# Autonomic dysfunction in chronic pancreatitis and associated diseases of the digestive system

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**Key words:** pancreas, chronic pancreatitis, autonomic disorders, homeostasis, stress

**Introduction.** Autonomic dysfunction (AD) and other claim psychosomatic disorders (PSD) is the cause of complaints in 36 - 71% of patients go to the doctor due to violations of the digestive system, including up to 25% suffer from chronic pancreatitis (CP) [23].

**Aim:** based on the study of the literature to evaluate the role of autonomic dysfunction and other psychosomatic disorders in the occurrence and progression of pancreatitis and gastrointestinal combined quiche for ovyh states.

**The main part.** The problem of the relationship between "mental" and "physical" for a long time at dniyeyu is key in medical science. The functioning of the digestivetract is closely linked with the mental state of man. Even the doctors of ancient India believed that negative emotions - are the first steps to beginning any disease. Greek scientists consider the person as a whole and provide important human character and temperament. C Hippocrates as you catch these views: "It is more important to know who is sick than to know what a sick man." In a healthy person there is a psycho-vegetative organization behind the formation of various forms of human adaptation. The "psychological" effect on the vegetative background indicators and their changes under the influence of significant stimuli (mental activity, stress) [2, 11]. The structure of the autonomic nervous system (ANS) distinguish segmental and suprasegmental divisions. The first is the autonomic centers barrel brain and spinal cord, there are four different groups:mezentsefalichnyy (parasympathetic); Arni tubers (parasympathetic); torakolyumbalnyy (cute) - core Bokov and x and Rog C v L sh- sh; sacred and also (parasympathetic). InISHCH th autonomic and city center vvazhayet be g and potalamus, cat ri is also includes an kernel formation of nerve cells Ova we do not possess the feature count secretory thiyeyu (OJ nerve by-lane idnykovi ityny cells) and core composed with neurosecretory cells and x ityn, cat ri sti forging prod and zynh a factor. The physiological role of the hypothalamus is to maintain the optimum level of metabolism, energy balance regulation of temperature, activity of internal organs, including the volume in the cardiovascular system, endocrine c ekretsiyi and regulation of sleep and vigor. G and potalamus of nahodyt be pi d b u thick adjustable glides in th correspondent and chief Ku MH and at thesame time even for a irkovyy sailed on ext ishni body and through agricultural and potalamus. Cl ityny g and potalamusa ykonuyut in the feature uw receptor s who perceivechanges in the homeostasis and the ability of transformer uvaty humoral

and changes ext ishnoho environment nerve ovyy process. None of idnyy's floated in grams andpotalamusa regulation provides the feature and is mainly due to the SPA and hormone and g and pof and on.

Run and howling believed that at sympatych and parasympatych on the nerve system functions Peninsula ion the principle th weights, that is antahon and Stam. In fact,strengthening Focusing ionuvannya one department to normal and x and f and h and oloh them conditions leads to a compensatory second example uzhennya and other deviceslove that returns the feature fore s system to normal homeostatych these indicators. Violation was in ivnovahy ynykaye WA with predominantly in float or wrong, and Mr. andshoyi systems. Functions and fore and Mr erevaha one department may be Uchi are bound with as with enhanced tone ovyh nerve center in them and peryferych formations andthis system, and and with a low tone of another. Homeostasis in number and volume in a vegetative and without her it means there is absolutely sustainability and lk t and sestablishes the extent to which the call yvannya possible without disruption of the AI.

Pathology is a violation of psycho-vegetative processes of interaction, leading to loss of adaptive nature of the reactions to changing conditions of the external and internal environments. To determine the effects of the proposed concept of "psycho-vegetative syndrome", ie the state lahodzhenyh roses mental and physical (first turn vegetative) funtsiy. It's like u is not a disease, but "potential disease" [14]. Psychophysiological reatsiyi be completed normalization funtsiy affected, but fundamentally also possible the other way when the duration of the stressful situation combined with some genetic predisposition leads to f ormuvannya AKP.

Proved that prolonged activation of VNS on the background of chronic stress leads to disruption of acid and disorganization of motor function of the gastrointestinal tractdue to violation of regulations synthesis of neurohormones. Affective disorders of anxiety-depressive nature due to their combination of vegetative and neuro-endocrine reactions lead to violations of vegetative-visceral gastrointestinal regulation, while reducing intratseptyvnoyi perception threshold and increasing the subjective feeling.

