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Confidential Information!

Final Report

"Clinical Efficacy of Bio-Normalizer in the Management of Patients with Severe Cerebral Damage"

(Pilot, randomized, case-controlled, open clinical trial)

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Abstract.

The open randomized case-controlled clinical trial on the efficacy of Bio-Normalizer in patients with severe post-operative brain damage was performed. Fourteen patients of both sexes aged from 10 to 65 years (mean age ± years) participated in the study after their informed consent. The patients were given 6 g of Bio-Normalizer a day daily at bedtime for 1 month. They exhibited numerous neurological symptoms of traumatic brain disease. This diagnosis was confirmed by instrumental methods such as computer tomography and electroencephalography and by neurological-psychological tests. There were no drop-outs from the trial or any of side adverse effects including allergic reactions in the participants. A vast majority of the patients studied with severe operation-related impairment of memory, mental functioning and locomotive activity showed significant improvement in neurological, psychological and physical status after taking BN (12 patients, 93 %). The results of instrumental assessment such as computer tomography and electroencephalography supported positive clinical observations revealing a significant decrease in EEG paroxysmal activity (10 patients, 71 %), improvement in the pathological diencephal symptoms (11 patients, 78%), and an increase in the hemisphere coherence (12 patients, 93%). The data of psychological tests showed BN-induced improvement of speech disorders particularly aphasia (9 patients, 64%), sharply increased self-assurance (12 patients, 93%), memory and social adaptivity (8 patients, 57%). At the same time, there were noticed temporal impairment of patients' mood and their increased aggressiveness during first period of the trial (3 patients, 21%).

Introduction.

According to Dr. Osato's ideas, BN contains several powerful neuro-agents capable of penetrating the blood-brain barrier and normalizing the cerebral metabolism. It has been shown in a number of works that BN suppressed significantly intensity of lipid peroxidation in the brain tissue [ ] and cured epilepsy [ ]. Furthermore, BN is found to be effective immunomodulator, regulator of redox status in the human body, adaptogen, and modulator of trace element distribution. It is well established that patients in the vegetative state due to severe brain damage are suffered a lot from the secondary immunodeficiency. Usually they lose completely the adequate response to

the external stimuli (adaptive reaction). There is clear *in vivo* evidence of oxidative stress in such patients, which is a consequence of oxidant/antioxidant imbalance. Therefore, it was suggested that BN could ameliorate the stress and improve metabolism and psycho-neurological condition in-patients after massive brain operations they were undergone due to trauma, stroke or tumor.

Patients and Methods.

- patients of both sexes
- age from 10 to 65 years
- patients operated after accidental cerebral trauma
- patients suffered from stroke and operated
- patients after brain tumor operations
- patients at the post-acute (chronic) stage

Exclusion criteria:

- patients in acute stage of brain disease
- patients with life expectance less than 3 months
- patients suffered from any kind of allergy
- patients or their relatives with poor compliance
- patients with other than cerebral severe diseases

Study design.

Fifteen patients fulfilled the eligibility criteria will participate in the clinical study after their or their relatives informed consent. All patients will start being treated with 1 sachet of BN at bedtime. Then, according to their doctor observations and recommendations the individual doses will be gradually increased up to 4 sachets a day. The scheme and way (oral or intraesophagial) of BN application will depend on patients' conditions and doctors' conclusions. The total duration of the BN therapy course will be 1 month. Each patient will be further followed-up during 1 month after cessation of BN therapy. The results obtained for the same patient with and without BN will be compared and if possible statistically evaluated. If there is a very broad variability of background parameters, individual clinical cases will be described in details with the focus on the comparison of the results obtained with and without BN.

Results and Discussion.

The patients admitted to hospital will be examined frequently at least 4-5 times during each period of trial, the first one with BN therapy and the second one in the absence of BN treatment. The general conditions of the patients will be assessed by determination of neurological status, behavior status, mental functions and so on. All patients will be followed-up by neurologist, therapist, specialists in ophthalmology, acoustical neurology, and rehabilitation. The patients at the different stages of vegetative state outcome will be subjected to a complex of neurological methods to determine a degree of motor and sensor deficiency, arousal level, muscular tonus, impairment of active and passive movements, reflexes, responsiveness to external signals, impairment of somatic functions, and so on.

The mental functions of patients will be examined frequently by the special tests, which allow to assess and document their cognitive processes such as speech, thinking, attention, visual-constructive activity, perception, practical skills (praxis), memory, etc. Psychologists will examine the emotional personal conditions.

Instrumental and laboratory analyses.

The instrumental tests will include:

- Electroencephalography

Doppler ultrasound analysis of cerebral blood flow

MRT

SPET

The general metabolism will be evaluated by routine biochemical analyses of blood such as: proteins, lipids including phospholipids, glucose, creatinine, urea, uric acid, electrolytes, ALT and AST activities.