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Iron Deficiency Anemia and Drug Addiction: Regional Problems and Ways of Solution

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Abstract- In general, the analysis of the available information in the modern literature shows that there is an increase of drug addiction occurences throughout the world. This increases social tension and arises medico-biological problems, in particular, related to early detection and therapy of CND (Chronic Non-communicable diseases) and IDS (Iron Deficiency Syndrome) amongst drug addicted population. The collected data emphasises the need to adjust the therapeutic or hematological work taking into account the growing tension in the narcological situation, which has already been formed on the basis of newly prioritized area - epidemiological narcology.

It is both interesting and logical to elucidate in an epidemiological study the characteristics of the response of the blood system during drug intoxication and to study the popular mechanisms of development of ID (Iron Deficiency), IDA (Iron Deficiency Anemia) and IDS with the background of drug addiction. Epidemiological, clinical and preventative aspects of the main risk factors for iron deficiency condition and associated pathological processes among drug-addicted population is the main discussion topic of our paper.

Keywords: *iron deficiency animia, epidemiology, risk factors, course, prevention.*

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Iron Deficiency Anemia and Drug Addiction: Regional Problems and Ways of Solution

Ne'matjon S. Mamasoliev [α], Burxonjon U. Usmonov [σ] & Xatam. X. Tursunov [ρ]

Abstract- In general, the analysis of the available information in the modern literature shows that there is an increase of drug addiction occurences throughout the world. This increases social tension and arises medico-biological problems, in particular, related to early detection and therapy of CND (Chronic Non-communicable diseases) and IDS (Iron Deficiency Syndrome) amongst drug addicted population. The collected data emphasises the need to adjust the therapeutic or hematological work taking into account the growing tension in the narcological situation, which has already been formed on the basis of newly prioritized area - epidemiological narcology.

It is both interesting and logical to elucidate in an epidemiological study the characteristics of the response of the blood system during drug intoxication and to study the popular mechanisms of development of ID (Iron Deficiency), IDA (Iron Deficiency Anemia) and IDS with the background of drug addiction. Epidemiological, clinical and preventative aspects of the main risk factors for iron deficiency condition and associated pathological processes among drug-addicted population is the main discussion topic of our paper.

It is a common knowledge that epidemiological and preventive studies are used to identify differences between country and population indicators in "reference groups" (countries or populations with a similar level of health indicators) and geopolitical groups (countries or populations united by geopolitics). This, firstly, makes it possible to find out the true epidemiological situations in relation to chronic diseases and, secondly, contributes to the development of effective preventative programs and/or shows possible ways of solving the epidemiological problems of non-infectious pathologies among various population groups [10,13]. Among the population, the most severe burden of CND is caused by such risk factors as AH (Arterial Hypertension), HCL (Hypercholesterolemia), HTG (Hypertriglyceridemia), HU (Hyperuricemia), BMI (Body Mass Index) , smoking, IBW (Increased Body Weight), Diabetes, CMD (Carbohydrate Metabolism Disorders), alcohol consumption, PI (Physical Inactivity), stress and hereditary factors [13,16,29,30,31,33, 34]. Another significant risk factors for drug addicted population are - an unsuccessful family factor, low consumption of vegetables and fruits, drug addiction, monotonous diet, strong tea / coffee consumption, nutritional factors, unfavorable social status, MTOs (microelementosis), medicinal factors, irregular nutrition, low educational status, polypathy, overeating and multiple risk factors [17,19,23,24,25,27].

It was found that some indicators have an increasing trend, others - decrease, and some others endure stabilization of the noted risk factors [14]. However, the mechanisms of the formation of the main risk factors for IDS in the amount of drug addicted populations have not yet been investigated in epidemiological studies. We came to this conclusion when analyzing data from a large stream of epidemiological and preventive studies, as well as available literature.

At the same time, it should be noted that in recent years, this problem has attracted attention of many researchers around the world [28,33,35, 38].

Keywords: iron deficiency animia, epidemiology, risk factors, course, prevention.

