Theoretical and Practical Aspects of the Use of Innovative Quantum (Bioquantum) Technologies in Chronic Pancreatitis

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Abstract. The article provides an interdisciplinary review of the potential of quantum approaches in the complex treatment of chronic pancreatitis. It considers modern ideas about the pathogenesis of the disease, considering the role of neuroendocrine regulation, chronic inflammation, and disorders of intercellular interaction. It identifies the theoretical foundations of quantum biology and bioinformation processes that can affect the physiological mechanisms of the body. It analyzes the results of clinical observations and scientific publications on the use of bioquantum and bioresonance therapy in functional disorders of the gastrointestinal tract. Particular attention is paid to the advantages of this approach: non-invasiveness, accessibility, compatibility with other pathological conditions, impact on the psychosomatic sphere, safety, and the possibility of personalized treatment. The feasibility of integrating bioquantum technologies into multidisciplinary treatment strategies based on the principles of evidence-based medicine, bioinformatics, and an individual approach is argued. Promising directions for further research are identified and the need for legal regulation in the field of quantum medicine is emphasized.

Keywords: chronic pancreatitis, innovations, quantum medicine, bioquantum medicine, bioquantum therapy, bioresonance therapy, neuroendocrine system, personalized treatment, multidisciplinary approach, complementary medicine.

Introduction. Chronic pancreatitis is a progressive inflammatory disease of the pancreas, which leads to irreversible morphological changes, a decrease in the functional activity of the pancreas and a significant deterioration in the quality of life of patients [1-4].

According to the World Gastroenterological Organization, the incidence of chronic pancreatitis is increasing worldwide, especially among people of working age, which determines the social and economic significance of this pathology [5]. Conventional medical care for chronic pancreatitis is focused on eliminating pain, correcting exocrine and endocrine insufficiency, preventing complications, and ensuring stable remission [4, 6, 7].

However, these approaches do not always provide a long-term therapeutic effect and do not directly affect the mechanisms of chronic inflammation and structural and functional restructuring of the pancreas. Often, patients are forced to take symptomatic drugs for years, and the side effects of drug therapy worsen the clinical picture of the disease [8].

In this regard, there is growing interest in innovative complementary and integrative medical approaches, in quantum (bioquantum) medicine. This direction includes several methods based on the influence of cold and closed plasma, electromagnetic fields, photons, vibrations, resonant frequencies and bioinformation signals on the human body to harmonize physiological processes and restore cellular homeostasis [9-11].

Despite the limited evidence base, research teams of scientific institutions and laboratories are studying aspects of the quantum (bioquantum) approach, noting its potential as an auxiliary tool in restoring impaired functions of organs and systems, including in chronic inflammatory diseases of the digestive system.

Thus, studying the possibilities of applying innovative technologies of bioquantum medicine in the treatment of chronic pancreatitis is a promising direction that requires an interdisciplinary approach, critical analysis of available data and development of new models of integrative therapy.

The purpose of the study was to analyze the theoretical background and clinical approaches to the use of quantum medicine as an innovative method in the treatment of chronic pancreatitis, as

well as to assess its potential for influencing the pathogenetic mechanisms of the disease, improving the quality of life of patients, and integrating with conventional therapy.

Materials and methods. This work uses the method of systematic review and critical analysis of scientific publications covering modern approaches to the diagnosis and treatment of chronic pancreatitis, as well as materials on quantum medicine and bioinformatics in medical practice. Sources of information included articles from international peer-reviewed journals, monographs, guidelines, and clinical recommendations published during 2000–2025.

The literature search was carried out in the following databases: PubMed, Scopus, Web of Science, Google Scholar, as well as on the official websites of international gastroenterological societies and associations, in particular the American Pancreatic Association, World Gastroenterology Organization, and European Society for Quantum Medicine.

