

OPTIMIZATION OF TREATMENT METHODS IN EXCESSIVE HEMOLYTIC ANAEMIA

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Ibragimova Zukhra Adilbekovna

Assistant of the department "Military field therapy and hematology" of Urganch branch of Tashkent Medical Academy

Rakhimov Dadakhan Jaloladdinovich

Urganch Branch of Tashkent Medical Academy Assistant of the "General Surgery" department

Currently, the main interest of scientists is to study the mechanism of development and treatment methods of hemolytic anemias (HC), which account for 5.3% of all blood system diseases and 11.5% of anemia cases in the world.^{202,203}. At the same time, the study of the mechanisms of erythrocyte breakdown, which provides natural tolerance in hemolytic anemias, and also leads to hemolytic processes as a result of the disruption of these mechanisms, is becoming more relevant.^{204,205}. Determining the mechanism of erythrocyte disintegration associated with the development of the iron metabolism system imbalance, antioxidant protection, lipid peroxidation and endogenous intoxication syndrome in experimental hemolytic anemias allows to develop new ways of their correction.

The development of the medical field of our country is assigned a number of tasks aimed at adapting the medical system to the requirements of world standards, diagnosing, preventing and treating various somatic diseases "...increasing the efficiency, quality and popularity of medical care provided to the population in our country, as well as high-tech methods of early diagnosis and treatment of diseases by introducing, creating a patronage service, supporting a

²⁰²Mentzer WC, Schrier SL Extrinsic nonimmune hemolytic anemias. In: Hoffman R, Benz EJ Jr., Silberstein LE, et al., eds. Hematology: Basic Principles and Practice. 7th ed. Philadelphia, Pa.: Elsevier; 2018:663–672.

²⁰³Onyeabo Ch., Achi K. Ngozi, Ekeleme-Egedigwe Chima A., Chidinma U. Ebere, Chidinma K. Okoro Haematological and biochemical studies on justicia carnea leaves extract in phenylhydrazine induced-anemia in albino rats// Acta Sci. Pol. Technol. Alimony. 16(2) 2017, 217–230.

²⁰⁴Paul S., Naaz S., Ghosh A., Mishra S., Chattopadhyay A. and Bandyopadhyay D. Melatonin chelates iron and binds directly with phenylhydrazine to provide protection against phenylhydrazine induced oxidative damage in red blood cells along with its antioxidant mechanisms: an in vitro study. Melatonin Research. 1, 1 (Dec. 2018), 1-20. doi.org/10.32794/mr11250001.

²⁰⁵Phillips J., Henderson AC / Hemolytic Anemia: Evaluation and Differential Diagnosis. Am Fam Physician. 2018 Sep 15;98(6):354-361.

healthy lifestyle and preventing and effectively diagnosing diseases...»²⁰⁶such tasks are defined. These tasks allow to reduce the rate of disability and death as a result of improving the use of modern technologies in the development of preventive measures aimed at increasing the effectiveness of local drugs in the treatment of hemolytic anemia among the population.

The purpose of the study It is aimed at improving the assessment of the effect of local blood substitute Reamannisol on certain metabolic, functional and structural parameters of the vital activity of the body during the development of the dynamics of experimental hemolytic anemia called phenylhydrazine.

The object of the study and methods: White rats (n=120) in the vivarium of the Tashkent Medical Academy were taken as the object of the study.

Design and methods of research on GC modularization. An experimental model of GC was established by intraperitoneal injection of 50 mg/kg of phenylhydrazine. All experiments performed on animals were carried out in accordance with the international recommendations (ethics code) on conducting medical-biological research using animals, developed by the Council of International Scientific Organizations in 1985 (CIOMS, Geneva, 1985).

In accordance with the purpose of the study, the studied animals (n=120) were divided into groups by random selection on the 1st day of the experiment: Group I (n=10) - healthy animals; II group (n=35) - with GK experimental model; Group III (n=25) - after the introduction of physiological solution (sodium chloride solution 0.9%) to the experimental model of GK; Group IV (n=25) - animals with an experimental model of GK after administration of the drug "Reosorbilact"; Group V (n=25)-GK experimental model animals after administration of new locally produced blood substitute "Reomannisol".

After introducing phenylhydrazine for 5 days, sodium chloride 0.9%, Reosorbilact, Reomannisol drugs were injected in the amount of 10 mg/kg of animal weight.

Studies in rats 1-2-5 days after the injection of phenylhydrazine, animals were decapitated under light ether anesthesia. Livers and spleens of animals of all groups were subjected to morphological examinations, and blood serum was used for biochemical studies.

The statistical processing of the research results was carried out using the "Statistica for Windows 7.0" personal computer application package.

