

## Clinical Picture and Treatment of Psycho-organic Syndrome in Drug Addicts

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### *Summary*

**Objective:** To study the clinical picture and treatment of psycho-organic syndromes in drug addicts. **Subjects and methods:** 100 patients addicted to various drugs. Cerebrolysin was administered by intramuscular injection in 5 ml doses twice per day to 49 patients on the 14-20th day after the most recent drug use. **Results:** The clinical picture may be defined as “organic decline of the personality with desocialization”, or as a specific psycho-organic syndrome induced by drug consumption. We therefore considered the administration of the peptidergic substance Cerebrolysin potentially useful. **Conclusion:** Administration of cerebrolysin improves attention and concentration functions, makes intellectual processes more active, and promotes stable, positive emotions.

**Key words:** Drug Addiction - Psycho-organic Syndrome - Affective Disorders - Cerebrolysin

### **Introduction**

At the end of the nineteenth and the beginning of the twentieth centuries several researchers observed organic disorders in substance abusers with reference to the duration of addiction (1-4).

The term “psycho-organic syndrome” (POS) was introduced by E. Bleuler in 1916. The syndrome comprised memory deterioration, affect and mentality disorders in the form of impoverished thought and low-level judgments reflecting widespread brain

damage. K. Schneider (1959) differentiated between euphoric, apathetic and irritable-explosive types of psycho-organic syndrome.

The increase in the number of psychoactive substances and the development of more sophisticated methods for their production and use were accompanied by the gathering of data on organic changes taking place in people with a history of chronic abuse of alcohol and other psychoactive substances.

Nevertheless, data published on opiate addiction (with morphine or heroin) can be interpreted in different ways. Psycho-organic disorders in opium addicts were reported by some authors, who observed asthenia and concentration difficulties affecting the intellectual ability of these patients (1, 5 - 9).

The long-term use of morphine is considered to affect mental working ability. Memory in chronic abusers becomes inaccurate; the productivity of mental work, especially creative energy, falls; fatigability rises; and systematic activity becomes absolutely impossible (1, 7, 8). Detailed investigation of the effects of morphine on the CNS revealed that the long-term, regular use of narcotics induced obvious pathological changes in the organism, especially in the CNS. These changes turned out to be irreversible in some cases (10).

In Russia, the late 1980s and the whole of the 1990s were characterized by an increase in the use of home-made substances produced by chemically treating raw opium and poppy straw. Many authors report that the use of home-made narcotics has not only narcotic but also toxic effects and results in the development of toxic encephalopathy involving intellectual and mnemonic disorders (11-14).

However, other opinions have been expressed about signs of organic decline in patients with opiate and heroin addiction. Some authors deny that these patients are intellectually impaired, insisting that their intellectual functions remain intact long after the start of addiction; they report that the quality of patients' mental health remains quite high, with a corresponding level of concentration (15-17).

## **Materials and methods**

100 patients addicted to various drugs (heroin, home-made opium, polydrug combinations and pervitin-ephedron) were included in the study. The age of patients was 18-50 years (with an average of 24.9 years), and disease duration was between 1 to 10 years (with an average of 4.2 years). The age at which these patients first used narcotics ranged between 13 and 36 years. One patient started using drugs at the age of 40 (the average age for the first use of drugs was 20.9 years). Cerebrolysin was used in 49 patients.

Cerebrolysin is a nootropic peptidergic preparation extracted from swine brain with the help of modern biotechnologies. It contains low-molecular biologically active neuropeptides, which pass through the blood-brain barrier and reach nerve cells directly. This substance has an organ-specific, multimode effect on the brain expressed by its ability to regulate metabolism, neuroprotection effect, functional neurotransmission

and neurotrophic effects. For example, it reduces the concentration of lipid peroxidation products, which is high in heroin addicts. It should be stressed that cerebrolysin improves cognitive functions such as concentration, attention and short-term memory, improves the ability to maintain skills, activates mental processes, improves mood, and facilitates the formation of positive emotions; so it possesses a nootropic effect and acts as a corrector of disturbed cognitive functions. Besides this, it possesses important properties such as antiasthenic, antidepressive and psychostimulating effects. Another advantage is that cerebrolysin exerts a brain-specific adaptogenic effect by inducing an increase in nervous cell resistance to various damaging impacts.

Clinico-pathological, follow-up and statistical methods were used.