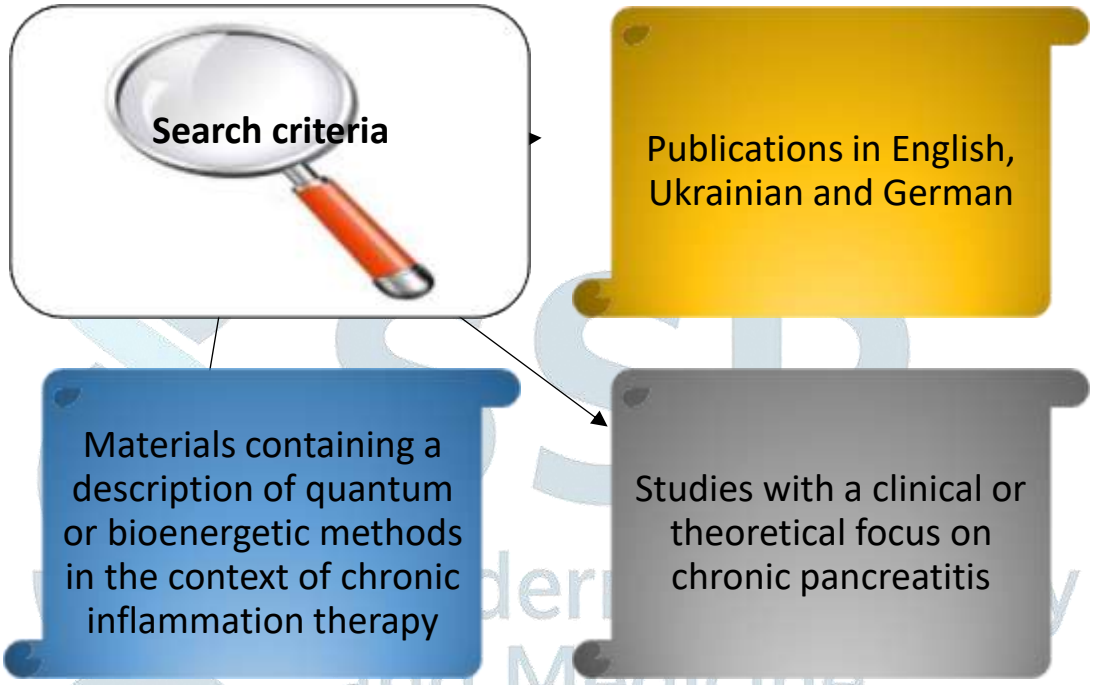

Fig. 1. Criteria for searching scientific literature.

The inclusion criteria were:

- publications in English, Ukrainian and German;
- materials containing a description of quantum or bioenergetic methods in the context of chronic inflammation therapy;
- studies with a clinical or theoretical focus on chronic pancreatitis.

Over 100 sources were analyzed, of which the 30 most relevant in terms of content, quality of presentation, scientific value and relevance were included in the final review. The analysis was carried out considering the evidentiary weight, description of the methodology, as well as the results and conclusions made by the authors.

The research of the article is a fragment of research works of Private Scientific Institution "Scientific and Research University of Medical and Pharmaceutical Law" and EUROPEAN WELLNESS BIOMEDICAL GROUP on the topics "Multimodal innovative research of digital medical technologies by using approaches and methods of evidence-based medicine, quantum medicine, bioquantum medicine, bioquantum therapy, artificial intelligence, bioresonance, proton-plasma, frequency wave, electronic-pulse, bioregenerative, information mathematical methods of diagnostics, therapy, evidence-based pharmacy, pharmacotherapy of health disorders according to ICD-11 (oncological, allergic, immunological, infectious, addictive, cardiological, comorbid, covid, post-covid, long-covid, etc.) based on medical and pharmaceutical law" (state registration number 0125U002484, implementation period 2025-2033).

Results and discussion. Chronic pancreatitis remains an urgent problem of gastroenterology, accompanied by persistent changes in the structure and function of the pancreas. Despite the availability of diagnostic and treatment standards, a significant proportion of patients continue to suffer from pain, digestive disorders, decreased quality of life, and frequent complications.

Today, there are several medical technologies that belong to the field of quantum medicine: electrotherapy, electron therapy, laser therapy, proton therapy, plasma therapy, quantum therapy, frequency therapy, frequency wave therapy, electric field therapy, magnetic field therapy, bioresonance therapy, pulsed electromagnetic field therapy, electro-capacitive cancer therapy, oncologic electromagnetic therapy, tumor treating fields, radio frequency therapy, ultrahigh frequency therapy. The use of quantum technologies and equipment reduces treatment times and improves the quality of life of patients with various nosologies.

Earlier, the author of the article proposed to expand the scientific terminology of quantum medicine with the addition of quantum medicine terms "bioquantum medicine", "bioquantum therapy" to introduce quantum medical and quantum pharmaceutical technologies. The term “bioquantum medicine” was first included in scientific circulation in 2024, in the article “Titarenko I., Shapovalov V. The Latest Quantum and Medical, Quantum and Pharmaceutical Technologies in Countering the Criminal and Legal, Forensic and Pharmaceutical Risks of Circulation of Falsified Drugs. SSP Modern Law and Practice. 2024. Vol.4. No.2. P.1-25. URL: https://doi.org/10.53933/sspmlp.v4i2.149”.

In this context, there is growing interest in new areas that can complement classical approaches, in the technologies of bioquantum medicine – a field based on the idea of information and energy influence on biological systems (Fig. 2).

To better understand the potential role of such approaches in the treatment of chronic pancreatitis, it is necessary to first analyze the clinical and pathophysiological aspects of this disease.

