ISSN: 2692-5206
AMERICAN ACADEMIC PUBLISHER
INTERNATIONAL JOURNAL OF MEDICAL SCIENCES

UDC:616.24-002.2:616.12.-007-053.1-053.3

FEATURES OF PNEUMONIA IN YOUNG CHILDREN WITH ATRIAL SEPTAL DEFECT

Efimenko Oksana Vladimirovna

Associate Professor of the Department of Hospital Pediatrics, Andijan State Medical Institute, Uzbekistan

Khaidarova Lola Rustamovna

Senior Lecturer, Department of Hospital Pediatrics, Andijan State Medical Institute, Uzbekistan

Abdusalamova Nodira

Graduate student of the Department of Hospital Pediatrics of Andijan State Medical Institute, Uzbekistan

Abstract: Of the large number of congenital heart defects, the leading position is occupied by congenital septal defects, among which the second place in frequency of occurrence is occupied by an isolated atrial septal defect (ASD), with a prevalence of about 7% among all congenital heart defects. The most common intercurrent pathology is pneumonia caused by hypervolemia of the small circle. The study of the features of the course of pneumonia in young children with ASD showed that lung tissue damage was associated with hemodynamic disorders that influenced the course and outcome of pneumonia.

Keywords: Pneumonia, atrial septal defect, congenital heart disease, heart failure, electrocardiography, X-ray.

Relevance. Congenital heart defects (CHDs) are the most common major congenital anomaly and represent a serious, global health problem for children. [5,8]

More than 350 types of congenital defects are known, and many heart defects are so complex in their anatomical combination that children die from their complications at very early stages of life, often even during the neonatal period. Clinical manifestations depend on the type and severity of the heart defect. Symptoms often appear early in life, but some congenital conditions can go undetected throughout life. [2,6]

Only a geneticist can quantitatively assess the risk of having a child with congenital heart disease in a family, but every doctor can give a preliminary prognosis and refer parents for medical and biological consultation. [1,3,5]

Of the large number of congenital heart defects, the leading position is occupied by congenital septal defects, among which the second place in frequency of occurrence is occupied by an isolated atrial septal defect (ASD), with a prevalence of about 7% among all congenital heart defects. [2,4,7]

ISSN: 2692-5206
AMERICAN ACADEMIC PUBLISHER
INTERNATIONAL JOURNAL OF MEDICAL SCIENCES

Atrial septal defect can be detected at any age, however, due to the lack of characteristic clinical manifestations, this defect is more often diagnosed in the second or third year of life. [2,5,8]

ASD is based on a left-to-right shunt, characterized by increased venous return from the lungs through the pulmonary veins. The long-term existence of a left-right junction leads to changes in the wall of the pulmonary vessels and the development of pulmonary hypertension, requiring cardiac surgery, which improves the prognosis of life with ASD. [6,7]

However, operations are forcibly delayed due to frequent intercurrent pathology, caused by secondary immunosuppression, documented for this category of patients. The main forms of intercurrent pathology are viral, bacterial or mixed infections of the lower respiratory tract, mainly pneumonia, present in children. It is known that frequent respiratory infections in patients with ASD often lead to the development of pneumonia against the background of chronic congestion of the lungs. [3,6,8]

Young children suffer from pneumonia year-round and the incidence remains high, especially during the season of outbreaks of respiratory viral infections, despite improvements in diagnostic and therapeutic opportunities. [1,4,7]

According to WHO, All over the world pneumonia is one of the leading causes of death of children under 5 years of age, especially in children with a congenital atrial septal defect, characterized by hypervolemia of the pulmonary circulation, which has an adverse effect on the course and outcome of pneumonia. [2,6,7]

Purpose of the study . To study the features of the course of community-acquired pneumonia in children with congenital atrial septal defect.

Material and methods. For our examination, 20 children with a verified diagnosis of ASD who were treated in the cardiology department of the regional children's multidisciplinary medical center in Andijan (Uzbekistan) were selected. The reason for the admission of children to the hospital was clinical signs of pneumonia, confirmed on the chest x-ray.

