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## Cerebral Pathology and Criminal Behavior.

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### ABSTRACT

Clinical and criminological analysis of cerebral pathology inmates in order to optimize their resocialization, improve social adaptation, quality of life and achieve the goals of punishment for the prevention of crime (deviant) behavior. Formed an array of observations is 250 surveys of men aged 35 to 50 years (mean age – 43.6 +/- 2.6 years). 1 (main) group – 50 men inmates; 2 (control) group – 200 men who are not held criminally liable. For a comparative analysis of neurological symptoms was used cerebral clinical profile, conducted psychophysiological (EEG, ECG, GSR), psychological (MMPI) and other (MRI, cerebral vascular Doppler ultrasound, etc..) study. Representation complaints neurotic spectrum, of neurological symptoms, identified at condemned, significantly different from the control group of persons having lawful behavior. The majority of surveyed inmates detect violations of intellectual activity in the form of forecasting shortcomings of their actions. Criminal behavior of the inmates person significantly associated with symptoms of cerebral pathology and psycho-physiological shifts. Features of the cerebral pathology of such person are reduced to an inability to exercise control over their lawful behavior. Other things being equal social conditions criminal conduct of a person with brain damage occurs more frequently. We discuss the possibility of creating a new approach to the inmates resocialization through the therapy of cerebral disorders, recovery of brain metabolism, improving axonal transport and the structural and functional organization of neurons. Etiopatogeneticheskoy therapy of brain damage leads to the inmates resocialization, improve social adjustment, quality of life, prevention of new crimes. Study adds to the information of clinical Criminology.

**Keywords:** Neurology. Cerebral pathology. Neurologic status. Criminal (deviant) behavior. Inmates. Prevention of criminal behavior

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## INTRODUCTION

One of the most urgent tasks in the medical and legal sciences is optimization of ways to prevent criminal (deviant) behavior, resocialization of inmates serving sentences for committed crimes, providing them with medical and psychological assistance is one of the most urgent tasks in the medical and legal sciences, due to the prevalence of neuropsychiatric diseases in inmates hindering their social adaptation, prohibiting the quality of their lives [5,10]. The significance of the problem is due to the processes of building a rule-of-law state, as well as the needs of science and practice in an integrated approach to studying the ways of preventing encroachments on public relations that are protected by criminal law; a variety of etiological factors and pathogenetic mechanisms of criminal behavior, various variants of their combination, which cause a wide methodological spectrum of approaches to the creation of a conceptual and theoretical basis for the re-inmates socialization, the prevention of criminal behavior [4].

The development of the holistic concept for the prevention of criminal behavior is associated with the solution of a number of issues of independent importance for neurology and psychiatry [7]. Among them - the prevalence of cerebral pathology in persons recognized by the courts as guilty of committing crimes; the influence of cerebral pathology on criminal behavior; exemption from serving a sentence in connection with the disease; effectiveness of prevention of criminal behavior, resocialization of inmates against the background of etiopathogenetic therapy of cerebral deficiency and many others. These problems have not been adequately studied: some are only indicated, others are inaccurate, and others remain controversial [11]. They have neurological, psychiatric, and interbranch aspects, since in the course of the development of scientific knowledge, the differentiation and integration of sciences are dialectically interrelated.

In our opinion, the goals of criminal punishment for the prevention of criminal behavior, provided by the current criminal and penal enforcement legislation, will remain unattainable if they are not based on the consideration of all factors, including the inmate's neuropsychic health.

There are several main reasons that have actualized the problem of optimizing the prevention of criminal behavior, the inmates' resocialization suffering from cerebral pathology. Firstly, an increasing number of people are being brought to criminal responsibility and discovering neuropsychic disorders that affect the intellectual-volitional sphere, determine a diminished ability to predict the consequences of their actions or to consciously manage them, that is, they are important in the etiopathogenesis of the criminal behavior [8,12]. At the same time the patient is not completely deprived of consciousness and arbitrariness of behavior, but his ability to understand his actions, to manage them in comparison with the norm is reduced. Secondly, a large number of patients suffering from neuropsychological pathology are serving their sentences in Russian penal institutions. Thirdly, the number of repeated crimes committed by persons suffering from neuropsychological pathology is very high, which indicates that the goal of punishment against them has not been achieved.