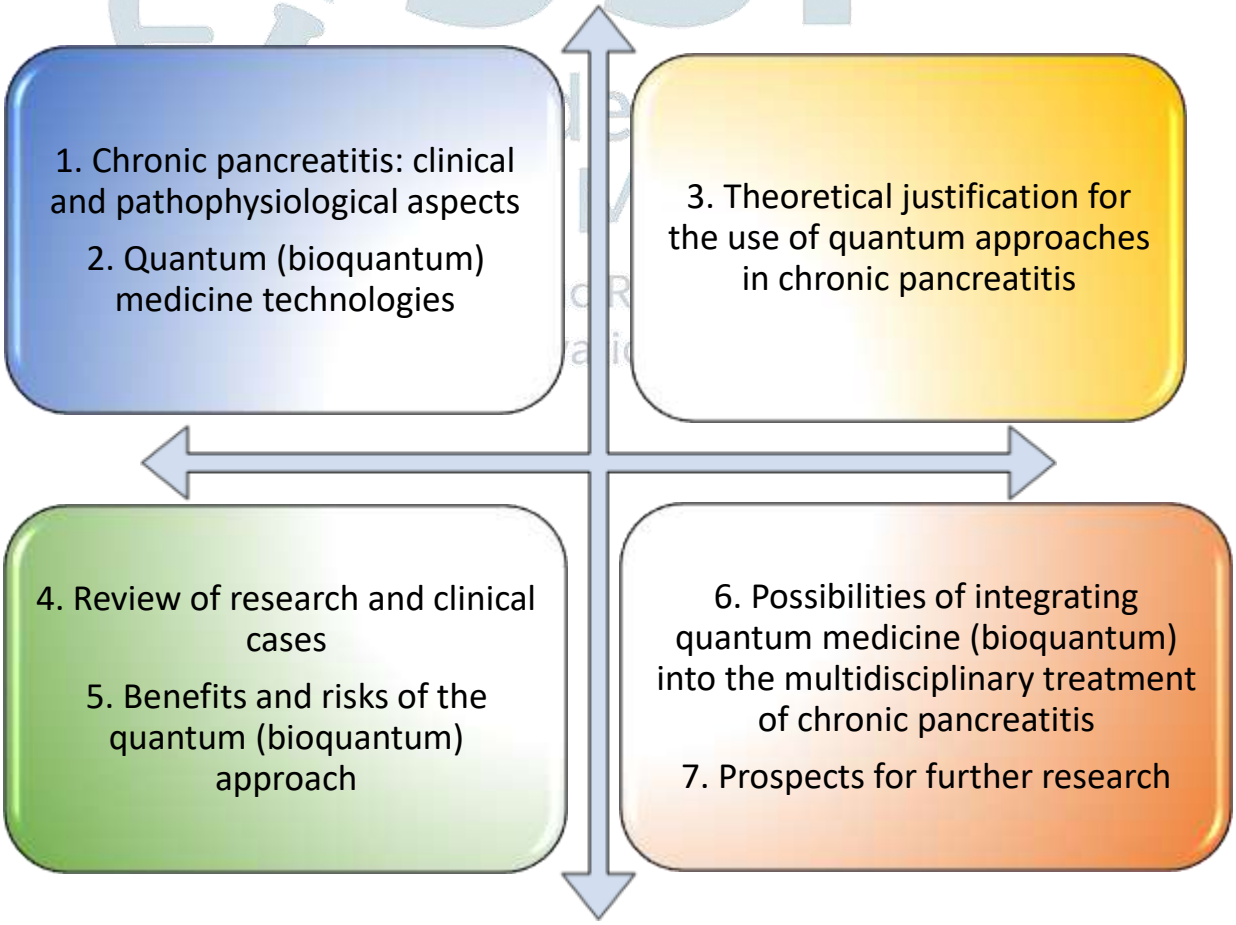

Fig. 2. Research directions.

1. Chronic pancreatitis: clinical and pathophysiological aspects.

Chronic pancreatitis is a long-term progressive inflammation of the pancreas, accompanied by its irreversible fibrous remodeling, loss of exocrine and endocrine function, as well as constant or recurrent pain in the epigastric region. The disease has a complex pathogenesis, caused by a combination of genetic, metabolic, toxic, infectious, immune and psychoemotional factors [9, 11, 12].

Among the etiological factors, chronic alcohol intoxication, cholelithiasis, hyperlipidemia, autoimmune disorders, as well as hereditary forms associated with mutations in the PRSS1, SPINK1 and CFTR genes [13].

The main pathogenetic mechanism is the activation of pancreatic enzyme activity within the gland, which triggers autolysis, chronic inflammation, and fibrosis. In this case, microcirculation is disrupted, tissue ischemia develops, and oxidative stress increases. As a result of prolonged inflammation, acinar cells are lost, enzyme secretion decreases, and digestion and absorption of nutrients are impaired [14].

The clinical manifestations of chronic pancreatitis depend on the stage of the disease, the degree of functional disorders and the presence of complications. The most characteristic are prolonged or recurrent pain in the upper abdomen, dyspeptic disorders, steatorrhea, weight loss, and the development of type 2 diabetes mellitus. During periods of exacerbation, symptoms of acute inflammation are observed, while in the remission phase, maldigestion and malabsorption predominate.