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I. Introduction

IDA - is a disease caused by the iron depletion in the organism and, according to WHO criteria, is manifested by a decrease in hemoglobin levels to less than 130 g / l in men and less than 120 g / l in women [8,35]. The clinical classification is based on the morphological principle - the determination of the mean erythrocyte volume (MEV), the coefficient of variation of the erythrocyte volume, ferritin concentration, hemosiderin deposition in the bone marrow, serum iron level, Total Iron Binding Capacity (TIBC) and hemoglobin level.

With iron deficiency, the entire body suffers, iron is absorbed in the duodenum and small intestine. For one meal, men absorb 1.3-1.5 mg, and women, despite the great need for "metal", only 0.3 mg. Regardless of gender, during the day a normal person loses (in the toilet rooms, with sweat and "dead" epithelium - the surface layer) about 1 mg of iron. During pregnancy, the need for it increases sharply, a woman needs 2.5-3.5 mg per day.

The body of an adult contains 3-4 g of iron. An important link in iron metabolism is its deposition. Violation of this process leads to the development of ID, mainly as a result of blood loss [7,30].

Iron deficiency in food rarely causes IDA in adults by itself, but contributes to its development in the presence of other Risk Factors . With a normal balanced diet, the human body receives 15-20 mg of iron per day, of which 5 to 10% is absorbed. Absorption increases up

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to 25% with ID in the organism. The percentage of iron absorption by the body also depends on the chemical structure of the substance in which it is included. So, gem iron (meat products, fish, poultry) is absorbed by 20-50%, the non-heme form of iron (cereals, vegetables, dairy products) is absorbed weaker, absorbed by about 5%. There are many factors on this process, as shown by some population studies. An increase in absorption is observed in the presence of ascorbic acid and a decrease is noted in the presence of acute and chronic inflammation [26,32].

II. Risk Factors and Course of IDS

According to the WHO, every 5th person on the planet is iron deficient, 30 percent of developing countries suffer from iron deficiency anemia. The main RFs of IDS NNS are: 1) chronic and acute blood loss (hyperpolymenorrhea, peptic ulcer of the stomach and duodenal ulcer, diaphragmatic hernia, esophagitis, erosive gastritis, Crohn's disease, diverticulosis, hemorrhoids, donation); 2) increased need for iron (during the growth of children and adolescents, pregnant and lactating women); 3) disorders of iron absorption in the small intestine, autoimmune atrophic gastritis; 4) alimentary factors (a decrease in the diet of foods containing iron. In the population of drug addicts, apparently, as sociological studies show, the range of RF of IDS is expanding.

So, in recent years, at the WHO level, it has been noted that from year to year the number of young people drinking increases, the amount of alcohol they consume and the frequency of its use increase, and the age at which young people start drinking is decreasing [4,22].

According to the above literature review by N.A. Nikiforova (1999), the anxiety about this is not accidental: • in Holland, 56% of adolescents aged 11 to 19 drink alcohol; • In France, 31% of boys and 15% of girls have a habit of drinking alcohol; • in Germany 45% of adolescents are threatened with alcoholism; • in Russia, by the age of 10, 12.1% of boys and 1.7% of girls are familiar with the taste of alcohol, and by the age of 17 - 47.2 and 31.4%, respectively; • 75% of boys and more than 50% of girls from vocational schools have experienced a state of intoxication, and 50% of boys and 20% of girls - repeatedly [15].

L.A. Atramentova (1991) investigated hereditary burden, the structure of parental marriages and marital selectivity of women suffering from alcoholism and drug addiction. The similarity of hereditary burden of both alcoholics and drug addicts was noted. The degree of exogamy of the parents does not affect the daughters' resistance to alcoholism and drug addiction [1].

According to the same study, in sick women with hereditary burdens, the likelihood of forming a married couple concordant for alcoholism and drug addiction is higher than in non-burdened women.

Research carried out by A.G. Soloviev et al. (1993) on 8 groups of 80 animals of white conventional male rats indicate that the change in a number of hematological parameters depends not only on the duration, but also on the nature of the alcohol-toxic effect. Under conditions of alcoholic toxicity, the number of erythrocytes and the total hemoglobin content is markedly reduced, which causes less and less erythrocytes in blood. The authors revealed a significant tension of erythropoiesis and erythrodieresis, which is, in general, an insufficient compensatory response to deep hypoxia. They expressed the opinion that the changes in the blood system caused by abovementioned process can, undoubtedly, be considered as one of the factors involved in the pathogenesis of narcological diseases [18].

