REPORT:

RESEARCH OF INDICATORS OF FUNCTIONAL STATE OF A BODY EXPOSED TO THE ELECTROMAGNETIC RADIATION OF A MOBILE PHONE AND THE POSSIBILITY OF THEIR CORRECTION IN THE PRESENCE OF AN AIRES RESONATOR

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ABSTRACT

The object of the study is mainly male volunteers at the age of 21 (12 out of 15 people). The methodological framework consisted of physiological and statistical research methods, as well as the calculation of fractal dimension. The purpose of the work was to assess the characteristics of the bioelectric activity of the brain when exposed to the electromagnetic radiation of a modern mobile phone in the following modes: "waiting" (I), "talk" without sound (II), "talk" without sound in the presence of a resonator (III). Studies of changes in the brain's bioelectrical activity during Scenario III suggested the possibility of compensating for the physiological consequences of exposure to a mobile phone. Based on the results obtained, the following conclusion was drawn: In the event of negative influence from electromagnetic fields and radiation, the AIRES resonator contributes to proactive activation of the body's own adaptive processes.

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LIST OF ABBREVIATIONS:

AbsAmpl - absolute value of the amplitude (μV)

AbsPwr - absolute power value = power spectral density (μV^2)

BEA - bioelectric activity

WHO - World Health Organization

HV - hyperventilation

DFV - value of the dominant frequencies (Hz)

MP - mobile phone

MP+ - mobile phone in the presence of an AIRES resonator

AT - after test

SHF - electromagnetic radiation in the centimeter band

FA - functional asymmetry of the brain

CNS - Central nervous system

ECG - electrocardiogram

EMR - electromagnetic radiation

EMF - electromagnetic field

EEG - electroencephalogram

SAR - specific absorption rate

INTRODUCTION

Background variations in cosmic-helio-geomagnetic fields play a leading role in arranging the rhythm-setting factors that ensure the stability of life on Earth. The widespread introduction of additional technogenic sources of electromagnetic radiation into everyday life has led the planet to a mass of negative consequences, including the disruption of the stable existence of the ecosystem as well as defects in a complex system of reactions aimed at maintaining the rhythmostasis and dynamic constancy of biological organisms' internal environment. Disorganization causes any organism to be in a state of stress, the direct path to development of disease. For supercomplex organic systems, which include humans, compensation for changes in environmental factors is possible due to the activation of its own systems responsible for the body's adaptation to external conditions, not only to natural cosmo-helio-geomagnetic variations, but also to new technogenic electromagnetic influences that have already become permanent environmental factors. At the moment, there is an urgent need for the reconstruction of old and/or the creation of new structural and dynamic adaptation programs that increase the body's resistance to external influences with markedly unusual characteristics, increased plasticity of the body, and the ability to restructure the body's rhythmic component in order to maintain the dynamic stability of the body's internal environment.

Cellular communications are a significant source of technogenic electromagnetic fields. The fact that mobile phone radiation has a negative influence is not in doubt by anyone (1, 2, 3). That said, we cannot eliminate the use of mobile communications from our lives. Accordingly, protecting the body from a mobile phone's electromagnetic radiation remains one of the most pressing topics of modern life, calling for humankind's intellectual and production efforts to be directed toward the development of technologies and devices that minimize the negative consequences of exposure to electromagnetic radiation, including from mobile phones. The industry currently offers a large selection of protective devices that use:

the absorbing properties of materials: wax, felt, paper, synthetic films;

reflective materials such as metal foil on insulating substrates made of synthetic materials;

textiles embedded with metallic threads;

conductors in various shapes with antenna properties: bracelets, necklaces, fobs…;

various types of diffraction gratings;

deflecting devices — metallic products without coatings and in insulators;

various resonators: spirals, cones, pyramids; electromagnetic pulse generators. Unfortunately, not all of the proposed devices have proven their effectiveness in relieving the negative consequences of EMR exposure for a human while using a mobile phone.

The purpose of this work was to assess the effectiveness of using an AIRES resonator to protect the central nervous system from the negative influence of a mobile phone's EMR.

LIST OF PARTICIPANTS, RESEARCH SCOPE AND METHODOLOGY

Table 1 presents the list and scenarios. 15 subjects participated in the studies on a voluntary basis, based on informed consent, and in accordance with the ethical standards of the World Medical Association's Declaration of Helsinki (2000): 13 men and three women, with the predominant age of 21 years (10 out of 15) (see Table 1). The studies were carried out in March-April 2020 during days when the helio-magnetic environment was calm. EEGs and ECGs were recorded using the Encephalan 131 03 software package with built-in programs for recording and analyzing EEGs and ECGs. The brain's BEA (EEG) was recorded using 16 monopolar leads in accordance with the internationally-recognized 10-20 system in the 0-70 Hz transmission band with 250 Hz frequency discretization. Electrodes were placed symmetrically in the areas of the prefrontal (Fp1, Fp2), postfrontal (F3, F4), frontotemporal (F7, F8), central (C3, C4), middle temporal (T3, T4), posttemporal (T5, T6), parietal (P3, P4), and occipital (O1, O2), areas, with joined reference electrodes being placed on the earlobes. The even-numbered electrodes are on the right. The GSM standard was chosen not only because and not so much because of its wide distribution, but mainly because time-division multiple access is used to organize the "telephone - base station" communication channel, which makes it possible to select frequencies that coincide with the frequencies of the brain's own bioelectric activity: gamma, alpha, delta (317 Hz, 8.35 Hz, 2.00 Hz).