The diagnosis of chronic pancreatitis is based on clinical, laboratory and instrumental data. The gold standard remains the visualization of structural changes in the gland using magnetic resonance cholangiopancreatography, endoscopic ultrasonography, or computed tomography. Tests for pancreatic insufficiency (e.g., fecal elastase-1, secretin tests) are used to assess the functional state. Therapeutic tactics include analgesia, diet therapy, enzyme replacement therapy, glycemic control in the development of diabetes, and interventional or surgical interventions in the event of complications [15].

Complications of chronic pancreatitis include the development of pseudocysts, bile duct stenosis, portal vein thrombosis, chronic abdominal pain, and secondary diabetes mellitus. They significantly affect the ability to work and social adaptation of patients. The quality of life of patients is significantly reduced due to constant pain, the need for a strict diet, dependence on drug therapy, and the gradual loss of digestive system functions [16].

Thus, chronic pancreatitis remains a complex multifactorial disease with a high medical and social burden, requiring a comprehensive approach to treatment, considering the individual needs of patients and the search for new therapeutic solutions.

2. Quantum (bioquantum) medicine technologies.

Quantum (bioquantum) medicine is a modern direction of conventional medicine, based on ideas about the quantum-informational nature of living systems. This approach considers the body not only as a biochemical structure, but as a complex dynamic system that functions according to the laws of quantum physics, including electromagnetic interaction, wave processes and oscillatory collapses [17].

Conventional medicine is known as generally accepted, widespread or Western medicine. It is a system of medical practice based on evidence-based scientific methods and clinical research. It covers a wide range of diagnostic, therapeutic, pharmacotherapeutic, preventive approaches. Among the main characteristics of conventional medicine, the scientific approach, evidence, specialization, use of innovative evidence-based technologies, prevention, pharmacotherapy, surgery are highlighted.

The concept of "quantum medicine" (or more precisely, "bioquantum medicine") encompasses the application of biophysical principles for the diagnosis, prevention, and treatment of diseases, through the influence on the bioelectric, energy, and information structures of the body. This concept assumes that physiological and pathological processes in the human body are accompanied by changes in electromagnetic characteristics that can be measured and corrected.

One of the concepts of quantum medicine is the phenomenon of biological resonance, better known as "bioresonance" - the ability of cells, tissues, or organs to respond sensitively to electromagnetic oscillations of a certain frequency. A healthy body generates certain clearly visible and distinct harmonic frequencies, while destructive frequency patterns arise in pathology. The influence on these oscillations through resonant stimulation allows, according to this concept and more than 30 years of effective practice, to normalize the functioning of biological systems [18, 19].

Another fundamental concept is the biofield, which is considered as a holistic electromagnetic field of the body (electromagnetic framework), which connects and coordinates all physiological processes. It is believed that the biofield is a carrier of information about the functional state of organs and systems, and can be an object for diagnostics and therapeutic influence [20].

Methods of quantum (bioquantum) medicine cover a wide range of both diagnostic and therapeutic technologies. Among them, the most common are (Fig. 3).

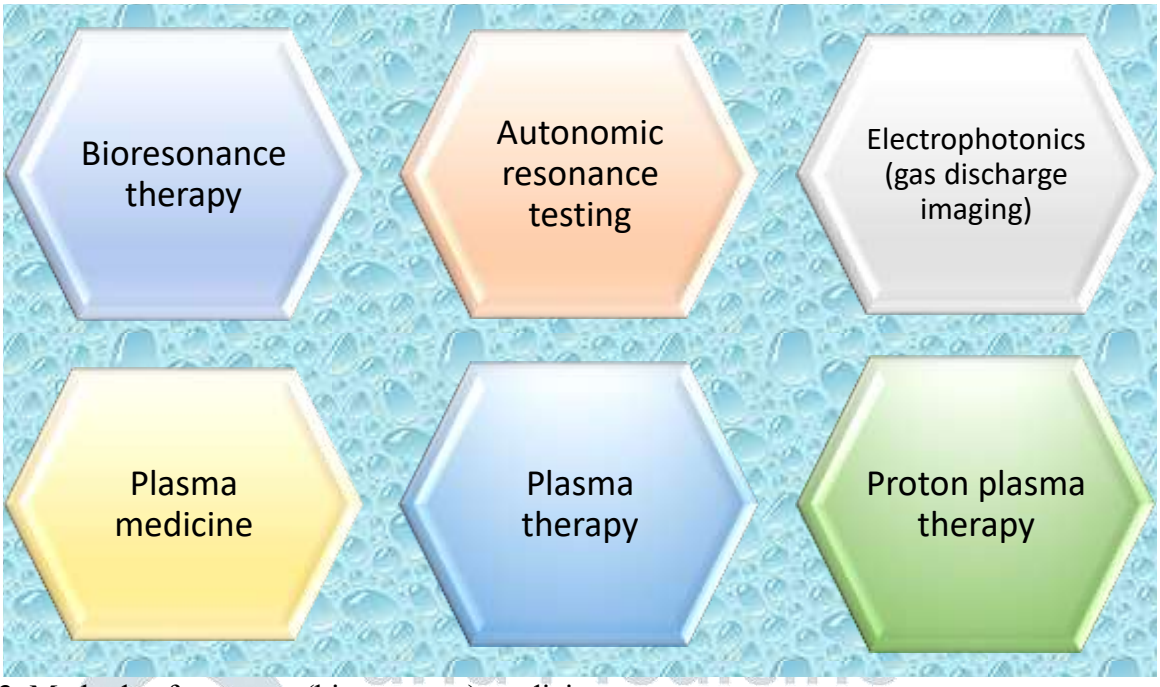

Fig. 3. Methods of quantum (bioquantum) medicine.

