

Aspects of Anemia Development Against the Background of Combined Antiviral Therapy in Patients with Chronic Hepatitis C

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Abstract Chronic hepatitis C (HCV) is one of the most common human infectious diseases. The development of severe hematological syndromes in patients during combined antiviral therapy (CAT) for HCV is a very urgent problem. Among the most dangerous complications in this case, one can especially single out CAT-associated anemia. Background: to study the main aspects of the pathogenesis of CAT-associated anemia in patients with chronic hepatitis C. Material and methods. The study included 114 HCV patients who had indications for CAT. 50.8% of patients received ribavirin in combination with cycloferon, and 49.2% in combination with roferon - "short" INF- α . Results. All patients, depending on the minimum concentration of Hb (Hbmin), recorded for the entire period of CAT, were divided into three groups.

Keywords Chronic hepatitis C, Combined antiviral therapy, CAT-associated anemia

1. Introduction

Chronic hepatitis C (HCV) is one of the most common human infectious diseases [1]. The use of modern combined antiviral therapy (CAT) of HCV makes it possible to achieve complete elimination of the pathogen in many patients [2], however, the development of adverse events (AE) remains an urgent problem, among which hematological complications occupy a special place [3]. One of the most serious hematological syndromes in patients with HCV is CAT-associated anemia, the development of which significantly increases the risk of life-threatening conditions in patients. It is assumed that the main cause of anemia, in this case, is the development of hemolysis due to the accumulation of ribavirin metabolites inside erythrocytes, which is known to be one of the components of CAT [4]. Unfortunately, the pathological changes that occur with red blood cells, as well as the features of hemolysis itself, remain practically unexplored [5].

Purpose of the study: to study the main aspects of the pathogenesis of CAT-associated anemia in patients with chronic hepatitis C.

2. Material and Methods

The study included 114 HCV patients who had indications for CAT. 50.8% of patients received ribavirin in combination

with cycloferon, and 49.2% in combination with roferon - "short" INF- α .

Determination of the content of erythrocytes in the blood and the concentration of hemoglobin (Hb) was carried out by the method of automatic hematological analysis [6]. Serum concentration of endogenous erythropoietin (EEP) was studied by automatic chemiluminescent immunoassay [7].

3. Results and Discussion

Completely completed the course of CAT 81 patients with HCV. Sustained virological response (SVR) was achieved in 77 patients. Among those receiving cycloferon, the SVR rate was 54.4%; receiving "short" IFN- α - 81.6%. In 4 patients, therapy was canceled after 8 weeks of treatment due to the development of severe hematological complications of CAT. In 28 patients with HCV, the absence of an early virological response was recorded, in 4 of them, the development of severe complications from the blood system was observed in parallel [8]. According to the classification of the European Society of Medical Oncology, mild (Hb 10.0-11.9 g / dl), moderate (Hb 8.0-9.9 g / dl) and severe (Hb < 8.0 g / dl) degrees of anemia are distinguished. In our case, the development of CAT associated anemia was noted in 36.8% of patients, while mild degree was noted in 12.3%; moderate - in 19.3% and severe - in 5.2% of cases. All patients, depending on the minimum concentration of Hb (Hb min), recorded for the entire period of CAT, were divided into three groups. Group 1 (n=70) included those whose Hbmin remained within the acceptable range. Group 2 (n=14) consisted of patients with

mild CAT-associated anemia. Group 3 (n=28) included patients with moderate and severe CAT-associated anemia. At the start of CAT, the average EEP level in the 1st group was 7.3 ± 1.2 mU/ml, in the 2nd group - 12.4 ± 2.1 mU/ml, and in the 3rd group - 30.8 ± 5.3 honey/ml. After the end of therapy, its level increased in all groups. However, the severity of the identified changes was ambiguous. So, in the 1st group, the average EEP level increased from the initial one by 7.7; in the 2nd - in 4.3; and in the 3rd - only 1.9 times. recorded for the entire period of CAT were divided into three groups. Group 1 (n=70) included those whose Hb min remained within the acceptable range. Group 2 (n=14) consisted of patients with mild CAT-associated anemia[9]. Group 3 (n=28) included patients with moderate and severe CAT-associated anemia. At the start of CAT, the average EEP level in the 1st group was 7.3 ± 1.2 mU/ml, in the 2nd group - 12.4 ± 2.1 mU/ml, and in the 3rd group - 30.8 ± 5.3 honey/ml. After the end of therapy, its level increased in all groups. However, the severity of the identified changes was ambiguous. So, in the 1st group, the average EEP level increased from the initial one by 7.7; in the 2nd - in 4.3; and in the 3rd - only 1.9 times. recorded for the entire period of CAT were divided into three groups. Group 1 (n=70) included those whose Hb min remained within the acceptable range. Group 2 (n=14) consisted of patients with mild CAT-associated anemia. Group 3 (n=28) included patients with moderate and severe CAT-associated anemia. At the start of CAT, the average EEP level in the 1st group was 7.3 ± 1.2 mU/ml, in the 2nd group - 12.4 ± 2.1 mU/ml, and in the 3rd group - 30.8 ± 5.3 honey/ml. After the end of therapy, its level increased in all groups. However, the severity of the identified changes was ambiguous. So, in the 1st group, the average EEP level increased from the initial one by 7.7; in the 2nd - in 4.3; and in the 3rd - only 1.9 times. Group 2 (n=14) consisted of patients with mild CAT-associated anemia. Group 3 (n=28) included patients with moderate and severe CAT-associated anemia. At the start of CAT, the average EEP level in the 1st group was 7.3 ± 1.2 mU/ml, in the 2nd group - 12.4 ± 2.1 mU/ml, and in the 3rd group - 30.8 ± 5.3 honey/ml. After the end of therapy, its level increased in all groups. However, the severity of the identified changes was ambiguous. So, in the 1st group, the average EEP level increased from the initial one by 7.7; in the 2nd - in 4.3; and in the 3rd - only 1.9 times. Group 2 (n=14) consisted of patients with mild CAT-associated anemia. Group 3 (n=28) included patients with moderate and severe CAT-associated anemia. At the start of CAT, the average EEP level in the 1st group was 7.3 ± 1.2 mU/ml, in the 2nd group - 12.4 ± 2.1 mU/ml, and in the 3rd group - 30.8 ± 5.3 honey/ml. After the end of therapy, its level increased in all groups. However, the severity of the identified changes was ambiguous. So, in the 1st group, the average EEP level increased from the initial one by 7.7; in the 2nd - in 4.3; and in the 3rd - only 1.9 times. 3 honey/ml. After the end of therapy, its level increased in all groups. However, the severity of the identified changes was ambiguous. So, in the 1st group, the average EEP level increased from the initial

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4. Conclusions

A decrease in the peripheral blood of HCV patients in the partial pressure of O_2 leads to a compensatory increase in the production of endogenous EEP. Under conditions of increased load on the erythron system due to the intake of antiviral drugs, the above mechanism of erythropoiesis regulation becomes insufficiently effective, which may be one of the key points in the pathogenesis of CAT-associated anemia.

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