



FEATURES OF THE COMORBID COURSE OF BILATERAL INTERSTITIAL PNEUMONIA WITH CHRONIC ANEMIA OUTSIDE THE HOSPITAL

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Abstract

This scientific article reveals the relationship between bilateral interstitial pneumonia outside the hospital, its characteristics, anemia and its classifications, the characteristics of interstitial pneumonia in the background of chronic anemia, its frequency in relation to age and gender, the level of lung damage in groups according to the amount of hemoglobin in the blood, and the recovery period of patients. In addition, there is information about risk groups of interstitial pneumonia in comorbid conditions with chronic anemia.

Keywords

Interstitial pneumonia, background disease, comorbid condition, hypoxia, hypoxemia, chronic anemia, hemoglobin, acidosis, interval metabolite, fibrosis process.

Introduction

Currently, the global problem that is still urgent and waiting for its solution is the disease caused by the coronavirus infection. We all know that this disease leads to a rapid escalation of inflammation, a rapid development of cytokines, thereby causing pathologies in many organs of the body. Interstitial pneumonia is a specific type of inflammation in which the interstitial tissue that makes up the

framework of the lungs is inflamed. Complications are dangerous and they depend on accompanying and background diseases. The course of the disease depends on the body's resistance, reactivity, state of the immune system, the age of the patient, as well as the amount of hemoglobin in the blood, because hypoxia of the body plays a key role in the pathogenesis of the disease. According to the information presented in the literature, chronic anemia ranks second among all anemias [1,2, 3]. Iron metabolism and anemia can play an important role in the formation of pathologies in many organs in the disease caused by coronavirus infection. [4]

Purpose of the research

To study the course characteristics of out-of-hospital bilateral interstitial pneumonia in patients with chronic anemia. To determine the frequency of out-of-hospital bilateral interstitial pneumonia in patients with chronic anemia by gender and age.

Materials and methods

Nonhospital bilateral interstitial pneumonia. 50 patients with a diagnosis of chronic anemia who were being treated at the Therapy Department of the Urgench city hospital were included in the study. Anamnesis was collected from them; laboratory-instrumental examinations were conducted. Patients were divided into 4 groups by age: patients under 30 years old; Patients aged 30-50 years; Patients between 50-70 years old and patients over 70 years old. In addition, patients with a hemoglobin level greater than 110 g/l according to the amount of hemoglobin in the blood; patients with a hemoglobin level of 110g/l-90g/l, patients with a hemoglobin level of 90g/l-70g/l; patients with hemoglobin less than 70 g/l.

Results

A total of 50 patients participated in the study, 44% (22) of them were men and 56% (28) were women. In terms of age, 4% (2 people) are younger than 30

years old, 28% (14 people) in the 30-50-year-old interval, 48% (24 people) in the 50-70-year-old interval, and 20% (10 people) are 70 years old and older) established. According to the amount of hemoglobin in the blood, patients were divided into 4 groups: 1) Hb<70g/l-4% (2 patients); 2) 52% (26 people) in the range of 70-90g/l, 40% (20 people) in the range of 90-110g/l, and Hb>110g/l-4% (2 people). According to the conclusion of computer tomography, it was observed that the lung damage and the average recovery time change according to the amount of hemoglobin in the blood.

Hb (g/L)	Lungs damage (in percent)			Recovery period (in days)		
	Maximum	minimum	Average	Maximum	minimum	average
70-90	65	30	47.5	11	4	7.5
90-110	40	25	32.5	10	4	7
Hb >110	30	5	17.5	7	4	5.5

Table 1. Pulmonary damage and recovery times according to the conclusion of computed tomography when grouped by the amount of hemoglobin in the blood.

Patient age / Hb	30> Age	30-50 intervals	50-70 intervals	70< Age
110<Hb	-	1	-	1
110-90	1	8	3	6
90-70	1	5	20	2
70>Hb	-	-	1	1

Table 2. Amount of hemoglobin in blood determined in different age groups.