Bioresonance therapy: a method that uses electromagnetic waves generated by the body itself or by external sources to correct the functional state by inverting pathological frequencies. The author of the term "bioresonance" is the German researcher and developer Hans Bruggeman, co-author of Dr. Francois Morrel, creator of the standard bioresonance device BICOM Optima, which is, in a way, a standard device in the field of bioresonance technologies.

Vegetative resonance testing (VRT): a diagnostic method that consists in measuring the electrical conductivity of biologically active points using frequency resonance to detect disorders in the functioning of organs, the presence of toxic factors or allergens. Authors of the method: Voll, Schimmel [21].

Electrophotonics (gas-discharge imaging): a method that records the photon radiation of the body in response to the influence of weak electrical pulses. The resulting images allow visualization of the body's energy status and detection of areas of functional insufficiency [22].

Plasma medicine

Plasma medicine is a promising area of modern science that combines physics, biomedicine, and clinical practice. Thanks to the use of cold atmospheric plasma, significant progress is being made in solving current medical challenges, including the fight against multidrug-resistant pathogens, the treatment of chronic wounds, dermatological and oncological diseases. Effectiveness of cold atmospheric plasma in disinfection and sterilization: cold plasma demonstrates a high ability to destroy a wide range of microorganisms, including antibiotic-resistant bacteria and biofilms. Its use

can significantly reduce the risk of nosocomial infections. Despite significant achievements, plasma medicine requires further research to improve technologies, standardize methods and ensure wide access to this technology. Integration of cold atmospheric plasma with pharmacotherapy into medical and pharmaceutical, clinical practice can radically change approaches to treatment and prevention, contributing to increasing the efficiency of medical care. Plasma medicine opens new horizons for modern science and medicine, offering effective and safe solutions for the treatment of diseases that may have previously been considered incurable (https://iopscience.iop.org/article/10.1088/1367-2630/14/11/113042).

Proton plasma therapy

The principle of proton plasma therapy combines two principles known as: "plasma therapy" and "proton therapy".

Earlier, the author of the article proposed the use of innovative equipment in medicine: the proton plasma device "ProtonPlasmaTherapy", which has the appropriate certification as a medical physiotherapy 2A. The device generates cold atmospheric plasma directly from the surrounding air, through microdischarges that occur due to the creation of a low-current electromagnetic field at a frequency of 2 to 16 kHz. The resulting cold atmospheric plasma provides a plasma flow with high bactericidal properties, without the risk of damaging healthy human tissue.

In the zone of cold plasma formation between the emitter probe, which has a positive potential, and the patient's body, which has a negative potential, a flow of free positively charged particles (protons) also arises. It is known that damaged cells, as well as cells susceptible to oncological processes, have an altered, impaired mitochondrial function and an impaired bioelectric, bioenergetic, electrical and conductive balance, as well as a violation of the ATP synthesis function. Thus, malignant cells and their clusters, having a "negative total electrostatic charge", are, in a way, a "second potential" for attracting the proton flow.

Due to the potential difference, the proton flow penetrates the tissue to the required depth, and, being neutral and harmless, colliding with large molecules, is converted into neutrons and electrons, giving up part of its energy. The released electrons compensate for the lack of electrons in the outer orbits of free radicals, thus performing the function of "antioxidants".

There is a rapid and effective antioxidant effect on the cell in a physiotherapeutic way, which leads to rapid and effective elimination of mitochondrial dysfunctions and rehabilitation of cells susceptible to early stages of malignancy.

Proton plasma therapy can be successfully and, with high efficiency, used to treat chronic pancreatitis, especially given the high analgesic properties of this therapy. Its use is indicated in the postoperative period.

3. Theoretical justification for the use of quantum approaches in chronic pancreatitis

The use of quantum approaches in the context of chronic pancreatitis is based on modern ideas about cellular communication, electromagnetic interaction, regulatory properties of the biofield and the ability of biological systems to self-regulate. These approaches go beyond the purely biochemical explanation of pathological processes, focusing on more subtle supramolecular energy and information mechanisms that ensure the integrity and functionality of the organism.

Cellular and intercellular communication, traditionally studied within the framework of molecular biology, is increasingly being considered also from the point of view of energy, bioelectric and biophotonic regulation. Cells exchange not only molecular signals (cytokines, hormones, mediators), but also electromagnetic and biophotonic oscillations, which play a role in the synchronization of their functional activity. Biophotonics studies demonstrate that cells can emit ultra-low-energy light in the ultraviolet and visible spectrum, which is involved in the transmission of information at the intercellular level [24].