The complex clinical-instrumental and laboratory examination of children with ASD and pneumonia included the collection and assessment of anamnesis. A set of modifying risk factors for adverse course and outcome of the disease was analyzed. Adverse medical history was taken into account; hemodynamic factors, including hypervolemia of the pulmonary circulation, pulmonary hypertension, arterial hypoxemia; radiological characteristics of the type of infiltrative changes (interstitial infiltration; alveolar infiltration and its morphological forms); significant concomitant and background pathology.

All children underwent a cardiac examination with an assessment of ECG signs of hypertrophy and overload of the heart; studying echocardiographic morphological characteristics of heart disease, pulmonary hypertension, pumping and contractile function of the myocardium.

ISSN: 2692-5206
AMERICAN ACADEMIC PUBLISHER
INTERNATIONAL JOURNAL OF MEDICAL SCIENCES

X-ray of the chest organs was performed in the direct and, according to indications, in the lateral projection.

Laboratory studies included clinical and biochemical blood tests.

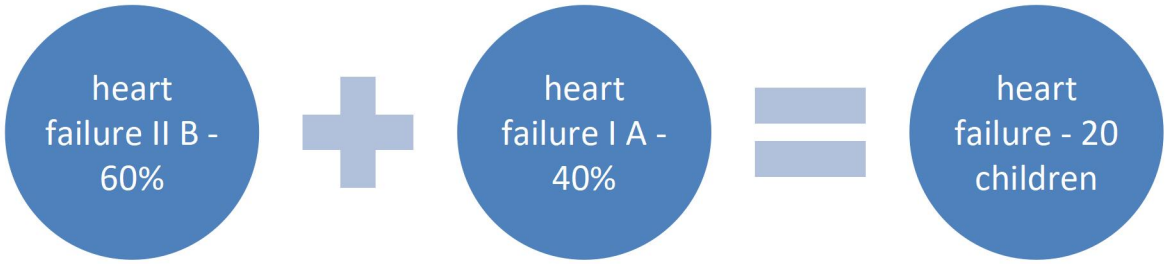
Results and discussions . The age range of all children examined was from 6 months to 3 years, with a slight predominance of boys (55%, versus 45% girls) and by territorial affiliation, 85% of children living in rural areas.

When analyzing medical and biological risk factors, we found that at the time of the birth of a child with ASD, all women were in a favorable childbearing period (75%); children born from the second pregnancy predominated (55%); All mothers had a complicated obstetric history, which played a major role in the formation of ASD. The most significant trigger factors among women were: anemia (100%), repeated acute respiratory viral infections (100%), and TORCH infection (70%).

In the neonatal period, all examined children were diagnosed with perinatal damage to the nervous system, and in the early childhood period, background diseases predominated: anemia (100%), rickets (100%) and protein-energy malnutrition (15%).

All children were admitted in serious condition due to respiratory and cardiovascular failure. The duration of pneumonia at the time of admission averaged 3 days. Only 2 children (10%) were admitted with a minimum duration of pneumonia (1 day) , and the rest were hospitalized later than 3 days due to late addressing to medical institutions.

The vast majority of children had signs of heart failure of degree II B upon admission.



An increase in body temperature from subfebrile (65%) to febrile levels (35%) was the basis for hospitalization. Clinical manifestations in all children were mixed shortness of breath and cough, in most cases paroxysmal, causing anxiety and sleep disturbance. All children were diagnosed with stage II respiratory failure, caused not only by hemodynamic disturbances, but also by the serious of pneumonia.

An objective examination revealed oral cyanosis, rapid breathing with retraction of the intercostal spaces. In 15% of children there were signs of low nutrition (nutritional deficiency of varying degrees) and various rachitic deformities of the bone skeleton.

ISSN: 2692-5206
AMERICAN ACADEMIC PUBLISHER
INTERNATIONAL JOURNAL OF MEDICAL SCIENCES

Physical changes in the lungs manifested themselves in the form of local weakening of breathing with a mass of crepitant wheezing.