Without cross-sectoral analysis, which requires system-methodological and substantive comprehensive development of a holistic concept for the prevention of criminal behavior, the inmates' resocialization, it is impossible to ensure the implementation of the current legislation in accordance with modern requirements for the development of society, its core values [1,2].

The purpose of the study: clinical and criminological analysis of cerebral pathology in inmates in order to optimize their re-socialization, improve social adaptation, quality of life, attain the goals of punishment for the prevention of criminal (deviant) behavior.

## METHODS AND MATERIALS

The formed array of observations is 250 examinations of men aged 35 to 50 years (mean age - 43.6 +/- 2.6 years).

The first (main) group consisted of inmates for committing crimes of varying severity (50 people). None of the subjects surveyed before on a dispensary record with a neurologist was not.

The second (control) group of persons (200 people), who were not involved (in their words) to criminal liability.

For a comparative analysis of neurological symptoms, a cerebral mathematical profile was used, polygraphic psychophysiological (EEG, ECG, RGR), psychological (MMPI) and others (MRI, KSA EEG, TSC EEG, UZDG cerebral vessels, etc.).

## RESULTS

The first group was statistically significantly more likely to complain about moderate (58%) or pronounced (32%) irritability, quick temper (64%), unbalance, feeling of emotional stress, which temporarily decreased as a result of aggression, fighting, getting their arm. Only 10% of the surveyed inmates did not present such complaints. The majority of inmates noted that complaints of the neurotic spectrum intensified when they were in prison («penal syndrome»).

In the anamnesis of life, the majority of inmates from childhood traced their inclination to acts bordering on hooliganism. They did not tolerate academic or military discipline, another regulated regime. These features intensified with age.

Among the first group of men who studied, only 34% have families, and 6% have a civil marriage. The family disintegrated in the process of imprisonment in 38% of the examined. The family qualification of the control group is statistically significantly higher.

34% of inmates had general secondary education, secondary vocational education had - 22%. Only 6% of men had a higher education. The educational qualification of the control group is statistically higher.

42% of the men of the first group lived in a city before imprisonment, 36% lived in the countryside. Almost every fifth man inmate had no permanent residence, which is an important factor in the low quality of life, social disadaptation.

Representatives of working professions among inmates were 64%, employees - 8%. 8% of inmates were engaged in individual entrepreneurial activity. Every tenth surveyed of the first group before the conviction was unemployed, while 2% of the surveyed did not have permanent sources of income, which is also an important evidence of a violation of social adaptation of the first group. All persons of the control group had a permanent place of work, sometimes with a high social status.

Every fifth inmate during his stay in places of deprivation of liberty applied for psychological help to a psychologist of Russian penal system. However, 74% of these people did not notice an improvement from psychological care. The persons of the control group did not apply to the psychologist.

Up to 82% of the surveyed persons in the first group had a history of factors acting either in isolation or in combination, but certainly causing irreversible morphological changes in the head brain (repeated traumas of the brain of varying severity, hypertension, etc.). Similar history in the examined second (control) group was found in only 28% of cases.

74% of the surveyed persons of the first group had narcological problems (systematic alcohol consumption, occasional drug use). All the examined inmates second group denied the use of drugs, alcohol abuse.

The cerebral mathematical profile was used for the comparative analysis of neurological symptoms of two groups of subjects, (Table 1).

## DISCUSSION

It was revealed that the neurological status of inmates (the main group) differs from those who were not brought to criminal responsibility (control group). The first group of patients showed disseminated small-focal neurologic symptoms (16%), carpal pathological signs (15%), elements of dysraphic status (11%). In persons of the second group, the corresponding signs were found in 9%, 6% and 4% of cases. The small-focal

neurological symptomatology found in inmates, statistically reliably «accompanies» criminal behavior, creates «pathological soil» for him.

The cerebral disorders clinic in persons of the first group varied in manifestation and course, as it was caused by various nosological diseases (head injuries of various severity, exogenous and endogenous intoxications, arterial hypertension, other previously transmitted diseases, etc.), which causes heterogeneity of the lesions of various departments of the brain. The relative uniformity of the formal clinical expression of cerebral disorders, which are caused by various causes, in our opinion, is associated with a limited number of ways of reacting the cerebral metabolism to exogenous and endogenous pathological influences.

