Pathogenic progress of gastrointestinal diseases, liver diseases and cardiorespiratory system with a depression formation on the basis of screening assessment of blood circulation and metabolism under the thermometry of active points.

(AMP Noninvasive Hemogram Analyzer)

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A large number of existing ideas on homeostasis derangements and their importance in pathogenesis of different forms of intestinal, liver and cardio respiratory system diseases in relation with the structure of psychogenic depressions and the role of psycho-traumatic factors in their genesis as well as of neurophysiologic and biochemical mechanisms of forming the combination with complexity of modern classification scales creates preconditions for seeking the new solutions in diagnostics and treatment.

Introduction.

In modern medicine etymology of many diseases has been explored. At the same time, pathogenesis of somatogenic depressions with such diseases is not determined. The condition that 15-40% of diseases cause complications and accompany by psychological and depressive disorders sets hypothesize about particular influence of phenotypic factor on genotype during development. However, the evidences of phenotypic factors determination and their influence to inheritable mechanisms of regulation are unconvincing and confirmed only in 5% (1, 25, 26, 32). Yet, the researches in energy metabolism of carbohydrates, lipids and proteins (regarding integrated receptors and serum inhibitors' concentration of serine proteinase (α1-antitrypsin)), amino acids and biogenetic amines, in particular, serotonin and acetylcholine, on the base of genetic control of thermoregulation with integrated heat shock proteins-chaperones on the level of hypothalamic-nephric mechanism of regulation, are very promising. (1, 2, 3, 4, 5, 6, 13, 14, 15, 16)

Method description.

Use of modern computer aids and mathematic modeling means including in the field of somatic medicine promotes objectification of the existing criteria and determines new diagnostic criteria of psychological and autonomic regulatory reactions. (3, 13, 14, 15, 16). As a matter of fact, diagnostics is a typical cybernetic process based on collection, transmission, keeping and processing of the genophenotypic information appearing under the impact of gaseous compound, atmosphere pressure and light flux of external environment on a body with the forming of a responsive temperature and metabolic reaction with a compulsory involvement of mitogen-regulating factor, transforming growth factor, actin's structural proteins of cell membranes, spectrin, glycophorin, nitrogen oxide and arginine. All these informational processes occur with the compulsory involvement of chemical elements being a part of membrane and organelles of cell structure (carbon, hydrogen, nitrogen, oxygen, phosphorus and sulphur). In general, this cause-and-effect information process takes place as a result of interrelations of nervous, endocrine, immunological and haematogenous systems on the level of mitogen-regulating factor activation. Mitogen-regulating factor is activated by tyrosine kinase cascade of reactions. Inhibition of mitogen-regulating factor occurs with the participation of protein phosphatase. (5, 14, 15). This informational chemical process of mitogen-regulating factor functioning is controlled genetically and depends on interrelation between carbohydrate, protein and lipid metabolism on the level of lysosomes and cells' cytosol with formation of lysosomes' pH=5 and cytosol's pH=7.35 and determination of temperature 36.75°C. The nature of such information

influence on the mitogen-regulating factor functioning. Continuity and permanency of the process is achieved by interaction of chylomicrons, triglycerides and amino acids, consisting in chylomicrons. Meanwhile the ratio of triglycerides and amino acids remains stable and will be 5 (13, 14, 15, 16). Such ratio is 0.734 in Very Low Density Lipoprotein (VLDLP) and 0.0098 in High Density Lipoproteins (HDLP), where triglycerides are to amino acids such as 9.5 to 963. Exchange of information between VLDLP, LDLP, $HDLP^2$ and $HDLP^3$ is regulated by lactic dehydrogenase (LDH) and oxygenases which have a unified structure. LDH and oxygenases are divided into 5 groups that participate in the information exchange between HDLP and LDLP with the participation of cholesterol. HDLP and LDLP are regulated by lactic dehyrodgenase (LDH) having a unified structure. LDH are divided into 5 groups that participate in the information exchange between HDLP and LDLP with the participation of cholesterol. Exchange products of HDLP are linked with protein carrying complex A-1. Exchange products of LDLP are linked with apoprotein B-100. HDLP and LDLP are regulated by lecitin-cholesterol-acyltransferase (LCAT). LCAT contains 416 amino acids that have disulphite bridges (sulphur containing amino acids) allocated in the position 50-74 as well as in the position 313 and 356. The important link in this chain of the reaction of HDLP and LDLP is cholesterol transportation mechanism to a cell and its excretion from a cell. This process is interrelated with the cell respiration, oxygen transportation to a cell, carbon dioxide formation and its excretion. The process of metabolic reactions is defined by the location of arginine in 117 position of trypsinogen molecule (7^{th} chromosome) and adenine in the 292 position (14^{th} chromosome). At such a structure the interaction of carbohydrate, protein and lipid exchange is ensured. In the opinion of most researches the leading role of these processes belongs to the amino acids arginine, glutamine, lysine and histidine. Their function is related with serine/threonine phosphatase and tyrosine phosphatase (6) on the level of lysosomes and peroxisomes. These interactions determinate the temperature at the account of pH change in lysosomes and peroxisomes (pH lysosomes - 5, pH of peroxisomes - 7.35).