From the cardiovascular system, a systolic murmur was heard with the epicenter in the area of the defect in the interatrial septum. Enlargement of the liver up to 2-4 cm was regarded as a symptom of heart failure.

Unlike most researchers who observed the absence of inflammatory changes in the hemogram in children with congenital heart defects, our laboratory data in children with ASD confirmed the presence of an inflammatory reaction, while leukocytosis was recorded in 17 (85%) children with neutrophilia and an increase in the neutrophil index (>0 ,2). The hemoglobin level in all children was reduced and corresponded to moderate anemia. An increase in the content of C-reactive protein in the majority (80%) of children confirms the presence of an acute inflammatory process in the lungs.

Electrocardiogram results in children with ASD are presented in the table.

ECG sign	**abs**	**%**
Tachycardia	20	100%
Normal position of the EAH	6	30%
EAH deviation to the right	14	70%
Right atrial overload and right ventricular hypertrophy with incomplete blockade of the right leg of the Hiss beam	5	25%
Right ventricular hypertrophy with incomplete blockade of the right leg of the Hiss beam	2	10%
Atrial overload	4	20%
Right atrium overload and high electrical activity of the right ventricle	6	30%
Right atrial and right ventricular hypertrophy with incomplete blockade of the right leg of the Hiss beam	3	15%

On the echocardiography, the size of the defect was diagnosed in 13 children (65%) from 2.5 to 10 mm, in 4 children (20%) - 12 mm and in 3 children (15%) - 30 mm. The most significant hemodynamic factor in severe pneumonia in 1/3 of children with a large defect in the atrial septum was the presence of pulmonary hypertension on echocardiography. The contractile function of the left ventricle in all children with ASD was within the normative parameters – the exile faction 69% ±11%.

X-rays confirmed pneumonia in 100% of children in the form of focal (55%) and focal-confluent (45%) infiltrates.

Conclusions. Thus, pneumonia in children with ASD is caused by a combination of damage to the lung tissue with hemodynamic disorders, manifested by heart failure and pulmonary hypertension, which can be regarded as a risk of unfavorable course and outcome.

ISSN: 2692-5206
AMERICAN ACADEMIC PUBLISHER
INTERNATIONAL JOURNAL OF MEDICAL SCIENCES

Literature:

1. Bockeria E.L., Degtyareva E.A. and others. Respiratory syncytial viral infection in children with congenital heart defects: relevance of the problem and recommendations for prevention.// Russian Bulletin of Perinatology and Pediatrics, 5, 2014, pp. 101-108

2. Bockeria L.A. etc. Atrial septal defect. Clinical recommendations. // Russian Journal of Cardiology, volume 28, No. 8, 2023, pp. 122-128

3. Degtyareva E.A., Pavlova E.S. and others Preoperative management of infants with congenital heart defects and pneumonia. // Russian Bulletin of Perinatology and Pediatrics, 3, 2014, pp. 50-58.

4. Dzhubatova R.S., Rakhimov A.Kh. and others. The course of pneumonia against the background of congenital heart defects in young children. //Bulletin of Emergency Medicine, 2015, No. 1, pp. 64-65.

5. Efimenko O.V., Khaidarova L.R. Risk factors in the formation of congenital heart disease in young children.// Journal of Cardio-Respiratory Research, Samarkand, 2021, No. 2.1

6. Efimenko O.V., Khaidarova L.R. The influence of hemodynamic disorders on the quality of life of children with congenital heart defects. // Economy and Society. №4 (107), 2023

7. Faizullaev F.A., Nabiev Z.N. and others. Features of the course of acute pneumonia in young children with some forms of congenital heart defects. // Health Care of Tajikistan, No. 2, 2020, pp. 61-66

8. Kuzibaeva N.K. Prevalence of congenital heart defects in children.// Attending physician, 2021, No. 9 (24, p.48-52)