WA reflected in the changes of autonomic reactivity and vegetative support of that ECS yeyu th queue causes metabolic disorders (hypercholesterolemia, dysproteinemia, hyper- and hypoglycaemia), changes of blood coagulation and fibrinolysis system in. As a result, WD disturbed innervation of internal organs, which leads to the appearance of dyskinesia W CT, August tsevoho violation of rhythm and conduction, vascular and dystoni. If the damage and VNS stimulation structures in the district iznyh bodies having stereotyped morphological changes (vasospasm, I dystrophies) associated with the release of neurotransmitters (norepinephrine, epinephrine, serotonin), adrenal hormones for ori, bi and ktyvnyh

deep geological materials. These changes humoral ECS yeyu queues th enhance and autonomic imbalance.

Stress - a common defensive reaction to any strong stimulus, a kind of adaptive syndrome. Protective relative nature of stress, it causes damage to several organs and systems, including the gastric mucosa and duodenal ulcers, heart, kidney, liver, pancreas, etc. of varying degrees of severity. It is known that the formation of gastroduodenal ulcers that often start forming CP, pervazhno associated with mucosal ischaemia and as a result of the reparative process in prynichennyam with the predominance of aggressive factors (hydrochloric acid, pepsin, bile acids, lizoletsytyna). As the stress factors may make different forces istyu th and lasting emotional or physical trauma, mental or physical exhaustion, surgery, sepsis, burns, severe physical illness and more. In the pathogenesis of stress ulcers involves not only a violation of microcirculation, increased secretory and motor functions of the stomach, but also increase the synthesis court ykosteroyidiv, neurohumoral of infringement on with humiliation and resistance g stroduodenalnoyi mucosa[17].

Histologically reveal spasm small arteries, easing the walls of blood vessels, epithelial desquamation, intussusception arteries duty osculant spa and atonic fragments inmicrovessels, hemorrhagic infiltration of tissues paraultseroznyh [7].

Against the background of the difficult situation in the country, which for many is a stressful, stressful cases of pancreatitis, of which only previously read in the literature.First necessity but recalled that the first phase of external secretion of the pancreas (SW) is a brain phase. It is characterized by difficult reflex mechanism is implemented throughthe central nervous system through the conditioned and unconditioned reflexes. In the brain phase of pancreatic secretion affects the emotional state of pain and other factors [9].

According to prof. GF Korotko pathogenesis of stress pancreatitis in large measures th th e depends on you in stress and stressor. The main mechanism is insufficient tissue perfusion hemo software via the shift system and local circulation Authority (vasoconstriction, intussusception arterioles, abuse mikrotsy rkulyatsiyi, thrombogenesis, hemorahichinfiltration in tissues software), it ishemizatsiyi [7]. Under these conditions, the ability disturbed barrier wall duct cancer, their structure and activation of protease inhibition antyproteolitychnoyi activity increases "uhy lyannya" peryprotokovyy hydrolases in space and lymph circulation. Important factors intraduktalnoho increasing pressure leads da violation of the secret transport, act Aisne viscosity ekzosekret zoom in and obstacles to its outflow duct system software dylatovanyh duktalnyh valves. The final reason is universal in the pathogenesis of acute pancreatitis. Also important to shift the mechanisms of multilevel self funtsiy with stress, including the functions P C, which is characteristic of the effect of extreme factors [9].

Virtually no such pathological conditions in the development and current which does not play an important role autonomic dysfunction. In some cases, they are a significant factor in the pathogenesis, in other - there are second in response to damage to various body systems [20]. Based on these provisions, the following formula suggested mental and physical relationship, mental stressors (accident, chronic social problems, important life events) - anxiety - emotional stress - a violation of neuro-humoral regulation -DPL [13].

Widespread chronic digestive diseases in the structure of morbidity internal organs causes high relevance of the problem. The involvement of segmental andsuprasegmental vegetative structures of the pathological process complicates the disease, and therefore vehetotropna correction is essential to improve the treatment of chronic pathology hastroenteralnoyi general and particular CP [5, 10, 15, 21]. In diseases of the gastrointestinal tract secondary psychopathological manifestations are absent only in 10.3% of patients. Some fragmentary asthenia violations observed in 22.1% of patients and in 67.3% - more complex psychopathological conditions [6, 18, 19]. Clinical features defined gastroenterological symptoms, susceptibility to many years torpid course with a tendency to involvement in the pathological process of the entire digestive system.