It is proved that the interaction of regulatory neuropeptides - [D-Ala2, N-Me-Phe4, C1y-o15] - enkephalins 15 and regulatory protein glycophorin is realized through aminopeptides of proteins of outer layer (172) and inner layer (84) of mitochondria and determines pH=7.32. The ratio of atomic weights of chemical elements H, O, P, C, P and S to the pH is constant and equal to 14. And temperature rate in carotid and abdominal area are dependent on heat shock proteins HSP90 and HSP65. Meanwhile, important thing is transportation function of apolipoprotein (A-1, B-100, B-48) and protein receptors integrins with mannose-6-phosphate defining the relationship between liver and intestine. The consequence of this regulatory interaction (carbohydrate, lipid and protein metabolism) at the level of kidneys is relative density of urine. (13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31).This value links the exchange of adrenalin, noradrenalin, dopamine and tyrosine (atomic weight 507), arginine and glutamine by concentration of tryptophan (normal rate 73,2 ±1, 4mkml) and serotonin (normal rate 45± 0,09) with the participation of thrombocyte growth factor .

The represented theoretical data brought together in "USPIH" program that is a basis of the screening diagnostic complex "Noninvasive hemogram analyzer (AMP)". (13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31)

An example of the report on results of examination of a patient is set forth below.

	Noninvasive screening hemogram analyzer AMP				
	Name: Patient 3150				
	Sex:1	Age:30	Weight:68	PS:56	BF:20
	28,56		28,06		0
		25,87		143,0900	745
	30,48		30,12		
No	Characteristic		Units	Norm	Value
	Blood formula:				
1	Hemoglobin HGB.		g/l	120-175	132,622
2	Erythrocytes RBC		x10E12/l 1mm3	4-5,6	4,134
3	Lymphocytes		%	19-37	**8,930**
4	Leukocytes WBC		x10E9/l	4,3-11,3	**11,521**
5	Segmented neutrofiles		%	47-72	47,305
6	Erythrocyte sedimentation rate ESR		mm/h	1-14	13,868
7	Eosinophils		%	0,5-5,8	2,768
8	Monocytes		%	3-11	**14,396**
9	Stab neutrofiles		%	1-6	**26,602**
	Electrolyte metabolism:				
10	Calcium (Ca) in plasma		mmol/l	2,25-3	2,482
11	Magnesium (Mg) in plasma		mmol/l	0,7-0,99	**0,516**
12	Potassium (K) in plasma		mmol/l	3,48-5,3	3,920
13	Sodium (Na) in plasma		mmol/l	130,5-156,6	146,481
	The system of blood coagulation:				
14	The begining of fibrillation		min	0,5-2	01`49``
15	The end of fibrillation		min	3-5	**02`37``**
16	The thrombocytes		thousands	180-320	**176,224**
17	The haematocrite		%	35-49	**34,763**
	The fermentative system:				
18	AST		mmol/l	0,1-0,45	**1,370**
19	ALT		mmol/l	0,1-0,68	**1,903**
20	AST		U/l	8-40	**48,228**
21	ALT		U/l	5-30	**67,004**
22	ALT/AST			0,8-1,2	**1,389**
23	The amylase		g/l*h	12-32	29,193
24	The total bilirubin.		mkmol/l	8,6-20,5	11,338
25	The conjugated bilirubin.		mkmol/l	2,2-6,1	2,371
26	The unconjugated bilirubin			1,7-10,2	8,968
27	The total protein.		g/l	60-85	71,252
	The oxygen elimination and transportation:				
28	The plasma density.		ml/kg	1048-1055	1048,18
29	The volume of circulatory blood		l/min	68-70	**60,48**
30	The minute volume of circulatory blood		ml/sec	3,5-4,3	**3,38**
31	The rate of O2 delivery to tissue.		sq.m.	260-280	**176,11**

