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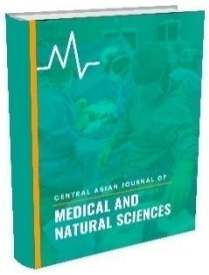

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EXTERNAL RESPIRATORY FUNCTION IN PREGNANT WOMEN WITH BRONCHIAL ASTHMA

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Abstract: Asthma in pregnancy is a health issue of great concern. Physiological changes and drug compliance during pregnancy can affect asthma control in varying degrees, and the control level of asthma and the side effects of asthma medications are closely related to the adverse perinatal outcomes of mother and fetus. This article provides an update on the available literature regarding the alleviating or aggravating mechanism of asthma in pregnancy, diagnosis, disease assessment, and systematic management, to provide a new guidance for physician, obstetric joint doctor, and health care practitioner. When assessing the condition of pregnant women suffering from bronchial asthma, the study of external respiration function, which objectively demonstrates the degree of impairment of the bronchopulmonary apparatus, is of great importance.

Key words: pregnancy, postpartum period, respiratory diseases, bronchial asthma, allergy.

Introduction. Bronchial asthma (BA) is considered the most common chronic disease in pregnancy, complicating 4% to 8% of pregnancies. Bronchial asthma is a chronic inflammatory airway disease characterized by increased responsiveness of the tracheobronchial tree to many different stimuli. Asthma is episodic, characterized by acute exacerbations and in between symptom-free periods. Most asthma attacks are short-lived. Bronchial asthma exacerbation in pregnancy represents a major clinical problem that can lead to maternal and fetal morbidity and mortality in pregnant patients with asthma. The percentage of women hospitalized for asthma exacerbation during pregnancy was 5.8% in a previous study.[1] The mechanisms, predictors, and outcomes of asthma exacerbations during pregnancy are not well understood. Many previous studies have shown that the bronchial asthma exacerbation rate in pregnancy is related to increasing asthma severity. Other studies considered nonadherence with bronchial asthma controller medication due to concern about its teratogenic effect during pregnancy to be an important risk factor for asthma exacerbations during pregnancy. Respiratory viral infections are also risk factors that trigger bronchial asthma exacerbations in pregnancy.[2][3]

Materials and methods. We examined 43 women in the dynamics of pregnancy and childbirth: 31 pregnant and postpartum women with bronchial asthma and 12 healthy pregnant

and postpartum women (control group). Infectious-allergic form of bronchial asthma was present in 27 patients, atopic in 3, mixed in 1. In 9 women the disease arose in childhood, in 20 in adulthood and in 2 during pregnancy. The subjects were aged from 17 to 45 years. There were 10 primiparous women, 21 multiparous women. External respiration was examined using an SG-1M spirograph early in the morning on an empty stomach. The study was carried out in the first and second half of pregnancy and in the postpartum period.