In the etiology and pathogenesis AKP play the role of psychogenic and biological aspects important to consider when assessing the clinical condition of the patient and the medical complex formation. Among the factors s n s syhohenn Mr syhotravmy (official, family, intimate) associated with the development of the disease, poor living conditions in childhood; OS oblyvosti personality.

Characteristics of persons likely to develop AKP: a) sense ytyvnist; b) the alarming distrust; c) emotional lability; d) show off; e) subdepresyvni features; e) stiffness. Key personality traits are formed in childhood as an alloy hereditary constitutional features and traits caused by factors external environment and second, the conditions of life and upbringing.

The main criteria for diagnosis AKP: traumatic situation; structural features of the individual; availability of mental conflict; Clinical manifestations of the disease.

Biological aspects of pathogenesis AKP Mr. astupni:

a) padkovyy s history. In 35- 50% of patients with AKP reject certain mental or psychological illnesses observed in relatives;

b) f unktsionalno anatomical features of the brain of patients with AKP. The most significant structures of the brain that are involved in the pathogenesis of neurotic symptoms are: 1) the structure limbiko-reticular complex; 2) blue stain; 3) core suture; 4) the hypothalamus; 5) septum; 6) parahipokampalna and hippocampus area; 7) the tonsils; 8) Explain twist; 9) frontal and temporal cortex;

c) soblyvosti functioning of the SPA. VNS is realizing the ultimate link peripheral somatic manifestations of emotional reactions. It remains Aktual noyu J. theory. Lange of primary - excessive vegetative reactions and anxiety - phobic syndromes that occur secondarily.

It is well known that anxiety is associated with three main transmitters: serotonin, norepinephrine and gamma-aminobutyric acid (GABA). The experiments showed that anxiety mechanisms play an important role noradrenalinerhichnyh violations of the brain. This concept proves inhibitors reverse the seizure of norepinephrine (lerivon et al.) In the treatment of anxiety. GABA is the most abundant inhibitory neurotransmitter in the CNS. And snuet assumption that when there is an anomaly AKP GABA-benzodiazepine receptor or lack of endogenous ligands that causes pathological anxiety as rice personality and ease of provocation. This is confirmed by performance anxiety agonists in the treatment of benzodiazepine receptor - benzodiazepine tranquilizers and especially vysokopotentsiyovanyh benzodiazepines (clonazepam, alprozolam). Confirmation pathogenetic role of serotonin and serotonin metabolites is the effectiveness of antidepressants that specifically affect serotonin metabolism in the brain, called selek tive inhibitors (Zoloft, Feva markets, tsypraleks) or stimulants reverse the seizure of serotonin (koaksilom).

Pr op and tetni and pioneering research that was conducted in St. Petersburg mental institute named Annie V. Spondylitis experts led by IP Lapin since the late 60s, showed the important role of the major metabolite of serotonin - neyrokinureniniv - in the development of stress, anxiety, depression, alcoholism, epilepsy [12]. It turned out that depression can cause defects in the functioning of the brain serotoninergic system. Serotonin levels in the central nervous system is involved in the regulation of food intake, appetite, sleep, memory, body temperature, mood, behavior, motivation and aggressive reaction function of the cardiovascular and endocrine systems. RIM K, it has a peripheral effect, which is manifested stimulating peristalsis and smooth muscle contraction, increased platelet aggregation. The main effect of antidepressants is to increase the content of serotonin in the brain structures. Thus, in the 90's., New antidepressants, which are aimed at selective serotonin receptors.

The system is the adaptation of the scheme: the hypothalamus - anterior pituitary fate - adrenal cortex that enhances excretion and secretion of glucocorticoids. This results in increased concentrations due neyrokinureniniv hormone production by the liver enzyme tryptofanpirolazy and brain - indolamin-2,3-dioksyhenazy. C t th yeyu queues,neyrokinureniny (L -kinurenin 3-oksykinurenin, quinoline acid, nicotinamide, etc.) Via the adaptation again increase the activity of these two enzymes. Thus, a "vicious" circle, which supports increased level neyrokinureniniv long time. Increased levels neyrokinureniniv is quite long, which distinguishes it from abuse indoalkilaminiv levels that are relatively short-lived (minutes, hours)

and circulate mainly in the initial phase of stress. Raising same level neyrokinureniniv remains for many hours and days, mainly determines the effects of stress, its effects on terminovani example, neurotic, depressive, psychological, and neurodegenerative disorders in early ontogenesis and distant.