Cerebrolysin therapy was started on the 14-20th day after the most recent use of the drug. The most difficult task was that of keeping patients in this programme. It was also quite difficult to choose an optimum dose of the best method of administration. Intravenous administration of high doses of cerebrolysin (30 ml) is used in psychiatry in treating dementia of Alzheimer type and, in neurological cases, after a stroke and in post-stroke states. Since no profound dementia was observed in our patients, we decided that a dose of 30 ml would be far too high for them and administered 10 ml intramuscularly once a day or 5 ml twice a day; as intravenous injections may induce an exacerbation of the craving for drugs in addicted patients, it was decided to avoid this form of administration altogether. Intramuscular injections were given every day for 5 days, followed by a 2-day rest. In all, 20 injections were given.

A patient card (questionnaire) including the main symptoms we intended to treat was drawn up (Table 1). The card listed 15 questions. It was filled in three times - once before therapy, and then on the 10th and 20th days after therapy started.

20 patients addicted to drugs, of about the same age and with a similar disease duration, but not-recipients of cerebrolysin therapy, were tested using the same card. These patients acted as controls.

## **Results and Discussion**

The following personality alterations were observed in all patients irrespective of the used drug: increased excitability, growing affective disorders, predominance of hysteric-excitabile forms of reaction, emotional instability, psycho-social dysfunction in the form of a gradual extinction of interests, emotional-volitional disorders, and a tendency to derangement.

These personality changes took the form of an intensification of premorbid traits. Later, as drug use continued, clear psychopathic disorders and, eventually, marked moral-ethic deterioration developed (Table 2). In some cases the latter was accompanied by impoverishment of feelings, judgments and activity, intensification of psychopathy-like symptoms, affective disorders, impairment or loss of working ability, social disadaptation and character defects. In addition, intellectual and mnestic decline (Table 3) became increasingly prominent; these took the form of restricted mental outlook,

Table 1. The dynamics of psychopathological symptoms in the late abstinence period in the treatment and control groups of patients			
Symptoms	Days of Cerebrolysin treatment	Treatment Group N=49	Control Group N=20
Fast exhaustibility	0	2.04	2.13
	10	1.14	1.56
	20	0.36	1.00
Low mood	0	1.96	2.04
	10	1.18	1.58
	20	0.39	0.90
Normal mood	0	0.21	0.20
	10	0.29	0.24
	20	0.43	0.40
Irritability (dysphoria), loominess, pessimism	0	1.54	1.50
	10	0.57	1.10
	20	0.18	0.52
Anxiety	0	1.39	1.40
	10	0.50	0.90
	20	0.21	0.52
Mood lability	0	1.60	1.60
	10	1.33	1.21
	20	0.43	0.63
Hypochondria	0	1.00	1.44
	10	0.60	1.20
	20	0.39	0.85
Slow motility	0	1.07	1.12
	10	0.79	1.80
	20	0.39	0.64
Motor restlessness (akathisia)	0	1.00	1.04
	10	1.68	0.70
	20	0.36	0.20
Psychomotor excitation	0	0.68	0.70
	10	0.14	0.17
	20	0.04	0.07
Asthenia (weakness, fatigability)	0	2.04	2.10
	10	1.00	1.90
	20	0.30	1.54
Apaty, indifference, passivity	0	1.86	1.80
	10	0.89	1.54
	20	0.36	1.12

Craving for drugs	0	1.75	1.71
	10	0.86	1.48
	20	0.36	0.74
Drug-induced dreams	0	0.54	0.61
	10	0.29	0.50
	20	0.04	0.19
Sleep disorders	0	1.84	1.90
	10	0.60	1.22
	20	0.39	0.75
The degree to which a symptom was present was measured on a scale going from 0 to 3: 0-symptom absent; 1-symptom havly evident; 2-symptom evident; 3-symptom clearly evident			

inability to generalize ideas, focussing over trifles, loss of logical and goal-oriented thinking, sluggish thinking, superficial judgments, poor imagination, disturbances of concentration and attention, deterioration of direct and mediated memory and other symptoms. The presence of intellectual and mnesic disorders was confirmed by various psychological tests. Withdrawal resulted in an improvement of intellectual functions, but no cases of complete recovery were observed.

Affective disorders were observed in most patients. They were prominent during the post-withdrawal period and were characterized by dystrophic, dreary or apathetic depression.

Affective instability, hypochondria, asthenia, passivity, and an inability to carry out even simple tasks - reading, for example - persisted for a long time. Specific affective disorders were also observed in many patients during remission. Most frequently a complex of dystrophic symptoms, which gave way to dreary ones and later to apathetic-abulic behaviours, was observed. In addition, dysphoria and explosiveness were characteristic of the early abstinence period and, conversely, apathy, lack of will, and inability to work prevailed in the late abstinence period. The patients were passive, careless and thoughtless, and had off-hand manners. Their wish to win material benefits did not lead to any practical steps to earn them. Their tendency to idleness i was absolutely evident.