G.M. Entin et al. (1999,2004) presents the following data on the prevalence of alcohol consumption among the population in recent years: alcohol consumption, which reached a maximum of 14.9 liters per capita in 1984, after the well-known measures to combat drunkenness and alcoholism (May 1985) decreased to 10 -11 liters per year (1986-88), but later, after the collapse of the Soviet Union, it began to grow again, reaching 15 liters in 1993-94 and stopped there for the next 10 years - until 2004 [22, 23].

The authors also wrote about the so-called "drug pyramid", although, according to the researchers themselves it is more like the Eiffel Tower in Paris. Nowadays in Russia there are 1.5-2 million drug users with the same situation, 90% of whom are heroin users [21, 23].

Similar judgments are expressed by other researchers regarding the high prevalence of drug addiction - a risk factor for CND in general and IDS in particular.

PC. Mustafetova (1996) showed that koknar drug addiction arises on the basis of cultural and ethnic tradition among the indigenous people of South Kazakhstan. The course of Koknara drug addiction is extremely slow and its development continues for decades. In women, the growth of tolerance to koknar is more than three times faster than in men. The author proposes the course of koknar addiction in 3 stages: the first stage is characterized by the manifestation of psychological and physical attraction; the second stage is characterized by the emergence of compulsive attraction and withdrawal symptoms, the third stage is characterized by the progressive desire of patients to indulge in the world of drug addiction dreams, the appearance of verbiage, vagrancy, loss of social ties with relatives and friends [14].

Consequently, in connection with the increase in recent years throughout the world, including in our

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republic, the frequency, firstly, of risk factors and, secondly, alcoholism and drug addiction, effective methods of epidemiological diagnosis and prevention of chronic diseases among the drug addicted population.

Researchers have confirmed that the health of citizens of Russia and the CIS has been deteriorating over the past 10-15 years [2]. This is explained by a number of circumstances: the collapse of the USSR, the unsettled and transparent borders between neighboring states, the economic and political reorganization of society, the redistribution of forms of ownership, the curtailment of state production, which led to unemployment, impoverishment, homelessness, an increase in crime and lack of spirituality. As a consequence, the threatening spread of RFs and bad habits such as alcoholism, tobacco smoking, prostitution and drug addiction and their abuse [11,12,13]. The very existence of a healthy lifestyle system, especially among drug addicted populations, is under threat, and therefore, in many regions, special programs have been created in the areas of prevention of chronic diseases and risk factors for their development, abuse of psychoactive substances and countering illegal drug trafficking.

Among many works in this direction, one can be singled out, which in 2003 for the first time in Russia on the basis of a representative sample in 13 constituent entities of the Southern Federal District (SFD) carried out a personal survey in order to assess the level of knowledge about their health, the harmful effects of drugs on the body. 7,800 people were tested - students and working youth aged 11 to 20 years.

The monitoring results show that at the age of 11, every second knows about the narcotic properties of cannabis or drugs of the opium group, at the age of 13 - already two-thirds, and by the age of 16 the share of children who are aware of drugs is close to 80%. Along with the consumption of narcotic drugs, the scale of the introduction of children and young people to the consumption of psychoactive substances such as tobacco products and alcoholic beverages is rapidly growing. In the age group 11-20 years, at least 50% smoke and consume alcohol, girls are increasingly involved in this category of young people. Consequently, it is necessary to regularly monitor the problems of substance abuse both in educational institutions and among the population with the systematization of educational and preventive work [2].

The extensive foreign literature devoted to the clinical, population and prophylactic aspects of drug addiction among the population, in general, is consistent with the above data and conclusions.

III. Results and Discussion

In the prevention of the spread of RF among the population, and especially of such bad habits as smoking, the use of alcoholic beverages and substances that cause substance abuse, the awareness of the population about their harmful effects on health is of great, albeit ambiguous, importance.

E.S. Skvortsova et al (2000) conducted an anonymous questionnaire survey of 4022 adolescents aged 15-17, high school students in Moscow secondary schools. The awareness of adolescents in relation to the harmful effects of psychoactive substances was revealed and the influence of such awareness on the behavior of adolescents was determined.