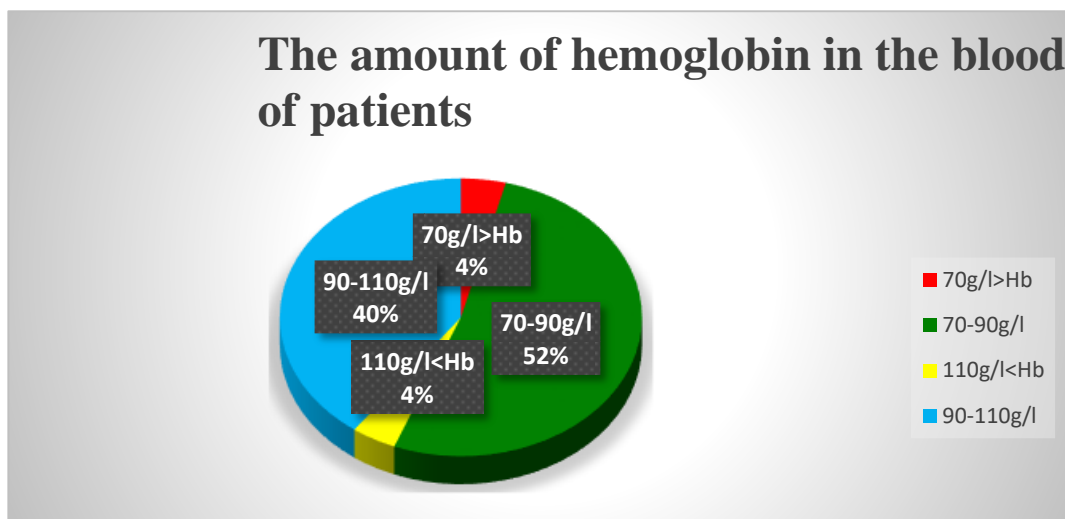


Fig.1

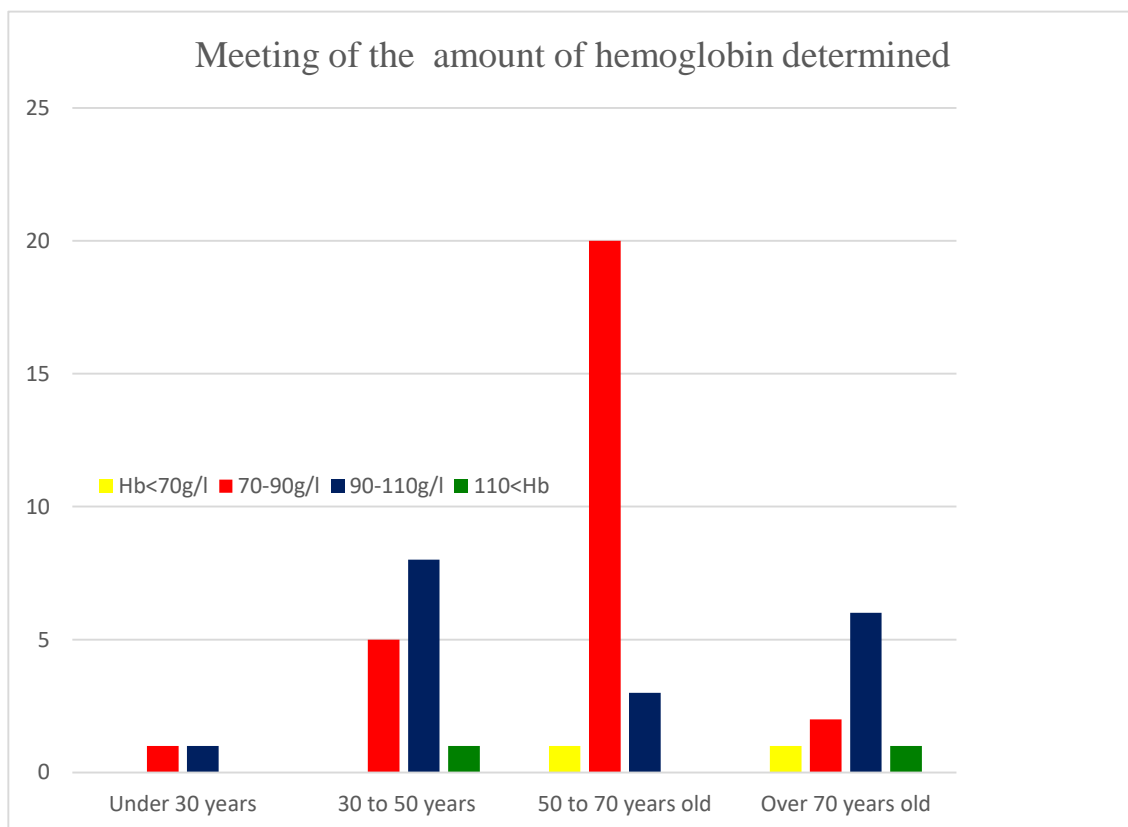


Fig.2

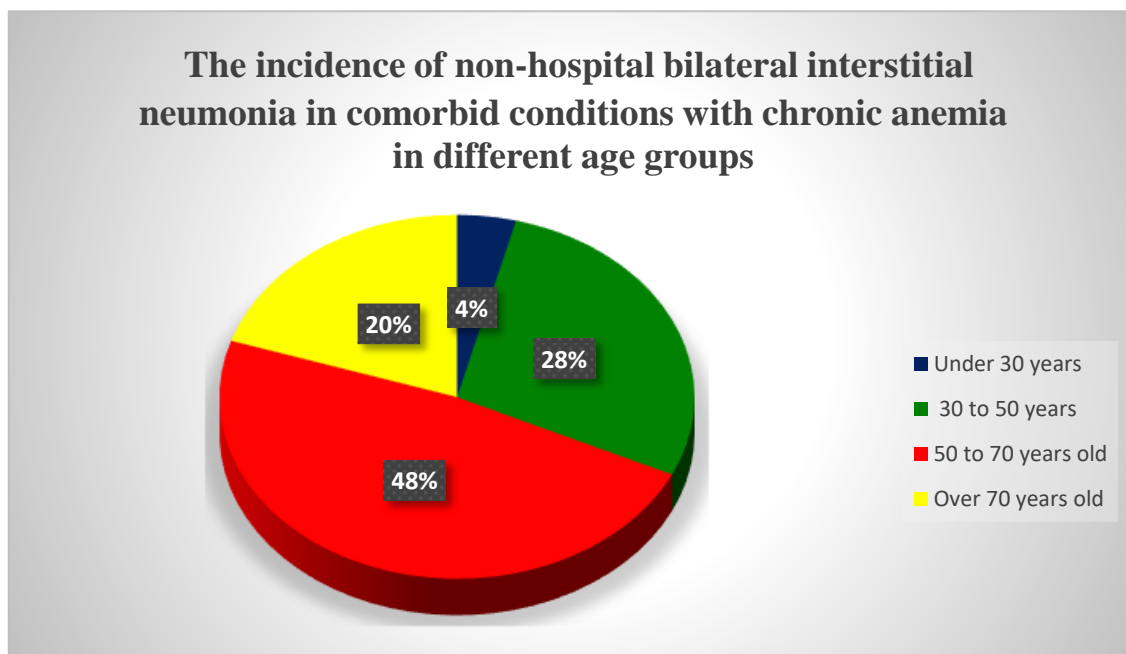


Fig. 3

Discussion

Anemia is a disease characterized by a decrease in the number of erythrocytes and the amount of hemoglobin per unit volume of blood. [2] In this case, the process of delivering oxygen to the tissues is disrupted. SARS-CoV-2 infection causes significant laboratory abnormalities, including elevated serum ferritin. [10] This also leads to exacerbation of chronic anemia. The longer chronic anemia lasts, the less hemoglobin in the blood, the smaller the size of erythrocytes. [3] According to one or another symptom of the blood system, anemic conditions can be described differently.