The majority of the examined inmates were found to have violations of their thinking activity in the form of shortcomings in predicting their actions. These features allowed them to easily engage in criminal behavior without trying to find socially acceptable exits from different situations. For the first group, 24% of cases were characterized by increased explosiveness, irritability combined with aggression, spitefulness. They defended their interests with the predominance of self-leaning, without regard for the interests and rights of others. At the same time, at the moment of aggression, detente was characterized by an affective narrowing of consciousness. The tendency to emotional explosions, anger in response to minor, sometimes neutral reasons, was throughout life. The angry reaction of the inmates arose on the remarks of relatives, on someone else's low-adaptive behavior, the more behavior provoking a criminal attitude. These inmates often acted without taking into account the consequences of their actions [3].

The individuals of the first group noted a desire for domination, intolerance of opposition to them; striving for leadership in their microsocial groups. Their distinctive feature was disregard for socially approved norms. At the same time, inmates had a persistent conviction that they were being prejudiced by others (including the investigator, witnesses, the prosecutor, the judge, the officers of the Russian penal system, etc.).

14% of the inmates noted that they committed crimes motivated by self-affirmation (of which, 12%, because of the desire to establish themselves in the eyes of representatives of their microsocial environment, 2% - the desire to establish themselves «in their own eyes»); 12% - to raise funds for alcohol or drugs, 8% - the desire to get «thrill». 8% of the inmates committed the crime «because of necessity to find means of subsistence». They could not find a means of livelihood in a socially acceptable way. Social adaptation of the control group is statistically significantly higher.

225 patients underwent psychophysiological examination (EEG, ECG, RGR). Of these, 25 were examined in the first group, and 200 in the second group. According to the psychophysiological study, inmates are diagnosed with violations of brain bioelectrical activity in 56% of cases. All the patients examined showed an increase in the span of the dermal-galvanic reflex. On the contrary, 86% of the examined second (control) group had an EEG within the normal range, RSR without features. These data show that persons of the first group (inmates) have greater functional and structural cerebral insufficiency than those in the control group.

Magneto-resonance tomography of persons of the first and second groups examined has no significant differences.

The indicators of ultrasound of the main arteries of the head of persons of the first and second group do not have statistically significant differences.

### CONCLUSION

So, the conducted research shows that the cerebral deficit «accompanies» the criminal (deviant) behavior. The small-focal neurological symptomatology found in inmates is an objective expression of the «pathological» soil that facilitates the realization of criminal behavior. Features of the cerebral dysfunction of such a person are reduced to the inability to form a controlling authority that perceives universal human values, the rules of society.

These people, unfortunately, are not in a position to logically predict the consequences of their actions in full. They do not learn from someone else's experience [6]. These features allowed them to easily engage in criminal behavior without attempting to find socially approved exits from various life situations,

acting by virtue of the peculiarities of their thinking, subordination of rational activity to momentary, situational emotions, without sufficient thought-out of actions and a full comprehension of the situation, inability to rational thinking of all circumstances. The realization of criminal direct or indirect intent occurred at the time of its occurrence.

With all other equal social conditions, a criminal breakdown of a person with cerebral disorders occurred more often. Subsequently the inmates accused the surrounding people that they «could not be kept» from committing a wrongful act.

If a person's mental activity is a reflection of reality in his brain, then the cerebral pathology causes a violation of the adequacy of reflective activity and at the same time a violation of the person's adaptation to the conditions of the external environment, which is accompanied by low social adaptation, behavior recognized as criminal.

Complaints, anamnesis, neurological status, results of psycho-physiological examination of inmates, determined indications for antioxidant, anxiolytic, vascular therapy, vitamin therapy, rational psychotherapy. Etiopathogenetic pharmacotherapy, combined with psychotherapy, led to a subjective improvement in the condition of most people in the first group, increasing their social adaptation and quality of life, which helped to achieve the goals of punishment, significantly reducing the risk of recurrence of criminal behavior.