Chronic inflammation, including chronic pancreatitis, in the context of quantum biology (bioquantum medicine) is interpreted as a state of prolonged energy and bioelectric imbalance. Persistent inflammation is accompanied by changes in the electromagnetic field of affected tissues, which probably supports a vicious circle of pathological activation of the immune system.

Accordingly, normalization of the energy and bioelectric state of the organ through resonant influence can contribute to the interruption of this process and the induction of regenerative mechanisms [25].

In addition, bioquantum therapeutic methods can potentially affect key regulatory systems - neuroendocrine and immune. Studies show that bioresonance exposure can modulate the activity of the autonomic nervous system, normalize the release of stress-associated hormones (cortisol, adrenaline), and reduce the level of pro-inflammatory cytokines in patients with chronic somatic diseases [26].

Considering the complex pathogenesis of chronic pancreatitis, which includes both inflammatory and neurohumoral disorders, the integration of quantum approaches may have the potential for complex bioinformatic correction. Maintaining a holistic electromagnetic field, restoring harmonious intercellular bioelectric interaction, and reducing the energy load on weakened pancreatic structures may contribute to improving the clinical course of the disease, reducing pain and dyspeptic symptoms, and improving the quality of life of patients.

4. Review of studies and clinical cases

The number of publications devoted to the direct application of quantum (bioquantum) technologies in chronic pancreatitis is currently limited, but there is a growing base of clinical observations and experimental works indicating the potential positive effects of bioresonance and other technologies of bioquantum therapy in chronic inflammatory and functional disorders of the digestive system.

A study conducted in Germany studied the effectiveness of autonomic resonance testing and subsequent bioresonance correction in patients with irritable bowel syndrome, which often accompanies chronic pancreatitis. A positive effect of therapy on the severity of abdominal pain, flatulence and defecation disorders was found, which indicates the potential ability of quantum methods to regulate motility and reduce inflammation [27].

In another case report, published in the Swiss Journal of Complementary Medicine, a patient with post-pancreatic pain syndrome received a course of bioresonance therapy using an individually tailored resonance spectrum. After 8 weeks of therapy, a significant decrease in pain intensity, stabilization of appetite, and improvement in sleep were observed without changing the main medication regimen [28].

Another study conducted in Ukraine included 46 patients with chronic gastroenterological pathologies, including chronic pancreatitis in remission. After a course of bioresonance therapy lasting 10 sessions, statistically significant improvements were noted in the indicators of emotional stability, sleep, appetite, and a decrease in subjective symptoms of dyspepsia [29].

Despite the positive results, most of the available studies have limitations associated with small samples, lack of double-blind control, and difficulties in standardizing quantum procedures. Many methods, particularly bioresonance, have an individualized approach to the selection of frequencies and parameters of exposure, which complicates the repeatability of studies. There is also a lack of studies using objective biomarkers of inflammation or the functional state of the pancreas as criteria for effectiveness. Nevertheless, the totality of available data suggests that the inclusion of quantum technologies in the complex therapy of chronic pancreatitis may have additional clinical value, especially in terms of reducing pain, normalizing vegetative tone, and improving the psycho-emotional state of patients.

5. Advantages and risks of the quantum (bioquantum) approach

Quantum medicine, particularly bioresonance therapy, is positioned as one of the purely invasive and least safe methods of therapeutic intervention. Its key advantage is the absence of pharmacological burden on the body, which is especially relevant for patients with chronic diseases who are already receiving polypragmatic drug therapy. According to clinical observations, bioresonance therapy does not cause any side effects, and sessions are well tolerated by patients of all ages [30].

Another significant advantage of quantum (bioquantum) methods is their positive psychoemotional effect. In many cases, there is an improvement in mood, a decrease in anxiety, stabilization of sleep and an increase in the general feeling of harmony, which indirectly contributes

to the normalization of autonomic functions. This is especially important in chronic pancreatitis, where the psychosomatic component plays a significant role in maintaining pain and dyspeptic symptoms [31].

However, despite its potential benefits, the bioquantum approach is accompanied by several serious challenges. First, given the innovative nature of the methodology, the lack of international standardization of methods, equipment, and treatment protocols, which makes it difficult to conduct multicenter randomized trials and compare results. The technical characteristics of the devices are often not open to scientific analysis, and the methods are not transparent to independent verification [32].

In the context of ethics, it is also important to ensure that patients receive complete and reliable information about the research status of the method, potential limitations, and the lack of generally accepted standards. Patient informed consent to quantum (bioquantum) therapy should be conscious and free from commercial pressure, exaggeration of the capabilities of the method or pseudoscientific promises.

The advantages, risks, and limitations of bioquantum approaches are presented in Fig. 4.