32	The surface of gaseous exchange	sq.cm.	3500-4300	**2658,50**
33	The vital capacity of lungs	ml/min.	3500-4300	**2255,61**
34	The transportation of oxygen	ml	900-1200	**803,52**
35	The quantity of assimilated oxygen on 100 gr. of tissue		2,8-3,4	**2,55**
36	The content of O2 in arterial blood	%	95-98	**83,17**
37	The cardiac ejection	ml	60-80	**49,18**
38	The quantity of assimilated oxygen on kg	ml/min/kg	4-6	**3,77**
39	The pulmonary ventilation	l/min	4-12	9,12
40	The quantity of assimilated oxygen	ml/min	200-250	**271,59**
41	The quantity of myocardial oxygen consumption	ml/min	7-10	9,87
42	The deficit of circulatory blood	ml	0-250	246,84
43	The vital capacity of lungs in an expiration phase	sq.cm.	--------	795,50
44	The maximum flow of air	l/min	74-116	91,49
45	Test Tiffeneau	%	84-110	**58,10**
46	The fibrinogen	g/l	2-3,5	2,79
47	The concentration of creatinine	mkmol/l	55-123	58,18
48	The dopamine B-hydroxylase	nanom/ml/min	28-32,5	**21,16**
49	The concentration of lactic acid	mmol/l	0,99-1,38	1,16
50	The concentration of urea	mmol/l	2,5-8,3	3,81
51	The concentration of glucose	mmol/l	3,9-6,2	4,11
52	The concentration of triglyceride	mmol/l	0,55-1,85	1,17
53	The cholesterol total	mmol/l	3,11-6,48	4,38
54	B- lipoprotein	mmol/l	17-55	33,45
55	B- lipoprotein	g/l	3-6	3,36
56	Low-density lipoproteins	mmol/l	2,35-2,43	**2,01**
57	Lowest-density lipoproteins	mmol/l	0,2-0,52	0,41
58	High-density lipoproteins	mmol/l	1,25-4,25	**1,11**
	The CO2 assimilation and transportation:			
59	CO2 discharge	ml/min	119-300	179,40
60	The content of CO2 gas in arterial blood	%	32,5-46,6	38,66
61	The content of CO2 gas in venous blood	%	51-53	**56,54**
62	The rate of CO2 production	ml/min	150-340	150,93
	The internal blood flow, in % to total blood flow:			
63	The myocardium current of blood	%	4,32-5,02	**5,33**
64	The muscles current of blood	%	14,56-16,93	**12,93**
65	The cerebral current of blood	%	12,82-14,9	14,40
66	The hepatic-portal current of blood	%	20,28-29,86	**19,45**
67	The nephritic current of blood	%	21,58-25,09	**31,74**
68	The skin current of blood	%	7,9-9,19	**5,99**
69	The other organs current of blood	%	5,76-6,7	**8,69**
	The internal blood flow, in ml/min:			