L -kinurenin is the precursor of all other neyrokinureniniv because its amount depends on the level of all derivatives of L -kinurenina that play a leading role in the genesis of depression, alcoholism, epilepsy, allergic diseases, psychosomatic disorders and a range of cancer [12]. Thus, it is clear expediency prolonged prescribing of antidepressants selective focus on re tseptory serotonin (Zoloft, Feb and markets), which can in some cases up to six months or more.

However, despite the relatively safety of selective SSRI, difficulty in selecting doses, unwanted side effects (including nausea, ting disrupt sleep and sexual dysfunction) [3,22], the presence of resistance to them in many patients limits their opportunities in therapeutic practice. In this regard, justified interest pharmacologists and clinicians to search for and implementation in the practice of alternative antidepressants are not inferior to effectively istyu said group means, but surpass their criteria for safety and in some casesthe breadth th therapeutic use. Noteworthy efforts of new antidepressants with plant material, ie medicines.

The most common option is stomachalgia AKP. The pain may be varied in nature. There is the compulsory ones dream relationship between emotional stress, fatigue andthe appearance of gastric symptoms (feeling of fullness and severity of epigastric pain, etc.), The lack of connection between the complaints and the nature of power, violation diet [1, 6, 23].

About yavamy neurotic symptoms may be nausea and vomiting. The options psychogenic vomiting, different mechanisms for its development. Vegetative components such vomiting (pale skin, perspiration, salivation, etc.) are usually absent or mild [4, 23, 24].

Some patients may occur difficulty and pain when swallowing (dysphagia). Patients experiencing difficulty in swallowing at different levels of the esophagus, and liquid foods patients eat harder than hard. The basis of this symptom is ezofahospazm, which is often the first time after a severe psychological shock meals and then repeated almost every food intake. Spasms of the esophagus are not related to meals, are pain or pressure behind the breastbone, which sometimes requires differential diagnosis of angina. In ezofahospazmi is expressed affective disorders, anxiety and constant fear of eating. In some patients formed cha zhkyy antenna-hypochondriac syndrome and kantserofobiya [6 , 23] .

A classic neurotic syndrome is globus histericus, which often occurs in younger women. In the throat feels a foreign body (breast), pressure acts I ntsi neck that usually weakens during meals. It is believed that this is due to neurotic disorders of sensory and motor function of the esophagus [6 , 23].

Frequent and clinically neurotic are various bowel disorders described in the literature as a syndrome of irritable bowel (IBS) [18 , 23] . Neurogenic intestinal pain, different in character, of course amplified against the backdrop of tension and emotional stress. Sometimes there are intestinal crisis, which revealed acute abdominal pain, flatulence, loud rumbling, urge to defecate and gas discharge [18 , 23] . Patients with C P K fix attention on the frequency, quantity and quality of bowel emptying, which contributes cha zhkoho hypochondriacal syndrome. Compelling urge to defecate in these patients often occur at the most inconvenient situation that affects the psychological state of patients. Cha p is diarrhea occurs at night or in the morning, leading to sleep disorders and increased fatigue.

Patients with gastrointestinal disorders very existence of the disease affects health, mood, activity of patients and appearance in their symptoms of anxiety. One of the most frequent clinical symptoms in patients with gastrointestinal disorders is depression. T radytsiyno believed that depression manifests steady decrease mood inhibition. Additional symptoms in diagnosing depression, lowering self-esteem and feelings of self-confidence; self-incrimination without cause or unexplained guilt; gloomy and pessimistic vision of the future; thoughts of sm ert or suicide or suicide cial behavior; sleep disorders of any type; change in appetite (decrease or increase) with corresponding changes in body weight . I must stress that depression can say, as long as the symptoms lasting at least two weeks.