Advantages	Risks and limitations
Non-invasiveness and lack of pharmacological load	Lack of international standardization of methods and equipment
Good tolerability and safety for patients of all ages	Limited evidence base and lack of multicenter clinical studies
Positive psychoemotional effect (reduction of anxiety, normalization of sleep, improvement of mood)	Unverified concepts (quantum field, information structures) raise questions in the scientific community
Possibility of use in concomitant serious diseases	Technical opacity of some devices and methodological closure
Potential for personalized therapy	Risk of pseudoscientific interpretation, insufficient patient awareness
Correction of psychosomatic components in chronic pancreatitis	The need for ethical control and legal regulation

Fig. 4. Advantages and risks of the quantum (bioquantum) approach.

Thus, quantum approaches have promising properties in terms of safety and positive impact on the general condition of patients with chronic pancreatitis, but their use should be accompanied by compliance with clinical rules, clinical support, and responsibility for informing the patient.

6. Possibilities of integrating quantum (bioquantum) medicine into the multidisciplinary treatment of chronic pancreatitis

In the current conditions of medical development, the concept of an integrative approach is gaining increasing popularity, which involves a combination of evidence-based and complementary medicine methods in accordance with the ICD-11. In the case of chronic pancreatitis, such a combination may be particularly appropriate given the complexity of pathogenesis, chronic course, and multifactorial lesions [33-37].

The combined use of classical and quantum (bioquantum) methods makes it possible to influence different levels of regulation: from somatic to energetic. For example, pharmacotherapy can control exocrine insufficiency and inflammation, while bioresonance therapy can affect the body's adaptive mechanisms, the autonomic nervous system, and energy homeostasis. This approach involves individual selection of therapeutic agents depending on the clinical condition, psychoemotional background, and bioinformatics profile of the patient [38].

The development of personalized medicine and bioinformatics opens new horizons for the application of quantum technologies. Analysis of bioelectric parameters, heart rate variability, electromagnetic frame characteristics, and electrophoton emission can complement laboratory and

instrumental diagnostic data, contributing to more accurate profiling of the patient's condition and prediction of the effectiveness of therapy [39].

The integration of quantum medicine into the treatment of chronic pancreatitis requires the establishment of interdisciplinary cooperation. Gastroenterologists, functional diagnosticians, complementary medicine doctors, psychologists, nutritionists, and bioinformatics specialists can jointly develop optimal patient management strategies. In this way, not only comprehensive therapy is provided, but also the level of patient-centeredness is increased, which is one of the key principles of modern medical practice [40].

The integration of quantum (bioquantum) medicine into the multidisciplinary treatment of chronic pancreatitis opens new opportunities for combining classical pharmacological methods with non-invasive bioinformatics technologies. This approach allows the following (Fig. 5).

