ANALYSIS OF PSYCHO-EMOTIONAL STATE AND THE SEVERITY OF ASTHENIC SYNDROME IN CHILDREN WITH ACUTE LEUKEMIA AFTER THE FIRST STAGE OF CHEMOTHERAPY

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ABSTRACT

Introduction: Children and adolescents with hematological diseases are constantly in a state of prolonged psychological stress caused by hospitalization, debilitating treatment, lifestyle changes, which ultimately leads to a significant reduction in the quality of life. In this connection it is necessary to study the dynamics of mental and emotional condition of the child at different stages of chemotherapy and the timing of formation of asthenic syndrome.

The aim: Determine the presence of psycho-emotional disorders and the severity of asthenic syndrome in children with acute leukemia after the first stage of chemotherapy in order to further predict the development of this pathology and develop a package of solutions that minimize its manifestations.

Materials and methods: A survey of 36 children was conducted, of them 21 people aged 6–10 years old, 15 people aged 11–16 years old. There are 27 boys (75%) and 9 girls (25%). The survey was conducted on the 78th day of the ALL IC-BFM 2009 protocol, which corresponds to the end of the first phase of chemotherapy. In the survey did not participate children with the syndrome of multiple organ failure, as well as with the presence of background mental disorders. To assess the psycho-emotional state, a questionnaire was used: “state of health, activity, mood”, adapted for children. For the study of asthenia was used questionnaire I. K. Schatz.

Results: The findings suggest that absolutely all children receiving chemotherapy at the end of the first phase have been violations of the psycho-emotional background. The index of state of health suffers the most, and to a lesser extent - activity. Indicators of state of health had lower values in the older group - from 11 to 16 years. Thus according to the data in the group of children aged 6 to 10 years the average was 4.02 ± 0.09 (p <0.05), in children age 11 - 16 years - 3.83 ± 0.11 (p <0.05). The average activity substantially the same in groups and indicates a favorable condition. Mood indicators are also within the framework of a favorable state in both groups. Also during the investigation revealed that the general for all children is a symptom asthenic. According to the data, fatigue reaction (less than 7 points) was present only in 9 children (25%).

The most numerous manifestations were moderate asthenia - 21 children (58%). Severe asthenia (13 - 18 points) was observed only in 6 children (17%).

Conclusions: This study will allow to develop a package of solutions for the prevention and minimization of asthenic syndrome in children with acute leukemia receiving chemotherapy.

KEY WORDS: children, acute leukemia, psycho-emotional state, asthenic syndrome

INTRODUCTION

The past decade has seen an increased incidence of leukemia in children [1]. Based on the analysis of databases WHO and the National Cancer Registry in Ukraine, analysis of the literature published from 1997 to 2018, we can conclude about the growth of cancer-incidence in children. According to WHO, by 2016 the percentage of cancers in children in the world was 4.7% of all cases of cancer pathology. [2]. Treatment of acute leukemia in children involves long-term combination therapy. The effectiveness of this treatment has been proven and leads to long-term remission in 80% of cases. [3]. However, apart from the positive effects of chemotherapy leads to a lot of negative consequences in the future reduce the patient's quality of life [4]. Also, children and adolescents with oncohematological diseases are constantly in a state of prolonged psychological stress caused by hospitalization, debilitating treatment, and lifestyle changes. A significant contribution to the development of asthenic component contributes and the presence of acute pain at different stages of the disease, often with pain chronicity [5, 6, 7, 8, 9, 10]. In the world supplied a lot of effort to deal with complications due to chemotherapy, improve the management of pain therapy. However, the determination of the presence of chronic pain syndrome, asthenic syndrome and psycho-emotional state disorders is usually carried out to achieve remission - that is, after the completion of the protocol treatment of leukemia [11,12]. And often, the rehabilitation of such children is quite difficult, requiring considerable effort from not only medical workers, but also psychologists [13]. To date, there are no clear data on changes in psychoemotional status at different stages of chemotherapy in children with acute leukemia, nor is the pattern established between changes in these indicators and correction of psychosomatic disorders caused by treatment of the underlying disease. In this regard, it is necessary to
study the dynamics of the psycho-emotional state of the child and the timing of the formation of asthenic syndrome at different stages of chemotherapy. Since the timely correction of violations will improve not only the quality of life in the future, but also the response to the ongoing therapy of the underlying disease.

**THE AIM**
Determine the presence of psycho-emotional disorders, and severity of asthenic syndrome in children with acute leukemia after the first phase of chemotherapy for the subsequent prediction of this pathology and the development of a package of decisions that minimize its appearance.