²⁰⁶Decree of the President of the Republic of Uzbekistan No. 5590 of December 7, 2018 "On comprehensive measures to fundamentally improve the health care system"

Research results and discussion:The practical significance of the study is explained by the high therapeutic efficiency in the correction of complex disorders identified in hemolytic anemia based on experimental research, which in turn made it possible to prevent the development of complications in patients with this disease, as well as to improve the quality of life.

The general condition of rats with phenylhydrazine-induced hemolytic anemia, hematological indicators of blood and bone marrow, morphological changes in liver and spleen, indicators of iron and bilirubin metabolism, results of LPO/AOT and EI systems are highlighted. Studies have shown that phenylhydrazine-induced hemolytic anemia, intoxication, and increased hemolysis of red blood cells lead to deterioration of the general condition of animals (100.0%) and death (20.0%).

On the 1st, 2nd and 5th days of the experiment, the development of discirculatory, dystrophic and destructive changes was shown in the morphological study of the structural components of the liver and spleen in rats with phenylhydrazine hemolytic anemia. In addition, due to the proliferative processes of Kupffer cells in the liver, fatty dystrophy developed due to the accumulation of lipofuscin and bilirubin in the cytoplasm, as well as foci of extramedullary blood formation in sinusoids and space of Disse with pigmentation. Destructive processes in the spleen were manifested by hemolysis of red blood cells, hyperpigmentation and increased phagocytic activity of macrophages in the cavity of the sinuses and pulps. Macrophage activity was observed in the white pulp of the spleen, especially in the germinal centers,

Thus, the marked changes in the morphological structures of the liver and spleen, as well as in the hematological parameters of the blood and bone marrow prove that they are related to the pathological process in hemolytic anemia.

In addition, in experimental animals, the above changes in GK were accompanied by disturbances in iron and bilirubin metabolism, and its severity increased until the fifth day of the study. For example, on days 1, 2 and 5, the amount of iron in serum was 2.83 times ($23.8 \pm 2.20 \mu\text{mol/l}$), 4.44 times ($37.3 \pm 2.3 \mu\text{mol/l}$), and 6.43 times ($54 \pm 2.6 \mu\text{mol/l}$) increased, which in turn increased the ferritin level by 6.5 times ($16.0 \pm 1.4 \text{ ng/ml}$), 6.97 times ($18.1 \pm 0.9 \text{ ng/ml}$), respectively) and 11.7 times ($30.3 \pm 2.3 \text{ ng/ml}$), as well as UTBX 2.4 times ($190.70 \pm 26.8 \mu\text{mol/l}$), 2.5 times ($198.1 \pm 23.0 \mu\text{mol/l}$) and 2.6 times ($203.6 \pm 24.8 \mu\text{mol/l}$) on the first, second and fifth days of the experiment compared to the values in healthy animals ($8.4 \pm 0.50 \text{ mmol/l}$, $2.6 \pm 0.5 \text{ ng / ml}$ and $79.7 \pm 5.6 \text{ mmol/l}$) caused an increase. At the same time, in animals with GK, changes in iron

metabolism, total bilirubin level, with a significant increase at the expense of its unbound fraction. Thus, on the 1st day, the level of total bilirubin and its unbound fraction in group II animals increased by 3.6 (21.2 ± 0.77 mmol/l) and 3.61 times (15.9 ± 0.70 mmol/l), on the 2nd day 6.05 (35.7 ± 1.4 μ mol/l) and 5.27 times (23.2 ± 1.04 μ mol/l) and on the 5th day 16.76 (98.9 ± 3.23 μ mol/l) and 14.61 (64.3 ± 2.0 μ mol/l) times compared to healthy animals (total bilirubin - 5.9 ± 0.20 μ mol/l and unbound bilirubin - 4.40 ± 0.15 μ mol /l) increased.

Thus, a single intraperitoneal injection of phenylhydrazine 2% solution in the amount of 50 mg/kg of body weight was associated with the induction of hemolytic anemia, increased erythrocyte hemolysis, and indicators of iron and bilirubin metabolism disorders in rats. 61 and $r=0.59$ respectively) level, ferritin ($r=0.46$ and $r=0.65$ respectively) and total bilirubin level ($r=0.48$ and $r=-0.88$ respectively) confirmed by the presence of correlation. Study of the state of the LPO/AOT system of phenylhydrazine GC showed a disproportionate development of its indicators, which also led to maximum changes on the 5th day of the study. In particular, this condition is accompanied by a decrease in the functional activity of AOT, which is 2.25 times the amount of SOD in plasma (2.80 ± 0.10 units/mg protein unit.; $p1 < 0.001$), GPO 4.44 times ($0, 09 \pm 0.004$ conditions. units/min \times mg Hb; $p1 < 0.001$), GR level 5.2 times (0.50 ± 0.03 μ M NADFN2/min \times g/Hb; $r1 < 0.001$), catalase activity 2.48 times (14.3 ± 1.2 ng/mg Hb \times min; $p1 < 0.001$), on the background of activation of peroxide processes, the concentration of MDA was almost 2 times (5.10 ± 0.21 nmol/ml pl), the level of diene conjugates and diene ketones was 2.64 times (3.70 ± 0.24 rel.) and 2.47 times (0.37 ± 0.025 rel.), manifested by increasing the LPO/AOT ratio by 5.57 times (0.518 ± 0.025 rel.).