I. According to its etiology

- 1) Genetic
- 2) Acquired

II. According to pathogenesis:

- 1) Posthemorrhagic
- 2) Hemolytic
- 3) Because of pathologies of hemopoiesis

III. According to the type of hemopoiesis

- 1) Anemia dependent on normoblastic hemopoiesis
- 2) Anemia dependent on megaloblastic hemopoiesis

IV. According to the ability of bone marrow to regenerate:

- 1) Regenerator
- 2) Hyperregenerator
- 3) Hyporegenerator
- 4) Aplastic

We know that anemia is a background disease. Chronic anemia causes a decrease in the amount of hemoglobin in the blood and the size of erythrocytes. It directly affects the course of the main disease. Symptoms of hypoxemia ($SpO_2 < 90\%$) are formed in interstitial pneumonia. Rapid progression of the disease forms acute respiratory distress syndrome. In this case, refractoriness is formed during oxygen treatment. When examining the patient, cyanosis, tachypnea, tachycardia are observed, hypoxic coma may develop due to excitation, subsequent inhibition, and intensification of the process due to disturbances in gas exchange in the central nervous system. The state of hypoxemia and inflammation developed during orgasm damage the cardiovascular system. As a result, markers indicating necrosis of cardiomyocytes increase in the blood. Blockage of interleukin-6 in the blood does not have a good effect [7] In our study, the role of anemia in the formation of interstitial pneumonia was further determined, that is, in 96% of patients with this disease, the amount of hemoglobin is less than 110 g/l. According to the results in Table 1, the most damage was detected in a patient with a hemoglobin level of 70-90g/l. The lowest was observed in a patient with more than 110 g/l. Iron homeostasis has a strong relationship with the occurrence of severe interstitial pneumonia [5]. Ferritin is associated with a poor prognosis in the body. [6] There is hyperferritinemia in the blood. [8] Patients with a ferritin value

of more than 287.4 ng/ml are more likely to develop moderate and severe COVID-19 infection. [9, 10] The more hemoglobin in the blood decreases, the more vital processes, energy production, and oxidation reactions in the body slow down. A state of reduced oxidation or hypoxia causes the body to accumulate intermediates (lactic acid, an intermediate metabolite of glucose) and other metabolites that cause acidosis. With the reduction of oxidation in the body, the synthesis of ATF also decreases, and at the cellular level, glycolysis energy is used more, which, in turn, stimulates the anaerobic breakdown of glucose, the cysticity of the body increases again, and the pH begins to decrease. Metabolism slows down, and in interstitial pneumonia, cells die due to a strong inflammatory process. Necrotic lung tissue is remodeled by fibrotic tissue. As a result, inflammation increases against the background of anemia and hypoxia.

Conclusion

Out-of-hospital bilateral interstitial pneumonia is very dangerous due to its rapid development and complications. In addition to inflammation, hypoxia also underlies it. Background diseases also play a big role in the pathogenesis of bilateral interstitial pneumonia outside the hospital. Out-of-hospital bilateral interstitial pneumonia in a comorbid state with chronic anemia affects lung damage, the general condition of the body, and the duration of recovery from the disease. The more severe the chronic anemia, the lower the amount of hemoglobin in the blood, the more dangerous it is to the patient's life. The occurrence of this disease in a comorbid condition with chronic anemia is higher in women in terms of gender, and in patients aged 50-70 years. By organizing measures aimed at eliminating anemia in the treatment of this disease and increasing the effectiveness of treatment, it will be possible to reduce lung damage and shorten the recovery period of patients. Also, it will be possible to reduce damage to the central nervous system while preventing the development of hypoxic conditions.

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