It should also be mentioned that when drug use continued, individual personality traits faded and were levelled down; patients came to resemble each other more and more closely. This allowed the inference that there was a specifically addiction-induced defect.

All the personality alterations described above, i.e. the presence of intellectual and mnesic decline, typical affective disorders, proneness to exhaustion, asthenia and passivity, were regarded as “organic decline in personality level with desocialization” or as a specific psycho-organic syndrome expressed to differing degrees in patients with various forms of drug addiction. All the alterations just mentioned were less marked in heroin addicts than in patients with opiate addiction induced by the use of home-made narcotics, but they were observed in both types of patients.

Table 2. Signs of moral and ethical decline in drug addicts					
	Total	Heroin	Opium	Pervitine- phedron	Polydrug
	N and %	N (%)	N (%)	N (%)	N (%)
Falsity	90	25 (100)	35 (100)	14 (70)	16 (80)
Impatience	81	23 (92)	31 (88.9)	10 (50)	17 (85)
Incostancy	77	23 (92)	30 (85.7)	10 (50)	14 (70)
Instability of intention	72	19 (76)	29 (82.9)	9 (45)	15 (75)
Propensity to an idle way of life	69	23 (92)	27 (77.1)	3 (15)	16 (80)
Irritability	68	18 (72)	28 (80)	11 (55)	11 (55)
Propensity to parasitism	61	16 (64)	27 (77.1)	7 (35)	11 (55)
Egoism	60	22 (88)	23 (65.7)	4 (20)	11 (55)
Ostentation self confidence	60	19 (76)	25 (71.4)	3 (15)	13 (65)
Light-mindedness	59	19 (76)	24 (68.6)	4 (20)	12 (60)
Decline in sense of professional duty	58	15 (60)	24 (68.6)	5 (25)	14 (70)
Cruelty to relatives	57	19 (76)	24 (68.6)	2 (10)	12 (60)
Inconsistency	57	19 (76)	27 (77.1)	1 (5)	10 (50)
Wilfulness	56	16 (64)	26 (74.2)	2 (10)	12 (60)
Attempts to avoid responsibility	53	14 (56)	20 (57.1)	9 (45)	10 (50)

Hence, a specific psycho-organic syndrome can be found developing in drug addicts (11,13,14,18-20). These data led to the inclusion of cerebrolysin in the treatment programme for patients with a potential perspective of opiate addiction.

The results were as follows:

A gradual rise in patients' IQ was evident by the 20th day of cerebrolysin therapy. Their IQ averaged was 85.0 before therapy, rose to 94.2 on the 10th day after therapy started, and reached 107.1 on the 20th. The IQ of cerebrolysin-untreated controls also showed a gradual increase, but the increase in cerebrolysin-treated patients took place much faster and it was much more substantial.

Analysis of attention concentration (Schulte's method) revealed a clear tendency

towards improvement: 2.75 points before the study, 3.14 points on the 10th day after treatment started, and 3.79 points on the 20th.

A similarly clear tendency towards improvement was observed in direct (mechanical) memory as assessed by the ten-word test (Figure 1).

Proneness to exhaustion fell sharply (from 2.04 points to 0.36) (Table 1). The mood of patients also improved. Before treatment, depressive mood was assessed at 1.96 points, whereas it reached 1.18 points on the 10th day after therapy began and 0.39 points on the 20th. It should be mentioned that during treatment our general policy was to give patients no antidepressants, or give them only in minimum doses. In a few of cases, however, antidepressants had to be included in the therapy programme because the patients' mood failed to change in response to cerebrolysin alone. In individual cases some improvement in the mood (of up to 0.45 points) was observed during treatment.

Dysphoria, irritability and anxiety all fell considerably. Unstable affect, and the hypochondria that is usually found in patients during a withdrawal period fell, too, but to a lesser extent. The level of dysphoria before the start of the treatment was 1.54 points and the anxiety level was 1.39 points, whereas on the 10th after therapy began, the dysphoria level had fallen to 0.57 points and on the 20th day to -0.18 points. The anxiety level fell too, to 0.5 and 0.21 points, respectively.

Asthenia manifestations became considerably milder from 2.05 points before cerebrolysin therapy to 1.0 on the 10th day after treatment began, and 0.39 on the 20th. As might be expected, a decrease in the asthenia manifestations recorded on the 20th day took place in patients without cerebrolysin treatment too, but the process was slower and less intensive. This is shown in Table 1.