70	The myocardium current of blood	ml/min	250-290	**223,31**
71	The muscles current of blood	ml/min	930-1100	**541,86**
72	The cerebral current of blood	ml/min	750-800	**747,96**
73	The hepatic-portal current of blood	ml/min	1690-1740	**815,35**
74	The nephritic current of blood	ml/min	1430-1490	**1330,54**
75	The skin current of blood	ml/min	500-535	**254,48**
76	The other organs" current of blood	ml/min	375-390	**364,19**
77	The acetylcholine	mkg/ml	81,1-92,1	**64,11**
78	The acetylcholinesterase of erythrocytes	mkmol/l	220-278	**218,02**
The time slice of cardiomechanics:				
79	PQ interval	sec	0,125-0,165	**0,124**
80	QT interval	sec	0,355-0,4	**0,332**
81	QRS interval	sec	0,065-0,1	0,096
82	The myocardial contraction of the heart left ventricle	%	60-85	**53,28**
83	Systolic arterial pressure		--------	106,5
84	Diastolic arterial pressure		--------	50,1
85	The resistance of pulmonary circulation	dyn/sec/cm-5	140-150	**116,38**
86	The width of cerebral third ventricle	mm	4-6	5,59
87	The pressure of spinal liquid	mm of water.	90-145	142,39
88	The central venous pressure	mm of water.	70-150	**42,46**
89	Pulmonary circulation time PVR	sec	16-23	**23,16**
90	The time of systemic circulation	sec	4-5,5	**5,70**
91	The spectral wave-length absorption of CO2 in blood	mkm	4,165-4,335	**4,5665**
92	The spectral wave-length absorption of N2O in blood	mkm	3,7828-3,9372	**4,1669**
93	The concentration of H2 of gastric juices		1,2-1,7	1,38
94	pH		7,36-7,45	7,40
95	SH		7,32-7,4	**5,92**
96	The cardiac work	Joule	0,692-0,788	**0,8008**
97	The glutamine acid	mmol/l	0,0045-0,0055	0,0048
98	The tyrosine acid [by Zbarskiy B.I.,1972]	mg*%	1,4-1,8	1,47
99	Muscle creatine kinase(MCK)	mkmol/min/kg	473-483	**506,06**
100	Myocardial creatine kinase(CK)	mkmol/min/kg	35,1-38,1	36,43
101	The glycogen	mg%	11,7-20,6	17,77
102	The wasting power of life support	kkal/kg/min	1,23-4,3	**12,21**
103	The working rate of assimilated oxygen	%	45-60	58,92
104	The time of single load	min	3-10	5,32
105	The respiratory factor		0,8-1,2	0,88
106	The Tyrozine	mkmol/l	0,044-0,072	0,0697
107	The cerebral blood flow on 100g of tissue	ml/100g	50-55	**45,40**

108	The testosterone of urine	mkmol/24hours	6,93-17,34	9,31
109	Total estrogen	nanomol/24hours	17,95-64,62	30,95
110	Extracellular water	%	21-23	**24,48**
111	Cellular water	%	39-42	**42,39**
112	Total water	%	53-60	**48,05**
113	The blood flow per 1gr of thyroid gland	ml	3,7-4,3	4,00
114	The blood flow per 1gr of cerebral tissue	ml	2,9-3,2	2,96
115	The index of extraction of tissue oxygen	ml	0,26-0,34	**0,20**
116	Basal pressure of Oddi`s sphincter	mm of mercury	39-41	**54,61**
117	Protrombin index(PI)	%	75-104	**64,09**

It is preliminary result, an automatic help for a doctor in charge:

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It is necessary to eliminate impaired coagulation. The blood coagulation must be under control.

It is necessary to get a consultation of a gastroenterologist (gastroduodenitis?). It is necessary to eliminate pathology of small intestine.

There is the posthypoxic encephalopathy. There is the delirium with convulsive component. There is the pulmonary-cardiac insufficiency.

It is distinguished the rising of astroproteins fermentative activity (aspartattransaminase, alaninetransaminase).

There is the vegetovascular dystonia, the liquor-venous discirculatory. There is the liquor hypertensive syndrome.

There is the hypertension of lesser circulation.

The tonic derangements are possible. Magnesium (Mg) in plasma. mmol/l=0,52 Calcium (Ca) in plasma. mmol/l=2,48

It is necessary to eliminate the pulmonary mechanism of homeostasis derangement(restrictive type of lungs function derangement).

There is the derangement of oxidative phosphorylation. It is distinguished the activation of lipid exchange. There is the reduction of amino acid synthesis (tyrosine, glutamine). The dopamine B-hydroxylase. nanom/ml/min=21,0

The index Tiffeneau is reduced till: 58,1 (Test Tiffeneau. %)

Discussion of the results.

For the purpose of diagnosis of the somatic diseases, complicated with depressions, based on the thermometry of active points (an area of bifurcation of carotid artery, axillary area and umbilical area) we took the model of screening assessment of the main parameters of vital activities based on dependency of HDLP and LDLP exchange with the electronic structure of the heme of haemoglobin and nitrogen oxide. The heme of haemoglobin is linked with the structural three-layer model of cellular membrane of a liquid crystal biological layer of phosphotides changing the mass-transfer of hydrogen and oxygen in protein-lipidic complex. Under the impact of lipases and the factor activating the platelets (PAF) the phospholipids consisting of two layers with a presence of lipoproteins regulate the mechanisms of the molecular diffusion of hydrogen, oxygen, phosphorus, sulphur and nitrogen from one layer to another by way of transferring the electrons within one layer. These transitions depend on the content of cellular membranes (cholesterol contents in erythrocytes 1.26*) and are determined

