameters in the middle cerebral artery of the fetus was carried out. At the gestation period of 35-40 weeks in patients with asthma, the pulsation index of  $1.26 \pm 0.05$  of the middle cerebral artery of the fetus had significantly lower values compared to the pregnant group of the comparison group  $1.38 \pm 0.03$  ( $p < 0.05$ );

The majority of patients experienced the development of gestational complications. Thus, the threat of termination of pregnancy was noted in 1 (2.9%) cases, the development of chronic placental insufficiency (PN) in 20 (57%), chronic intrauterine fetal hypoxia (HVUG) in 20 (57%), gestosis of varying severity - 9 (25.7%) of the patients. Most gestational complications are noted in the uncontrolled course of asthma. In the majority of pregnant women, labor occurred on time, preterm labor was noted in 1 (2.9%) of them, with a period of 32 weeks of pregnancy. Complications was observed in 35 (100%) patients with asthma. Cesarean section was performed in 16 (45.7%) patients.

Conclusions. Thus, the hemodynamic features of the course of bronchial asthma during pregnancy have been determined, changes in the rates of speed in the vessels of the kidneys and in the utero-placental system have been revealed. It follows that pregnancy and asthma can mutually burden their clinical course, which requires special approaches to the conducting of pregnancy and the therapy of the disease.

## References

1. Dynamics of mild persistent bronchial asthma course in pregnant women / A.F. Babtseva, O.B. Prikhodko, E.B. Romantsova, Y.S. Landishev, I.V. Kostrova // *Breath physiology and pathology Journal*, 2012. Issue 46. P. 39-43.
2. Features of social-economic status in pregnant women with bronchial asthma / T.A. Luchnikova, O.B. Prikhodko // *Breath physiology and pathology Journal*, Blagoveshchensk, 2015. Issue 56. P. 78-82.
3. Evolution clinical and epidemiological course of bronchial asthma in during pregnancy / T.A. Luchnikova, O.B. Prikhodko, A.F. Babtseva, E.B. Romantsova, M.V. Pogrebnaya, E.I. Smorodina // *The 11th Sino-Russia forum of biomedical and pharmaceutical science: the conference proceedings*. Harbin, 2014. P.166-167.
4. Prikhodko O.B. Clinical and functional features of bronchial and lung systems and neuro-vegetative regulation in patient with asthma in during pregnancy and their effects on offspring. abstract of thesis...doctor of medical sciences. Blagoveshchensk, 2010. 44 p.
5. Prikhodko O.B. Neurovegetative regulation and hemodynamics of pregnant women with bronchial asthma // *Allergology and Immunology Journal*. 2009. V. 10, № 1. P. 84.
6. The role of controlled asthma in the development of complications of pregnancy and influence on the health of newborns / O.B. Prikhodko, A.F. Babtseva, E.B. Romantsova // *International journal on immunorehabilitation*. 2009. V. 11, № 1. P. 38-39.
7. Influence of clinical and functional features of bronchopulmonary system at pregnant women with asthma on the condition of child / O.B. Prikhodko, A.F. Babtseva, E.B. Romantsova // *International journal on immunorehabilitation*. 2010. V. 12, № 2. P.114a.
8. Changes of the placenta in patients with bronchial asthma depending on the level of disease control / O.B. Prikhodko, A.S. Zenkina, I.V., Kostrova, S.A. Goryacheva, E.I. Smorodina // *Allergology and Immunology Journal*. 2016. Vol. 17, №2. P. 134.
9. The lack of asthma control during pregnancy as a predictor of perinatal complications / O.B. Prikhodko, A.F. Babtseva, E.B. Romantsova, Y.S. Landyshev, T.A. Luchnikova, E.I. Smorodina, I.V. Kostrova // *Allergology and Immunology Journal*. 2013. V. 14, № 3. P.188-189.
10. Morphological characteristics placenta in bronchial asthma patients in the control of its according to treatment. / O.B. Prikhodko, A.F. Babtseva, E.B. Romantsova, et al. // *The 8th Russia - China Pharmaceutical Forum «Modern problems of nanopharmacology»*. - Blagoveshchensk, 2011. P. 81-82.

11. Patients with bronchial asthma and chronic nicotinic intoxication during pregnancy / O.B. Prikhodko, A.S. Zenkina, A.F. Babtseva, E.B. Romantsova, E.I. Smorodina, I.V. Kostrova, S.A. Goryacheva // Amur Medical Journal. Blagoveshchensk, 2016. V. 1. № 13. P. 49-51.

12. The clinical course of asthma in pregnant smokers / A.S. Zenkina, O.B. Prikhodko, A.F. Babtseva, E.B. Romantsova // Materials of the VI congress of pulmonologists of Siberia and Far East. Blagoveshchensk, 2015. P.36-39.