The results of the authors' study showed that along with the growing awareness of adolescents about the harmful effects of psychoactive substances, adolescents' use of these substances is spreading. At the same time, data have been obtained indicating the positive impact of awareness. It was noted that children and adolescents practically do not have reliable sources of information that take into account their age characteristics and use mainly “their own observations”, “their own experience” or receive information from adults [17].

In many works on the prevention of chronic diseases with the background of drug addiction, mainly social aspects were studied, and only relatively recently began to study medical and biological factors or personality traits, including the epidemiological and biochemical mechanisms of the development of non-infectious pathologies in drug addicts.

N.I. Ivanets, M.A. Vinnikova (1999,2001), characterizing the premorbid personality traits of heroin addicts, note that heightened excitability, a tendency to emotional outbursts with aggression, and protest reactions are detected already at the age of 4-6 years. Some of the patients had residual effects of organic diseases of the brain, most often suffered in childhood. Dysphoria with affective viscosity and stuckness was typical for them. A significant group consisted of people with hysterical character traits, with a predominance of asthenic and anxiously suspicious traits [11,12].

The risk groups for CND / IDS and the use of psychoactive substances include minors with a burdened heredity in terms of narcological and somatic diseases; with pronounced characterological, behavioral changes as a result of early or acquired organic cerebral pathology, with congenital or developing psychopathological traits due to defects in upbringing, pedagogically neglected and from socially disadvantaged families.

Brun E.I. et al. (2002), Bespalov A.Yu. et al. (1998), Davydkin I. (2009), Dumanyan D.T. et al. (2009) and many other researchers from non-CIS countries show that it is important to know not only the age of drug exposure, but also the environment (social, family, ecological and epidemiological), which provokes them and affects the formation of maladjustment. Preventive care should be addressed to a specific person [3,6,8,].

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In the process of the development of somatic pathologies, including IDS against the background of anesthesia, regardless of the type of drug used and premorbid characteristics, a "drug addict" personality is formed with its characteristic behavior and leveling of individual characteristics and the formation of a kind of drug addiction defect with increasing affective disorders in the form of dysphoric or anilitic abulic depressions, affective lability, the predominance of hysterically excitable forms of response, psychosocial dysfunction in the form of a gradual fading of interests, various anomalies of the emotional-volitional sphere, disorders of the sphere of drives, including sexual disinhibition [21,37,38].

According to many authors, hormonal levels are of great importance in the development and clinical manifestation of CND / IDS against the background of anesthesia [26].

The fact is that long-term abuse of surfactants causes secondary endocrine insufficiency, including adrenal insufficiency. Stimuli that cause clinical signs of sympathetic reactions, increased urinary excretion of catecholamines and plasma norepinephrine and epinephrine levels, include cold, pain, fear, exercise and anticipation of physical activity, hypoglycemia, hypoxia, hypercapnia, bleeding, fluid loss, drugs (anesthetic drugs) [39].

Psychosomatic manifestations of testosterone deficiency in men are characterized by poor mood, decreased physical and intellectual activity, irritability, and increased fatigue. Deficiency of estrogen in women is accompanied by memory impairment, decreased ability to concentrate, increased emotionality and severe depression. These conditions are risk factors, firstly, predisposition to the drug and, secondly, to the formation and aggravation of the course of CND, IDS and IDA in the drug addicted population [20].

The clinical picture of IDS among population with drug addiction is characterized with a significant severity of sideropenic (40.6%), anemic (30.6%) and "minor" symptoms from the nervous, cardiovascular and digestive systems (28.8%) leading to a decrease in working capacity and an increase in the tendency to faint. The greatest increase in the clinical manifestations of IDS occurs after 40 years.

Thus, the studies carried out in the population of drug addicts revealed a number of features of the formation of epidemiological and clinical conditions in relation to the development of CND and IDS, the assessment of the degree of which can be used in the population and clinical characteristics of the general severity of the patient's condition, as well as in the planning and implementation of preventive programs among drug addicted population with these pathologies.

Conflict of Interests and Contribution of Authors

The authors declare the absence of obvious and potential conflicts of interest related to the publication of this article and report on the contribution of each author.

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