In the last two decades, the problem of children allergic diseases, including bronchial asthma (BA) becomes really state-of-the-art and the most debated topic in medicine. It is difficult to overweight the impact of this disorder on the human organism. BA is a chronic disease characterized by chronic allergic inflammation of bronchi and it should be controlled during all patient’s life. Typical age of BA onset is infancy but it may occur at any age, including adulthood [14]. Nowadays there are more than 300 million people, both children and adults, suffering from this disease [14, 18]. Children prevalence rate of BA vary from 10 to 15 % in different countries and takes leading place among respiratory system chronic diseases [17].

The embarrassment of ventilation directly affects circulatory system. This becomes the essential pathophysiological factor of BA. When bronchospasm occurs, activity of cardiovascular system (CVS) falls down. Recently, scientists proved that bronchial obstruction and hypoxia, which take place at the beginning of patient’s life, predict further risk of ischaemic heart disease. It should be remembered that BA comes amid chronic general inflammation which affects function of myocardium [2, 6].

Chronic hypoxemia is the most common consequence of BA, especially in moderate and severe stages of the disease, and becomes the major factor of cardiac dysfunction and pulmonary hypertension. High pressure and its further raising is important mechanism, which can change the myocardium electromechanical activity, central and peripheral hemodynamics, heart diastolic function. Functional changes of CVS in patients with BA occur as a result of hypoxemia negative effect on myocardium metabolism and vessels’ vasoconstriction. This may be the cause of cardio-vascular and pulmonary failures in case of severe stage of disease [10, 18]. While speaking about the problem of “bronchial asthma and heart diseases”, special attention should be paid to such micronutrient as potassium (K +). Normal level of (K +) prevents arrhythmias, enhances brain-cells’ oxygenation, reduces blood pressure, lessens fatigability, improves physical stamina. There is a lot of situations in BA when potassium’s blood level decreases significantly. First of all,
this can happen due to inhaled β2-agonist treatment. Noticeably, glucocorticosteroids also can increase potassium urinal excretion [2, 10, 18]. It’s important to examine heart condition in children suffering from BA because of the hemodynamics disturbance and risk of such complications as cardiac arrhythmia, infections endocarditis, pulmonary hypertension [11]. There is still no profound answer for the question in what age and under what circumstances these changes appear. According to Volosovets A.P. and co-authors, development of pulmonary hypertension in early childhood is caused by hereditary or acquired genes malfunction.

Further development of pulmonary hypertension is usually caused by chronic bronchopulmonary diseases, including BA. Thus a number of researches are dedicated to diagnostic facilities used for determination of cardiac abnormalities and detection of pulmonary hypertension in children with BA. Investigation of systemic and pulmonary hemodynamics and microcirculation in BA according to its clinical stage has a great value. Thuswise it was discovered that pulmonary hypertension, registered at the period of recurrence, has further regression after alleviation of attack. During the remission stage hemodynamics disturbance in pulmonary circulation (increasing of blood pressure, enlargement of right chambers of the heart, increasing in rate and grade of tricuspid and pulmonary regurgitation, myocardial hypertrophy of right ventricular) was found in long-lasting and severe stage of disease, especially if it was combined with heart connective tissue dysplasia. However, increasing pulmonary blood flow rate only in early post attack period of BA could be qualified as compensatory reaction of pulmonary circulation on decreased levels of respiratory function [13, 15].

Thus multifacetedness of this problem determines comprehensive approach to children’s examinations, involving available such up-to-date methods of investigation as heart function evaluation: echocardiographic heart study with Doppler sonography and electrocardiography (ECG) which make possible to detect incipient changes in CVS [12].
To make a conclusion it’s important to emphasize that bronchial asthma, especially uncontrolled stage of this disease, can cause significant changes of CVS. This requires further studies of this topical and inexhaustible issue. Solution of this problem would open new available, opportunities for implementation of preventive and curative interventions which would help to maintain health of Ukraine’s future generations.