by the electronic building of chemical elements being a part of the cytoskeleton of a cell. Depending on the correlation of the total temperatures of active points to the temperature of an abdominal area (normal value is 4.9-5.1) the position of arginine is determined (normal position is 117). When changing these values in the position 117 the molecule of trypsinogen is replaced with histidine. This replacement changes the interaction of nitrogen oxide with the iron of cellular metalproteins that affects the distance between atoms in a molecule by 0.046 A° while interatomic distance in a molecule of nitrogen is changed by 0.064 A°. These changes of interatomic distances influence the frequency of fluctuations of ions of iodine and hydrogen (at the temperature $+37^0$C (98.6^0F) the iodine ion fluctuation frequency is 214 fluctuations per second and the hydrogen ion fluctuation frequency is 4395 fluctuations per second). This complex of physical and chemical information processes taking place in cells of blood and endothelium, determines interconversion of one type of energy into another (a chemostatic principle of the energetic coupling) launching the synthesis of adenosine triphosphat and a breathing chain of conveying hydrogen protons to oxygen on the level of mitochondrions (8). This principle is interrelated with the regulation of the cardial mechanism that ensures blood circulation of the internal organs and changes blood circulation of gastrointestinal tract. Changes in blood circulation are accompanied by changes in activity of microflora, nitrogen oxide and interaction of pH of arterial blood and bile acids: cholic and deoxycholic. As a result of these transformations the disruption occurs in the creation of proton gradients of cell membranes with the formation of the relevant metabolites of neuropolypeptide nature α and β compounds (enkephalines) consisting of 16 and 31 amino acid residuals in neurons of the brain and apoprotein C-3 accordingly. This process is resulted in changes of correlation between temperature and pH, when the ratio of proteins in mannose-6-phosphate's structure is 0.201 and remains constant. These changes influence to activity of transforming growth factor and quantity of α1-antitrypsin (norm is 2.0-4.0 gr/l) and depends on replacement of glutamine acid by lysine in polypeptide chain of α1-antitrypsin (norm is 292) and replacement of arginine by histidine in the 117^{th} position of the 7^{th}-chromosome, which occur as a result of the disruption of calcium, potassium and sodium receptor channels (17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 31).

Conclusions:

1. Based on the own data and the literature sources the conclusion has been made that temperature values of active points play an important role, primarily temperature values of the carotid artery and an umbilical area in the system of regulation of somatic-neurological and psychological states of a human.
2. Based on the aggregate value of these points the patients were divided into 3 groups. The first group had total temperature values of their active points over 103^0C (217.4^0F), the second group had over 99.9^0C (211.8^0F) and below 103^0C, the third group had below $99,9^0$C.

3. Depending on the temperature values of the active points, the initiating exchange mechanisms were observed including changes of tryptophan, serotonin, rate of α1-antitrypsin, oxygen transportation, CO_2 production velocity ml/min, CO_2 excretion velocity ml/min, triglycerides, lipoproteins of low and very low density, high density lipoproteins and level of dopamine-beta-hydrolase (DBH).
4. Meanwhile, risk of cardio cerebral insufficiency and depressive states was higher for a patients with the rate of α1-antitrypsin less than 2.0 gr/l and low activity of dopamine-beta-hydrolase in comparison to the control (36.4 ± 3.5 nm/ml/min). The level of dopamine-beta-hydrolase of the patients with the depressive syndrome – 31.9 ± 4.1 mkmole/l; the patients with the frequent depressive syndromes – 25.1 ± 4.1 mkmole/l; the patients with sleep disturbance – 23.1 ± 1.6 mkmole/l; the patients with organ malfunctions – 19.1 ± 2.8 mkmole/l. The level of dopamine-beta-hydrolase is under a genetic control throughout the entire life of a human. DBH is one of the limiting enzymes of the biosynthesis of noradrenaline and serotonin.
5. We reckon that the reduction of dopamine-beta-hydrolase value is due to the changes in the system of oxygen transportation before treatment 827 ml/min, CO_2 production velocity change – 231.89 ml/min in average, CO_2 excretion velocity value – 436.39 ml/min in average. These deviations were accompanied by the activation of oxidant system that resulted in the heavy clinical course of psychopathological deficit of a depressive episode and frequently recurring depressive episodes becoming continuous.

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