The accomplished long-term research opens the possibility to formulate new approaches to inmate's resocialization through the therapy of cerebral disorders, restoration of brain metabolism, improvement of axonal transport and structural and functional organization of neurons. Etiopathogenetic therapy of cerebral disorders in inmates leads to an improvement in their quality of life, resocialization, prevention of the commission of acts under criminal law.

**Table 1: Cerebral clinical and mathematical profile**

No	Symptom	1 group	2 group
1.	Hyposmia	5%	2%
2.	Olfactory agnosia	0%	0%
3.	The flashing of «flies», the appearance of fog in front of the eyes	7%	8%
4.	The appearance of a change in the clarity of visible objects	8%	9%
5.	Hemianopsia	0%	0%
6.	Visible agnosia	0%	0%
7.	Easy restriction of mobility of eyeballs aside	17%	9%
8.	Paralysis of the eye	0%	0%
9.	Weak convergence	24%	16%
10.	Coarse convergence parse	4%	2%
11.	Decrease (flaccidity) of pupillary reactions	0%	0%
12.	Diplopia	0%	0%
13.	Decreased sensitivity on the face	4%	1%
14.	Smoothness of nasolabial fold, slight asymmetry of grin	16%	7%
15.	Central paresis of facial nerve	4%	2%
16.	Incompatible weak dizziness, recurring	9%	11%
17.	Unsystematic moderate dizziness, often occurring	2%	5%
18.	Nystagmus	3%	4%
19.	Noise in the head, arising periodically, weak	9%	7%
20.	Noise in the head, persistent, weak	8%	4%
21.	Noise in the head, persistent, strong	3%	2%
22.	Hypoacusia (sensorineural hearing loss)	2%	4%
23.	Hypoguesia	0%	0%
24.	Mild dysphagia	1%	3%
25.	Dysphonia	0%	1%
26.	Language deviation	16%	9%

27.	Fazio-lingual paralysis	6%	4%
28.	Easy, transient «blurring» of speech	5%	3%
29.	Moderate, constant «blurring» of speech	0%	1%
30.	Rough dysarthria	0%	0%
31.	Increased masseter reflex	0%	2%
32.	Reflexes of Oral Automatism	11%	7%
33.	Friendly movements on the face	0%	0%
34.	«Faintheartedness»	3%	6%
35.	«Forced» laughter	0%	1%
36.	Headache of frontal-temporal localization of compressive nature	19%	11%
37.	Headache of other localization	15%	12%
38.	The feeling of heaviness in the head	16%	7%
39.	Satisfactory-developed muscular system	36%	71%
40.	Well developed muscular system	64%	29%
41.	Revitalization of tendon and periosteal reflexes	12%	6%
42.	Anisoreflexia of tendon, abdominal reflexes	0%	2%
43.	Light hemiparesis	0%	1%
44.	Fazio-brachial paralysis	0%	1%
45.	Light hemiparesis	0%	0%
46.	Moderate monoparesis	0%	0%
47.	Moderate hemiparesis	0%	0%
48.	Deep monoparesis	0%	0%
49.	Deep hemiparesis	0%	0%
50.	Fazio-lingua-brachial paralysis	0%	0%
51.	Pathological reflexes on the upper limbs	15%	6%
52.	Pathological reflexes on the lower limbs (flexion)	0%	0%
53.	Pathological reflexes on the lower extremities (flexion).	0%	0%
54.	Change in muscle tone by plastic type	2%	2%
55.	Hypokinesia, akinesia	0%	0%
56.	Parkinsonian tremor	0%	0%
57.	Subjective uncertainty when walking	0%	1%
58.	Nausea that occurs periodically	9%	8%
59.	Nausea that occurs frequently	0%	0%
60.	Romberg's pose (rocking)	0%	0%
61.	Intensive tremor	0%	0%
62.	Constant misapprehension in the palmar and heel-knee samples	0%	0%
63.	Dissynergy	0%	0%
64.	Hemiataxia	0%	0%
65.	Pronounced cerebellar ataxia	0%	0%
66.	Hemiparesthesia	0%	0%
67.	Cerebral type of sensitivity disorder on the trunk	0%	1%
68.	Hyperpathy («subthalamic» lesion)	0%	0%
69.	Amnesic aphasia	12%	8%
70.	Sensory aphasia	0%	0%
71.	Broca's Motor aphasia	0%	0%
72.	Yanishevsky Reflex, «resistance» phenomenon, «confrontation»	0%	0%
73.	«Frontal» psyche	0%	0%
74.	Scattering (subjective)	16%	14%
75.	Autopagnosia	0%	0%
76.	Astereognosia	0%	0%
77.	Apraxia	0%	0%
78.	Apraktognostichesky syndrome	0%	0%