Thus, the development of the pathological process in hemolytic anemia creates pathogenetic conditions for the emergence of EI syndrome, which is characterized by an increase in O'Mpl, concentration of OPpl and OPer in erythrocytes ($r=0.52$; $r=0.92$ and $r=0, 92$ respectively), a decrease in the level of hemoglobin ($r=0.58$; $r=0.85$; $r=0.83$ and $r=0.92$ respectively) and an increase in the level of reticulocytes ($r=0.64$; $r=0, 73$; and $r=0.75$, respectively) was confirmed.

It is aimed at a comprehensive study of the main pathogenetic mechanisms of the formation of pathological processes that play an important role in the development of hemolytic anemia. At the same time, the mechanism of erythrocyte destruction in hemolytic anemia is very complex, and it involves many pathological processes, such as LPO/AOT systems, iron, bilirubin metabolism, and EI, which directly affect the morphological structure of the liver and spleen.

Summary:The following conclusions were presented on the basis of the research conducted on the topic of "Use of the new blood substitute "Reomannisol" in hemolytic anemia" on the basis of the thesis of the doctor of philosophy in medical sciences: On the fifth day of hemolytic anemia in experimental conditions, the maximum change in blood and hematopoietic tissue parameters was determined. Disturbances in the system of antioxidant enzymes are probably associated with the sharp activation of free radical processes caused by mass hemolysis of erythrocytes. On the fifth day of the experiment, the development of discirculatory and dystrophic changes in liver and spleen parenchyma was clearly noted in rats suffering from hemolytic anemia. Reomannisol has a more effective effect on the activity of antioxidant enzymes compared to reosorbilact, which probably increases the level of antioxidant properties due to the synergism of the properties of mannitol and succinate. The combination of antioxidants is a multifunctional inhibitor of free radical lipid peroxidation and is a component of it, so stabilization of free radical processes leads to an increase in the resistance of erythrocyte membranes and a decrease in their hemolysis. Limiting the efficiency of lipid peroxidation processes of biological cell membranes causes their resistance to damaging actions to increase. It is this factor that causes more effective regulation of discirculatory and dystrophic changes in the studied organs under the influence of reomannisol.

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STEP AS AN ANTHROPOCENTRIC WAY OF MEASUREMENT

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Umirzoqova Nozimabonu Aziz qizi

Teacher, Uzbekistan State World Languages University

Abstract

Step was used as a unit of measurement for distance and length in ancient times. In the Uzbek and English languages, the word "step" is used not only as a noun, but also as a verb. This article provides some examples of the word "step" used in works of folk oral art, as well as synonyms for it.

Key words

step, anthropocentric, folk oral art, measurement, length, distance.

The category of measure is of great importance for the formation of a holistic picture of the world. It underlies the mathematical model of the world. "The creation of a mathematical model is an important stage of cognition, because when it is created, we know from what premises we derive consequences. In the course of experimental verification, we have the opportunity to investigate the correspondence of each of the premises of reality" [1].

Even now we often determine small distances in steps. Such survivability of this anthropocentric method of measurement is explained, firstly, by its direct nature, which does not require any additional instruments and devices. Secondly, "it turns out that this measure is quite constant in a person if he walks without thinking that he is doing it for the sake of measurement" [2]. Many measures known to us, which have become widespread, were derived from the length of a person's step. According to the dictionaries of the English language, the word step, in addition to its direct meaning "foot movement when walking, distance from foot to foot during such movement" and "movement on foot", can represent gait. In this case, both in English and in Uzbek, the word is used in the singular:

- From his chair Geary watched Hugh go in a leisurely swinging stride to the shed between windmills (Prichard. Coonardoo, 57).
- With a joyful step with a cheerful song, we stand for the Komsomol (Zharov. March of the Young Pioneers).
- Ochil "bu gaplarning menga aloqasi yo'q", deganday qilib, qadamini tezlashtirdi. (P. Qodirov, „Uch ildiz“).