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**MEDICAL-PSYCHOLOGICAL, ENVIRONMENTAL AND SOCIO-ECONOMIC
CONSEQUENCES OF THE CHORNOBYL DISASTER**

**based on the materials of the scientific and practical online conference
with international participation April 25, 2025**

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**MEDICINE AND PHARMACY: CURRENT ISSUES OF GENERAL MEDICAL
AND PHARMACEUTICAL PRACTICE IN WAR TIMES**

**based on the materials of the scientific and practical online conference
with international participation on May 14, 2025**

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researchers of the Institute, in particular Yu.I. Kundiiev and L.O. Dobrovolskyi had been actively involved in its work.

For Ukraine, scientific and technical support for the nuclear sector remains a top priority. Even today, it's unclear when the effects of Chornobyl – premature deaths and serious illnesses caused by radiation – will subside. Thus, research into Chornobyl's consequences remains vital. There's an increasing focus on longitudinal epidemiological studies as part of social and hygienic health monitoring in the exclusion zone and surrounding contaminated areas. All strategic research directions initiated under the Chornobyl agenda must continue to evolve.

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HEALTH STATUS AND RISK OF DEVELOPMENT OF LIVER LESIONS AMONG THE RESIDENTS OF UKRAINE

A new classification and nomenclature of fatty liver disease was adopted at the International Hepatology Congress of the European Association for the Study of the Liver (EASL), which was held in Vienna on June 21-24, 2023. Leading hepatologists proposed replacing the term “non-alcoholic fatty liver disease” with the term “steatotic liver disease associated with metabolic dysfunction.” This diagnosis is made in patients with confirmed hepatic steatosis and one of the five cardiometabolic risk factors. The concept of “nonalcoholic steatohepatitis” (NASH) has been changed to the concept of “steatohepatitis associated with metabolic dysfunction”. In recent years, the number of patients with liver damage has doubled. Treatment of patients remains ineffective, often symptomatic, and side effects may occur. Comorbidity makes it difficult to achieve treatment effectiveness (the need for desensitizing, antibacterial, prokinetics, antispasmodics increases)¹.

¹ Mitochondrial dysfunction: mechanisms and advances in therapy. Zong Y, Li H, Liao P, Chen L, Pan Y, Zheng Y, Zhang C, Liu D, Zheng M, Gao J. Signal Transduct Target Ther. 2024 May 15;9(1):124. doi: 10.1038/s41392-024-01839-8.

The report of prof. Helena Cortez-Pinto (Lisbos University, Portugal, President UEG (2022-2023)) indicated the increase in the frequency of liver damage in the world, at the 9th Congress of Gastroenterologists of Ukraine (25-27.09.2024) the increase in the frequency of liver damage in its residents was confirmed. In Ukraine, Industry Standards and Clinical Guidelines for the Treatment of Alcoholic Hepatitis (2019), Autoimmune Hepatitis (2019), Viral Hepatitis B (2021), Viral Hepatitis C (2021), Non-Alcoholic Steatohepatitis (2019) were adopted. Epidemiology: the prevalence of steatotic liver disease (SLD) in the world is 30 %, in Europe – 25 %. Non-invasive diagnostic tests are gradually replacing liver biopsy. The emphasis is on the metabolic association of SHP. Pathogenetic links of the cardiometabolic consensus MASLD: insulin resistance, increased glucose production (over 100 mg/dL, H1B over 5.7 %), increased cytokine levels (systemic inflammation), increased triglycerides (increased above 2.3 mmol/l when the normal triglyceride level in an adult is less than 1.7 mmol/l), decreased high-density lipoproteins (HDL norm – above 1-1.2 mmol/l, in women the HDL level is not less than 1.42 mmol/l, in men the HDL level is 1.68 mmol/l). The content of high-density lipoproteins (HDL) in plasma, which have anti-atherogenic properties, is of great importance for atherogenesis. Their content is inversely proportional to the rate of development of early atherosclerosis. The lower the plasma concentration of HDL (in particular, less than 1-1.2 mmol/l), the higher the risk of developing atherosclerosis. Normally, the level of LDL is up to 3 mmol/l (from 2.2 to 4.8 mmol/l) and 1.8 mmol in people from the risk group, an increase in Apo-B (with a norm for women of 0.6-1.41 g/l; men of 0.66-1.44 g/l), diastolic dysfunction, myocardial and mitochondrial dysfunction². Mitochondrial dysfunction, including mtDNA, miRNAs located in mitochondria, and associated proteins, play an important role and may be potential therapeutic agents to enhance mitochondrial function in immunometabolic diseases and tissue damage.

Current strategies for the treatment of mitochondrial dysfunction in terms of dietary supplements and targeted therapy are reviewed, as well as the clinical translational situation of related pharmacological agents. Attention is

² The National Consensus statement on the management of adult patients with non-alcoholic fatty liver disease and main comorbidities] *Ter Arkh.* 2022 Feb 15;94(2):216-253. doi: 10.26442/00403660.2022.02.201363.

paid to anti-obesity drugs in SHP. A chronic liver condition that encompasses a spectrum of pathologies from simple steatosis to predominantly focal necroinflammation with or without centrilobular fibrosis is defined as nonalcoholic steatohepatitis (NASH), which can ultimately lead to cirrhosis and its associated complications. Obesity, metabolic syndrome, and type 2 diabetes mellitus aggravate liver changes. The presence of hypothyroidism, hypopituitarism, hypogonadism, sleep apnea, and polycystic ovary syndrome in a patient provoke the development or are consequences of obesity, therefore they are risk factors for the development of NASH.