Somatic depression delve in gastroenterology practice in many diseases. For example, there are a number of scientific studies that confirm the presence of depression reactions in 90 % of patients with CP [6 , 23 , 24] . With HP in ynykayut depression reaction light and moderate cha zhkosti. Dynamic observation of the patients shows that depression reaction under mild decrease to improved physical condition of patients and almost do not need special treatment appointment. When depression reactions of moderate slowdown set intended therapeutic effect of healing tion, maintaining low next swarm even in stabilizing physical state [6 , 23 , 24]. However, signs of depression and autonomic disorders often quite independent nature and not always associated with the same disease. But in any case, depression exacerbates symptoms, the disease worsens and complicates its treatment. This results in increased frequency of requests for medical help, a negative impact on the clinical picture, greatly reduces the effect of therapy, increases the number of additional studies, resulting in a so-called "history of colon syndrome."

At the same time, we know that in addition to behavioral mechanisms that explain the effect, for example, depression in physical illness, matter and metabolic disorders. It is now established that depressed patients are prokoahulyatsiyni trends diabetopodibni reactions, increased factors of nonspecific inflammation [25 , 26 , 27] . There are reports that about 80 % of patients suffering from depression, exhibit low amylase software [24] .

According to a study conducted in clinical gastroenterology laboratory Vinnitsa National Medical University Annie MI Pirogov , in the group of patients amilaznu failure was found compared with patients without failure amilaznoyi significantly lower scores ($p < 0.05$) assessment activity ($4,3 \pm 0,1$ to $4,7 \pm 0,1$) and significantly higher scores ( $p < 0.05$) assessment of autonomic disorders and anxiety (respectively $30,8 \pm 0,8$; $8,1 \pm 0,2$ vs $27,1 \pm 1,3$; $6,9 \pm 0,5$) ; The possibility of exposure amilazno her failure on the activity ($\chi^2 = 7,2$) and vegetative disorders ($\chi^2 = 6,68$); amilaznoyi degree of failure does not depend on the age of patients ( $r = -0.05$); amilaznoyi degree of failure does not affect the level of ill health assessment ( $r = 0,2$), activity ( $r = 0,07$), mood ( $r = 0,2$), vegetative disorders ( $r = 0,05$), anxiety symptoms ( $r = 0.08$) and depression ( $r = 0,09$). That is, if amilaznoyi failure, regardless of the extent necessary to carry out an appropriate correction [16] .

Most publications are data on prevalence vagotonia in patients with gastroenterological I , but according to research Ukrainian Research Institute of Medical Rehabilitation and Health Resort Odessa. Study the initial state of autonomic tone (according to the clinical trial) demonstrated significant predominance sympathicotonia in patients with chronic diseases of the digestive system In particular, HP . Most scientists attribute data discrepancy that in most studies conducted analysis of autonomic manifestations without chronic gastroenterological process and almost all publications are not considered primary or secondary character autonomic abnormalities. However, the reported prevalence sympathicotonia in patients with chronic diseases of the digestive system may be relevant ' related chronic of nature underlying pathological condition. In their view, the development of chronic pathological process in the digestive system utilized VNS compensatory mechanisms, ie the initial prevalence of significant vagotonia offset by increased activity of the sympathetic division of the ANS. So, in the end there comes a point of tension compensatory mechanisms when adaptive regulation system works with congestion, which is already sympathetic predominance of sympathetic link SPA. The fact that the prevalence is manifested at different length basic pathological process e ozvolyaye suggest that compensatory mechanisms regulating autonomic tone depleted quickly (already in the first year of chronic diseases of the digestive system). It may also indicate the fact that even in patients with disease duration of 1 year from the original eytoniyeyu functional load (klinoortostachna test) showed exhaustion of compensatory mechanisms regulating autonomic tone (manifested asympatykotonichna reactivity) [8] .

**Conclusion.** P ytannya state of autonomic nervous system in diseases of the gastrointestinal tract, particularly when HP is not you scientists th that causes the need for further study.

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The article analyzes the literature on the role of autonomic dysfunction and other psychosomatic disorders in causing and progression of pancreatitis and associated gastrointestinal states. The influence of deviations of autonomic nervous system balance regulation on the emergence of hemodynamic, morphological, metabolic, energy disorders in aforementioned pathological conditions is studied. Pathogenic aspects of treatment of autonomic disorders are considered.