**MATERIALS AND METHODS**
We observed 36 children aged 6 - 16 years of age with a diagnosis of "acute lymphoblastic leukemia", who were treated at the Child Oncology and Hematology Center of the city of Poltava (Ukraine). All parents agreed to the examination, and the design and methods of clinical studies were approved by the bioethical commission.

A survey of 36 children was conducted, of them 21 people aged 6–10 years old, 15 people aged 11–16 years old. There are 27 boys (75%) and 9 girls (25%). All children were treated for acute lymphoblastic leukemia according to the ALL IC-BFM 2009 protocol. The survey was conducted on day 78 of the protocol, which corresponds to the end of the first stage of chemotherapy. In the survey did not participate children with the syndrome of multiple organ failure, as well as with the presence of background mental disorders.

To assess the psycho-emotional state was used questionnaire "state of health, activity, mood," adapted to children's age. For the study of asthenia was used questionnaire I. K. Schatz.

Statistical processing carried out by conventional methods to the calculation of interest, the mean values and their errors using software Microsoft Excel 2007, STATA.

**RESULTS AND DISCUSSION**
The data obtained indicate that all children receiving chemotherapy, at the end of the first stage of treatment, there are violations of the psycho-emotional background (tab. I). When interpreting the results of a questionnaire assessment of each item (state of health, activity and mood), in excess of 4 points, according to the favorable condition of the test, less than 4 - an unfavorable condition. Normal evaluation condition are in the range of 5.0-5.5 points. In our study, we see that children suffer the most health indicator, to a lesser extent - the activity. Health indicators had lower values in the older group - from 11 to 16 years. So according to the data, in the group of children aged from 6 to 10 years old, the average well-being was 4.02 ± 0.09 (p <0.05), in children aged 11–16 years - 3.83 ± 0.11 (p < 0.05). This difference in performance is due to a greater extent the features of the disease in different age groups. The average activity in the groups is almost the same and indicates a favorable condition. The mood indicators are also within the framework of a favorable condition in both groups, with a more pronounced positive value in the older group (Table I).

However, in the course of the survey did not reveal any child with at least one indicator of normal - higher than 5 points. Consequently, already at the end of the first stage of treatment, we have a violation of the psycho-emotional state of children of both age groups. Considering that the protocol treatment of acute leukemia involves several stages with a predominance of invasive diagnostic and therapeutic manipulations, the violations already existing in children will only worsen, ultimately leading to a catastrophic de-
cline in the quality of life, as evidenced by the data [13].

Also during the investigation revealed that the general for all children is a symptom asthenic. According to the data, the fatigue reaction (less than 7 points) was present in 9 children (25%). These children have prevailed physical fatigue, to a minor extent - mood lability. The most numerous manifestations were moderate asthenia - 21 children (58%) (picture 1). It is dominated by complaints of sleep disturbance, appetite, physical fatigue and increased irritability. Severe asthenia (13 - 18 points) was observed only in 6 children (17%). The children of this group didn't make contact with the questionnaire; therefore, parents were involved in the survey. Children with severe asthenia had significant sleep disorders, mainly due to prolonged insomnia. Also present were pronounced negativism, aggression, mood lability with sharp drops in the emotional sphere, increased physical fatigue and a complete lack of appetite.

Thus, we can conclude that the adverse physical and stress factors that affect the child during the treatment of acute leukemia, after the first stage of treatment led to the formation patopsihologicheskikh reactions. Analysis of the data obtained showed that in the total mass of respondents there were both children with minimal manifestations of disorders, and children with pronounced personality disorders. Considering that the ultimate goal of our study is the correction of anesthetic therapy in children with acute leukemia in order to minimize the chronic pain process and asthenia, the data obtained will help develop an optimal approach to improving the management of analgesia. The dynamics of well-being, activity and mood, as well as the severity of asthenic syndrome manifestations at the stages of treatment can reflect the effectiveness of anesthetic therapy along with the generally accepted scales of pain syndrome characteristics (visual analogue scale, face scale). In this connection, we will continue to study these parameters in children in the stages of chemotherapy in comparison to the treatment of pain.

CONCLUSIONS
This study will help develop a package of solutions for preventing or minimizing the development of asthenic syndrome in children with acute leukemia receiving chemotherapy.

REFERENCES

The work is a fragment of the research work of the Department of Anesthesiology and Intensive Therapy of the Ukrainian Medical Dental Academy, state registration number: 0114U006326. “Optimization of the quality of anesthesiology and the intensive care of patients taking into account the age and gender dimorphism of clinical and functional, immune and metabolic changes.”

Authors’ contributions: According to the order of the Authorship.

Conflict of interest: The Authors declare no conflict of interest.