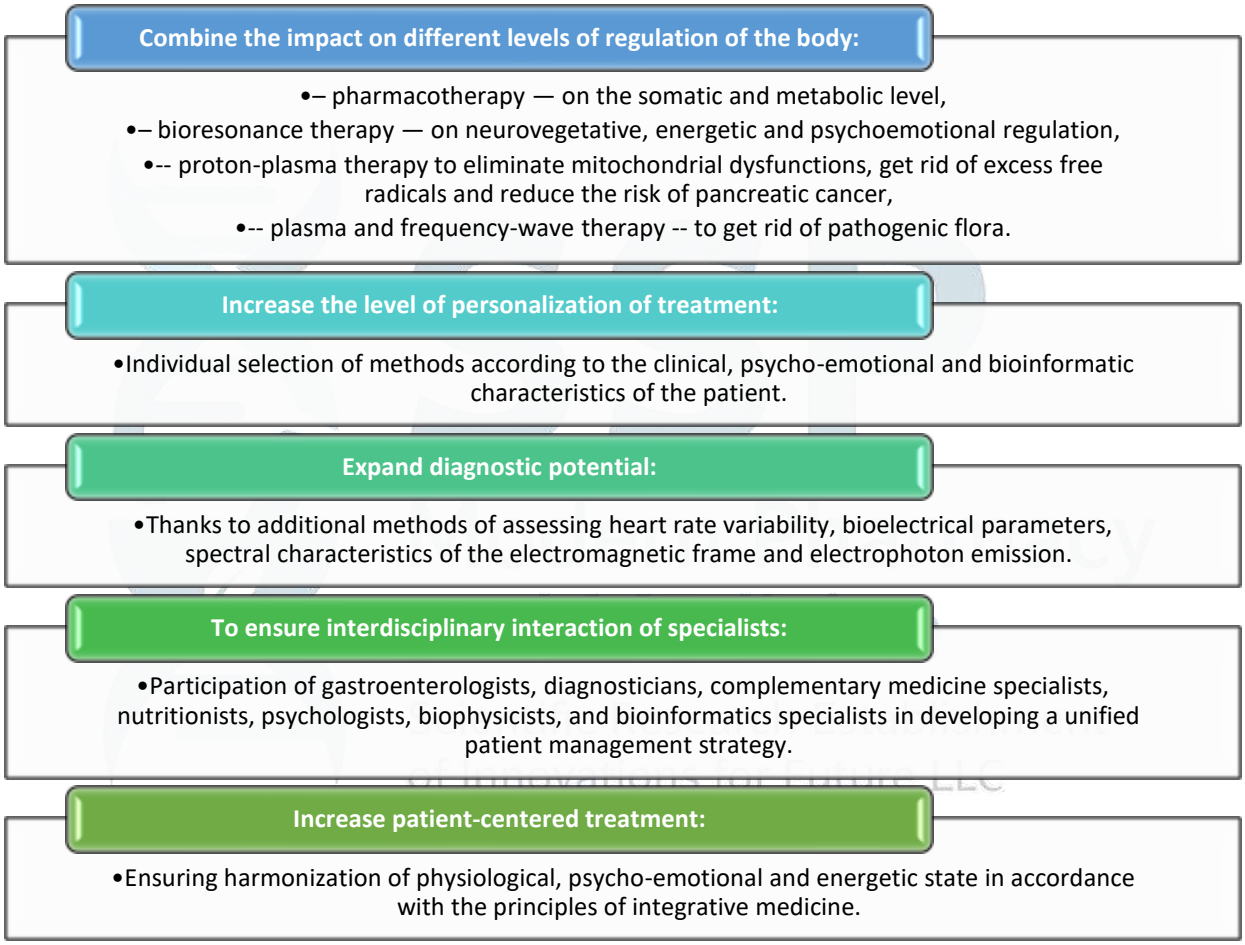

Fig. 5. Possibilities of integrating quantum medicine (bioquantum) into the multidisciplinary treatment of chronic pancreatitis.

Such a comprehensive approach allows not only to reduce the clinical manifestations of the disease, but also to activate the body's internal resources to maintain a stable state in chronic pancreatitis.

Thus, quantum medicine can act as an important component of a multidisciplinary approach to the treatment of chronic pancreatitis, complementing classical therapy and expanding the possibilities of personalized medical intervention.

7. Prospects for further research

Despite the growing interest in the use of quantum (bioquantum) approaches in medicine, including in chronic pancreatitis, currently available data are mainly limited to clinical observations, descriptions of individual cases and theoretical models. In this regard, there is an urgent need to organize large-scale, methodologically sound clinical trials that would allow objectively assessing the effectiveness and safety of such interventions. Conducting randomized controlled trials involving multicenter platforms is an important step for the integration of quantum technologies into the practice of gastroenterology [41].

In addition to clinical studies, fundamental research in the field of quantum biology is relevant. The mechanisms of intercellular communication, the role of biophotons, quantum coherent processes in the regulation of inflammation and tissue regeneration remain poorly understood, but are potentially critically important for understanding the pathogenesis of chronic pancreatitis. Modern technologies, in particular spectroscopy, visualization of weak photon emissions and modeling of quantum processes, open new horizons for the study of bioinformatic interactions in living tissue [42].

At the same time, the growing interest in the use of quantum (bioquantum) technologies in medicine requires the creation of an appropriate regulatory and ethical framework. Currently, many methods of quantum (bioquantum) therapy do not have official status in most countries, are not subject to proper control and are often used without standardization. This makes it impossible to develop this promising field quickly.

In this regard, it is necessary to develop clearer criteria for admission to clinical use, including requirements for device certification, training of specialists and ethical assessment of new interventions. Current organizational and legal research to prevent errors, risks in the system of legal relations "doctor-patient-pharmacist-lawyer" [43-52].

Thus, the prospects for further research in the field of application of quantum (bioquantum) medicine in chronic pancreatitis cover both clinical and fundamental aspects, and require the creation of a holistic regulatory and ethical system to ensure safe and scientifically sound implementation of innovations.

Conclusions. Chronic pancreatitis requires the search for new therapeutic solutions that would not only relieve symptoms, but also contribute to a deep restorative effect on the body. In this context, quantum (bioquantum) medicine is considered a promising direction that combines approaches to energy, neuroendocrine and psychoemotional regulation. The data presented in the article indicate the potential of using bioquantum medicine methods as a component of a multidisciplinary approach to the treatment of chronic inflammatory conditions, including chronic pancreatitis.

However, the integration of bioquantum technologies into clinical practice should be accompanied by a critical assessment of effectiveness, high standards of evidence and proper scientific validity. Personalized use of such methods is possible only under the condition of clear protocols, interdisciplinary interaction of specialists and legal certainty within medical practice.

Further scientific research should be aimed at experimentally substantiating the mechanisms of action, studying the long-term efficacy and safety of bioquantum approaches, as well as creating a regulatory framework for their ethical and responsible use. Only a comprehensive and balanced approach will ensure the potential place of bioquantum medicine as an addition to the standards of treatment of chronic pancreatitis.

Conflict of interest. The author confirm that they are the authors of this work and approve it for publication. The authors also certify that the obtained data and research were conducted in compliance with the requirements of moral and ethical principles based on medical and pharmaceutical law, respectively, and in the absence of any relationships that could be interpreted as conflict and/or potential conflict of interest.

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Data availability statement. The datasets analyzed during the current study are available from the corresponding author on reasonable request.

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