79.	Moderate memory impairment	12%	8%
80.	Severe memory impairment	0%	0%
81.	Moderate asthenia	15%	11%
82.	Severe asthenia	2%	1%
83.	Moderate apathy	3%	2%
84.	Pronounced apathy	0%	0%
85.	Moderate irritability	58%	11%
86.	Severe irritability	32%	7%
87.	Spitfire	64%	9%
88.	Moderate depression	11%	6%
89.	Severe depression	4%	2%
90.	Moderate dissomnic disorders	8%	12%
91.	Expressed dissomnic disorders	3%	7%
92.	Pronounced superciliary arcs	12%	3%
93.	«Low» forehead	12%	3%
94.	Massive lower jaw	11%	4%
95.	Pelvic Inflammation	0%	0%
96.	Vegetative dysfunction moderate	14%	11%
97.	Vegetative dysfunction expressed	3%	4%

#### REFERENCES

- [1] Antonyan Yu. M., Gul'dan V.V. kriminal'naya patopsikhologiya [criminal Pathopsychology] / Yu. M. Antonyan., V.V. Gul'dan // Moscow, Nauka Publ., 1991. 243 p.
- [2] Brown G.W. Depression. Distress or disease? Some epidemiological considerations / G.W. Brown, T.J. Craig, T.O. Harris // British Journal of Psychiatry. – 1985. – Vol. 147, № 12. – P. 612–622.
- [3] Leinard B. Fundamentals of Psychofarmacology / B. Leinard. – N. Y., 1998. – 391 p.
- [4] Lloyd G.G. Psychiatric syndromes with a somatic presentation / G.G. Lloyd // Journal of Psychosomatic Research. – 1986. – Vol. 30, № 2. – P. 113–120.
- [5] Pilkonis P.A. Social anxiety and psychiatric diagnosis / P.A. Pilkonis, H. Feldman, J. Himmelhoch, C. Cornes // Journal of Nervous and Mental Disease. – 1980. – Vol. 168, № 1. – P. 13–18.
- [6] Melekhov D.E. social psychiatry and psychiatric clinic. Zhurnal nevroptologii i psichiatrii im. / S.S. Korsakova // S.S. Korsakov's Journal of neuropathology and psychiatry, 1972, no.3, pp. 389-395(in Russian).
- [7] Principles practice of Forensics Psychiatry / ed. by R. Bluglass, R. Bowden // – L., 1990. – 1408 p.
- [8] Raguram R. Patterns of phobic neurosis: A retrospective study / R. Raguram, A.V. Bhide // British Journal of Psychiatry. – 1985. – Vol. 147, № 11. – P. 557–560.
- [9] Reich J. Psychiatric diagnosis of chronic pain patients / J. Reich, J.P. Tupin, S.I. Abramowitz // American Journal of Psychiatry. – 1983. – Vol. 140, № 11. – P. 1495–1498.
- [10] Sorel E. Social Psychiatry: A Mission and a Vision for the 21<sup>st</sup> Century / E. Sorel // Jutern Medical Journal. – 1998. – Vol. 5, № 4. – P. 247–249.
- [11] Spasennikov V.A., Tikhomirov A.N. Mental disorders and their legal criminal meaning. / V.A. Spasennikov, A.N. Tikhomirov / Rossiyskaya yustitcia //Russian Justice, 2014, No. 2, pp 20-23 (in Russian).
- [12] Sergeev I.I. Neuroses dynamics and outcomes. Zhurnal nevroptologii i psichiatrii im. S.S. Korsakova // S.S. Korsakov's Journal of neuropathology and psychiatry, 1989, No. 11., pp. 66-70. (in Russian).