UDC 616.248-084:618.2-06 DOI 10.22448/AMJ.2017.3.148-149

## PECULIARITIES OF PLACENTA STRUCTURE IN PATIENTS WITH BRONCHIAL ASTHMA DEPENDING ON THE COURSE OF THE DISEASE DURING PREGNANCY

Zenkina A.S., Prikhodko O.B., Romantsova E.B., Kostrova I.V.

Amur state medical academy, Blagoveshchensk, Russian Federation

Abstracts. This article analyzes the morphological features of the placenta of women depending on the severity and nature of the course of bronchial asthma in combination with the pathology of pregnancy. There was examination of the pathological effect of the placental complex on the course of pregnancy and the process of fetal adaptation in patients with bronchial asthma.

Key words: bronchial asthma, pregnancy, placental insufficiency

Bronchial asthma occupies a leading place in the structure of respiratory diseases in pregnant women (8.4% - 13.9%), which is the reason for the growing interest in this problem throughout the world. The development of placental insufficiency is associated with a violation of maternal hemodynamics, which is facilitated by a complicated course of pregnancy and extragenital pathology, including bronchial asthma (BA). Placental insufficiency (PN) is a complex of symptoms that occurs with many complications of pregnancy, indicating the inhibition of the gestational dominant. One of the leading links in the pathogenesis of PN is the disruption of adaptation mechanisms in the mother-placenta-fetus system.

According to the literature, women suffering from asthma have a risk of having children with hypotrophy, asphyxia, neurological disorders, congenital malformations, especially in severe BAA number of studies have shown that the course of pregnancy in AD can be complicated by toxemia (up to 37%), gestosis (up to 43%), threat of interruption (up to 26%), chronic placental insufficiency (CPI) (up to 29%), premature birth (up to 19%) [1].

Material and methods. An analysis of the morphological study of the placenta in 42 patients with asthma of different severity was carried out. Group I comprised 22 patients with asthma with exacerbation of the disease during gestation (with uncontrolled course of asthma), group II - 20 patients without exacerbations (partially or completely controlled by asthma), group III - 26 pregnant women without bronchopulmonary pathology (control group). In 57% of cases there was placental insufficiency, while in 17% - sub- and decompensated, in 8% of cases there was a violation of maturation of the placenta. Presented data indicate that placental insufficiency in patients with asthma ( $p < 0.01$ ), especially in uncontrolled flow, was developing more often than in the comparison group ( $p < 0.001$ ).

Results and discussion. In patients with asthma, in contrast to the comparison group ( $p < 0.01$ ), the pathological immaturity of the placenta was noted more often, which predetermined the unfavorable prognosis for the newborn. All cases of delayed and accelerated maturation of the placenta were observed in patients with moderate and severe course of uncontrolled asthma. In 2 out of 10 cases of immaturity of the placenta (among patients with asthma) there was observed dissociated maturation, which is formed as a result of dyschronosis in the formation of villi and lagging behind the development of their capillary channel, which indicates a poor pregnancy in the II - III trimesters of pregnancy.

In the placenta of women of all groups, circulatory changes were more frequent ( $p < 0.01$ ), less often - dystrophic and inflammatory. In patients with asthma in placentas were dominating circulatory changes, at the same time combining with inflammatory and dystrophic only in the uncontrolled course of the disease - in 10 cases. In the II group of patients, the frequency of circulatory and dystrophic conditions of the placenta was approaching the parameters of the comparison group.

In patients with exacerbations of asthma during gestation, dystrophic changes in the placenta were dominating 1.3 times more often than in the comparison group, which occur when the autoregulation of cells and the function of transport systems, are often responsible for intrauterine dystrophy of the placenta. Large number of villi with dystrophic changes in the stroma identified in the morphological study contributes to reduced permeability of the placenta, hypoxia of the fetus, metabolic, hypotrophic disorders, the appearance of pulmonary diastreme stress syndrome.

Circulatory disorders that characterize the change in blood circulation in the placenta (the presence of pseudoinfarctions, blood flow disorders - stasis, hemorrhages, extensive subbasal infarcts, necrosis of villi), disorders of utero-placental and placental-fetal blood flow were observed in the placenta in patients with asthma, 1.2 times more often, than in the control group. In the group of people with exacerbation of asthma during gestation, the difference with the comparison group is slightly higher, 1.4 times. Disorders of blood circulation in the placenta, changes in circulation prolong the process of adaptation of the fetus, contribute to the development of the hypoxic state and the appearance of dystrophic, inflammatory processes. Obtained data put forward focal disturbances of circulation in the placenta, especially in case of exacerbation of asthma - hemorrhages and thromboses, infarcts, necrosis, collapse of the intervillous space, uneven filling of the villi and their vascularization, stasis that promote the development of intrauterine hypoxia of the fetus.

Among inflammatory changes contributing to the development of hypoxic state, in more than 1/2 cases, basal decidua