Results. The following indicators were determined: respiratory rate (RR), tidal volume (TV), vital capacity (VC), maximum ventilation (MVL), forced vital capacity (FVC), forced expiratory volume in 1 second (FEV1), FEV,%, minute respiratory volume (MRV), reserve volume of inhalation (RIvd) and expiratory volume (ROvd), Tiffno test , air velocity indicator (ARV). Taking into account the height and body weight of the woman, the proper minute volume of respiration (DMV), the proper vital capacity of the lungs (VLC), and the proper maximum pulmonary ventilation (MPV) were calculated. The growing need for oxygen in the body of a pregnant woman and the developing fetus causes changes in the respiratory system of the expectant mother, which are of an anatomical, hormonal and metabolic (acid-base state) nature. This is reflected in changes in external respiration parameters. During physiological pregnancy, minute ventilation (MV) is increased by 50% or more (in non-pregnant women 6800 ml), mainly due to an increase in tidal volume by 30% (in non-pregnant women 450 ml) and to a lesser extent due to an increase in respiratory rate (in non-pregnant women 15 per minute). An increase in tidal volume occurs due to a decrease in PO volume by 18.5-35% (700 ml in non-pregnant women). The MOD indicator compared to DMOD 62 increases by 2-3 times. Vital capacity decreases moderately - by 6.2-16.5% compared to that in non-pregnant women and with a maximum respiratory volume (VEL) equal to 320 ml in both cases. In the second half of pregnancy, vital capacity increases by 340 ml. The inspiratory reserve volume is reduced by 25% (in non-pregnant women 2050 ml). MVL in the second half of pregnancy exceeds MVL. Indicators such as FVC, FEV do not change. The Tiffno test during pregnancy is slightly reduced; FEV1% in healthy people is usually more than 70%. In the postpartum period, external respiration indicators do not immediately reach the level of those in non-pregnant women. In pregnant women suffering from bronchial asthma, the function of external respiration is altered to an even greater extent. In patients with bronchial asthma, FEV1, FEV,% and Tiffno test are reduced . In the second half of pregnancy, PSDV decreases. These indicators characterize bronchial patency, which is impaired in patients with bronchial asthma during pregnancy and after childbirth. It should be noted that the studies were carried out during the interictal period; during an attack these indicators would be more pronounced. RR and DO changed insignificantly, vital capacity practically remained the same, as did most other indicators. It is important that in the postpartum period not only FEV1 and Tiffno tests change , but FVC, MOD and PSDV also decrease. These changes appear to be due to the elimination of neurohormonal effects inherent in pregnancy, and should attract attention as an indicator of the likelihood of exacerbation of bronchial asthma after childbirth. The studies were carried out on the 20-25th day after birth; During this period, the majority of those observed had an exacerbation of bronchial asthma. Thus, our data show that the function of external respiration in those examined is influenced by both the state of pregnancy and the disease bronchial asthma. Hyperventilation remains as a necessary factor in compensating for the need of the body of the pregnant woman and the fetus for gas exchange (increased MOD, DO, decreased ROV), at the same time signs of impaired bronchial obstruction appear (decrease in FEV1, FEV1%, Tiffno tests , PSDV). Due to the small number of subjects examined, the article presents summary data regardless of the severity of bronchial asthma.

An individual assessment of the spirogram of each sick pregnant or postpartum woman shows that the severity of respiratory dysfunction is directly dependent on the severity of the clinical course.

Conclusion. For pregnant women, physical structural changes, the direct effect of hormones, and the changes of immune function induced by hormones are involved in the control of asthma; one-third of asthma patients are aggravated due to pregnancy. To minimize maternal and fetal perinatal risks, assessing patient's condition by early identification of new onset asthma in pregnancy, monitoring changes of asthma symptoms, PEF variability, FeNO, and fetal activity, education for improving patients' compliance and standardizing medication, avoiding triggers, treating complications actively, and using drug therapy by a stepwise approach are all needed to be written in asthma control plan. Many studies and guidelines support the fact that inadequate treatment has a greater impact on mothers and fetuses than potential drug side effects. Achieving a good whole-course management of asthma patients in pregnancy still requires continuous efforts of clinicians and patients themselves.

References:

1. Kwon HL, Triche EW, Belanger K, Bracken MB. The epidemiology of asthma during pregnancy: prevalence, diagnosis, and symptoms. Immunol Allergy Clin North Am. 2006 Feb;26(1):29-62. [PubMed]
2. Gluck JC, Gluck PA. The effect of pregnancy on the course of asthma. Immunol Allergy Clin North Am. 2006 Feb;26(1):63-80. [PubMed]
3. Contreras G, Gutiérrez M, Beroíza T, Fantín A, Oddó H, Villarroel L, Cruz E, Lisboa C. Ventilatory drive and respiratory muscle function in pregnancy. Am Rev Respir Dis. 1991 Oct;144(4):837-41. [PubMed]