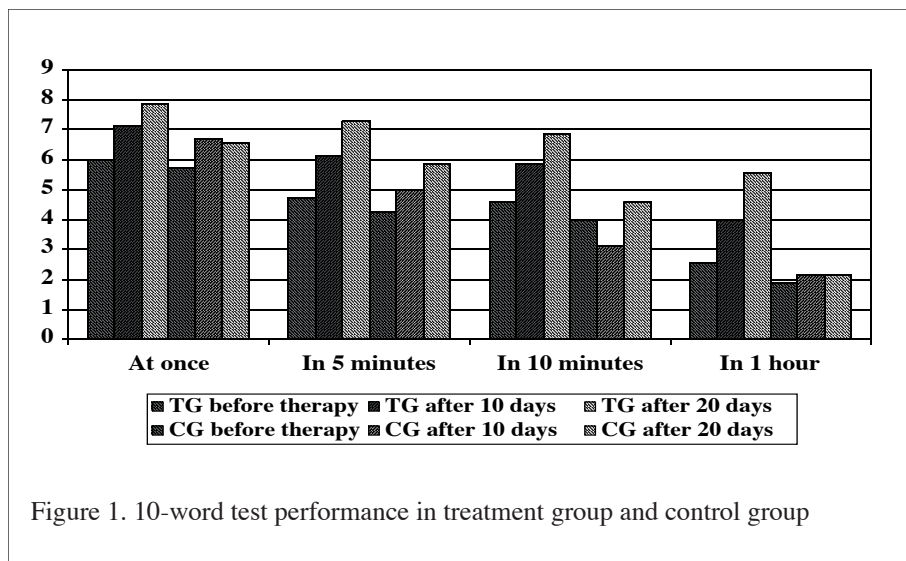


Figure 1. 10-word test performance in treatment group and control group

Table 3. Intellectual and mnesitic disorders in drug addicts					
	Total	Heroin	Opium	Pervitine- phedron	Polydrug
	N and %	N (%)	N (%)	N (%)	N (%)
Weakening of fixative memory	11	3 (12)	6 (17.1)	--	2 (10)
Weakening of reproductive memory	31	5 (20)	17 (48.6)	--	9 (45)
Narrowing of intellectual outlook	73	20 (80)	32 (91.4)	4 (20)	17 (85)
Inability to generalize and allocate main ideas	38	13 (52)	14 (40)	2 (10)	9 (45)
Fussiness over details and examples	59	18 (72)	24 (68.6)	3 (15)	14 (70)
Slowness and incoherence	17	6 (24)	6 (17.1)	1 (5)	4 (20)
Exhaustibility, with reactions of refusal	68	20 (80)	29 (82.9)	3 (15)	16 (80)
Uncertainty and contradictoriness of judgments	52	11 (44)	23 (65.7)	6 (30)	12 (60)
Loss of logic string and purposefulness in thinking	42	17 (68)	11 (31.4)	1 (5)	13 (65)
Superficiality of judgments	60	18 (72)	26 (74.3)	4 (20)	12 (60)
Absence or low level of critical abilities	67	20 (80)	31 (88.6)	2 (10)	14 (70)
Weakening of attention (loss of concentration)	67	19 (76)	26 (74.3)	6 (30)	16 (80)
Inability to understand difficult vital situation	19	3 (12)	6 (17.1)	2 (10)	8 (40)
Flat humor	48	13 (52)	20 (57.1)	6 (30)	9 (45)
Poverty of imagination	31	8 (32)	15 (42.9)	--	8 (40)

The same can be said about apathetic-abulic disorders. The patients became more active, and their flabbiness, weakness, apathy and indifference were less evident. Before cerebrolysin therapy these symptoms were assessed at 1.86 points; on the 10th day after treatment this figure had fallen to 0.86 points, and on the 20th to -0.36 points. As was mentioned at the beginning of this presentation, the 20th day after cerebrolysin therapy corresponded to the 34th-40th day after the most recent drug use. It is true that asthenia and apathetic-abulic disorders decreased without cerebrolysin treatment, even when abstinence lasted longer, but they did so to a lesser degree. Thus, asthenia in the control group was assessed on the 40th day as being at 1.54 points and apathy at 1.12 points, showing that these symptoms continued to be more evident than in cerebrolysin-treated patients.

No exacerbation of craving for drugs was recorded in cerebrolysin-treated patients, whereas it often follows Nootropil administration. No sleep disorders were noted (Table 1).

It can be concluded that cerebrolysin's most marked effects were those on cognitive functions, and then on disorders such as fast proneness to rapid exhaustion, asthenia, apathetic-abulic syndrome and anxiety. Hence, the inclusion of cerebrolysin in treatment programmes for drug addicts may be of great value.

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