Metabolic alcoholic liver disease is a new category of steatosis, which is defined in patients with steatotic liver disease associated with metabolic dysfunction and consumption of excessive amounts of alcoholic beverages per week: 140 g/week. for women and 210 g/week. for men.

Cryptogenic steatohepatitis has occurs in patients with an unknown etiology or without any metabolic risk factors.

Autoimmune hepatitis is a chronic liver disease of unknown etiology, characterized by continuous necrosis of liver tissue, accompanied by the replacement of normal liver tissue with connective tissue (fibrosis) with the subsequent development of cirrhosis and progressive liver failure.

Clinical manifestations of steatohepatitis: fatigue, decreased physical activity, nosebleeds (dropsy), bleeding gums; jaundice, manifestations of endogenous intoxication ("shadows" under the eyes), heaviness in the abdomen and its enlargement; nausea and vomiting; decreased or complete loss of appetite; the appearance of spider veins, ecchymoses in the absence of injury, weight loss; itching of the skin; discoloration of feces; darkening of urine; enlargement of the liver and spleen; pain in the right hypochondrium; decreased skin elasticity and dryness; symptoms of dyspepsia – belching, heaviness in the abdomen, periodic mild nausea, frequent constipation and diarrhea; dilated subcutaneous vessels on the chest, abdomen; jellyfish head – dilated veins on the skin of the abdomen; bleeding from the esophagus, intestines, stomach.

All these nosologies also occur in the liquidators of the Chernobyl nuclear power plant (ChNPP) accident. In addition, age changes have been added (the average age of such patients today is within 57-62 years), these patients have a number of concomitant diseases, such as arterial hypertension, diabetes mel-

litus, obesity, alcohol abuse, cardio-metabolic risks, which provoke the occurrence and progression of liver lesions³.

The selection of drugs is based on a complex action: influence through humoral, cellular, neuro-reflex mechanisms, activation of monocytes and macrophages in all organs and systems. Conclusions. To inhibit the progression of SHP, one should focus on normalizing weight, eliminating fatty hepatosis (liver steatosis) and biliary sludge, normalizing stool and intestinal microbiota, improving enterohepatic circulation, avoiding excessive polypharmacy. The FDA approved the first drug to eliminate liver fibrosis (resmethiron, which is a partial activator of the thyroid hormone receptor; their activation in the liver reduces fat accumulation, 2024). The prospects for innovation and potential applications of mitochondrial transplantation as a progressive and promising treatment method are considered.

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3 Epidemiological studies of mortality due to non-tumor diseases in the adult population evacuated from the Chernobyl exclusion zone. The impact of low doses of ionizing radiation / O.Ya. Pirogova, V.O. Buzunov, V.A. Tsuprykov, T.E. Domashevskaya // Environment and Health. – 2011. – No. 1. – P. 23-29; Scientometric analysis of scientific communication tools on the problems of medical consequences of the Chernobyl accident / N.O. Artamonova, A.E. Gorban, G.V. Kulinich [et al.] // Ukrainian Radiological Journal. – 2014. – No. 3. – P. 48-52.

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РОЛЬ І МІСЦЕ ПСИХОТЕРАПІЇ ТА ПСИХОПРОФІЛАКТИКИ В ЗАБЕЗПЕЧЕННІ НАДІЙНОСТІ І БЕЗПЕКИ ОПЕРАТИВНОГО ПЕСОНАЛУ АТОМНИХ ЕЛЕКТРОСТАНЦІЙ НА ПРИКЛАДІ ЧОРНОБИЛЬСЬКОЇ КАТАСТРОФИ

Минуть століття, а подія, що відбулася 26 квітня 1986 року о першій годині 23 хвилині 40 секунд буде не лише предметом гострих дискусій, а й об'єктом дослідження науковців, медиків, психологів, соціологів, економістів, політиків тощо.

У зв'язку з аваріями на атомних станціях Три-Майл-Айленд (Пенсільванія, США), Фукусіма Данчі (Японія) та інші постала проблема забезпечення надійності та безпеки роботи оперативного персоналу, кваліфіковані дії якого можуть не допустити до 70 % виникнення нештатних ситуацій на атомних електростанціях¹.

Вирішити це питання неможливо без підвищення якості відбору оперативного персоналу атомних електростанцій та розробленої, апробованої і впровадженої нами у 1987 р. системи психогієни, психопрофілактики і реабілітації безпосередньо в медико-санітарних частинах цих підприємств, профільних санаторіях, профілакторіях та реабілітаційних центрів при АЕС.

¹ Кутько І.І., Табачніков С.І., Долганов А.І., Панченко О.А. Медико-психологічне забезпечення безпеки і надійності роботи персоналу атомних електростанцій. Київ, 1994. – 227 с.; Панченко О.А., Кутько І.І., Моляко В.А., Майоров О.Ю., Табачніков С.І. та інші. Чорнобиль: уроки ... і після. Київ, 2016. – 405 с.