EEGs were recorded according to the scenarios presented in Table 1: I – baseline EEG (60s), "eyes open (10s) – eyes closed" test, baseline EEG with eyes closed (60s), MP powered on - "waiting" mode (300s); II - baseline EEG (60s), "eyes open (10s) – eyes closed" test, baseline EEG with eyes closed (60s), MP powered on - "talk" mode without sound, III - baseline EEG (60s), "eyes open (10s) – eyes closed" test, baseline EEG with eyes closed (60s), MP(+) powered on with a resonator - "talk" mode without sound. The subjects did not know scenarios II or III were used during the study.

Five random 5-second segments were analyzed in each scenario test. The spectral power density (AbsPwr), index (relative power value), and dominant amplitude values (DFV) were evaluated across ranges. The significance of the results obtained was assessed using the nonparametric Wilcoxon test.

RESULTS AND DISCUSSION

The obtained results and their statistical processing are presented in Tables 2-7. As you can see, the group of participants has a large spread in the values of the analyzed indicators and EEG patterns: a so-called "flat" EEG was recorded in 3 people, and a highly synchronized EEG was also recorded in 3 people. Due to the small size of the group, outliers were not discarded. As a result, the statistical analysis was carried out using nonparametric statistical criteria. The effect of the influence of a mobile phone's EMR depends both on the individual level of a person's functional state and on the location of the user and the distance between the user and the base station. The maximum radiation power is observed in "waiting" and "calling" modes (4.5). Accounting for these facts, we performed a comparative analysis of the baseline BEA values and those recorded in "waiting" mode (Tables 2-3). The mobile phone's searches for a base station and the communication with it were reliably reflected in the study participants' EEGs (Table 7). After the third or fourth minutes of exposure to the mobile phone, there was an increase in the total absolute value of power in the slow-wave (2-6 Hz) part of the spectrum. A frequency shift in the alpha range towards the bias of the low-frequency component was accompanied by a decrease in the value of the absolute total power. Following mobile phone exposure, the EEG indicators returned to their initial values. Apparently, the coincidence of the frequencies of the GSM-900 standard and the frequencies of the brain's bioelectric activity provokes a short-term deactivation of brain processes. However, the longer and more often a person uses cellular communication, the more likely is the accumulation of changes in dynamic disturbances in the EEG, and, as a consequence, the development of behavioral disability, which has been indicated by researchers who studied the influence mobile phone EMR on the EEGs of children (2).

A different picture was revealed when analyzing changes in the BEA in "talk" mode (Tables 3-4 in Fig. 1). Here we see a strong dependence of the BEA response on the influence of mobile phone EMR. The increase in the EEG's slow-wave rhythmic component was more pronounced in persons with a "flat" EEG, the most labile in vegetative reactions with respect to the entire range of external influences, and not only to EMR (Fig. 3). As a rule, these individuals are more prone to chronic fatigue syndrome and asthenic syndrome. Still, it was possible to identify the general trend of changes in BEA under exposure to mobile phone EMR: a significant drop in power in the EEG's alpha range in response to exposure to mobile phone EMR, as well as a shift in the dominant frequency in the alpha range of the low frequency region: 8.5-9.2 Hz. As noted in the previous report, the response to external physical influences is an evolutionarily fixed property of biological systems when a certain level of change is reached. After that, the system switches to another, more cost-effective response. That is why the most pronounced changes are observed in the alpha range, which is dominant in the EEG and closely related to the analysis of incoming information and behavioral responses (6, 7). However, a decrease in the frequency of the dominant rhythm may have a negative effect with prolonged use of a mobile phone. This hazard can be avoided by minimizing the impact of mobile phone EMR by reducing the duration of use of "talk" mode or, if this not possible, by activating the adaptive processes of the body.

Changes in BEA values (a significant increase in AbsPwr in the alpha range) are presented in Table 6, reflecting the special features of EEG changes upon exposure to mobile phone EMR in the presence of an AIRES resonator (Figures 1 and 3), indicate the activation of one's own defense mechanisms against the negative influences of EMR. Responding to a harmful factor, the brain increases the power of the dominant alpha rhythm, also increasing its frequency. In addition, the spindle-shaped modulation of alpha wave amplitude and the appearance of spindle-shaped bursts of low-frequency beta activity are more pronounced. The increase in the spindle-shaped modulation of alpha wave amplitude indicates, in the formation of total alpha activity, an increase of cortical sources, which produce the appearance of a higher-frequency component. At the same time, bursts of beta activity reflect the involvement of regulatory formations of the diencephalic level. Comparative analysis (Tables 5 and 6) accounting for the correlation dimension and entropy (Fig. 7, 8) showed that the more jagged the peaks of alpha waves due to beta activity, the higher the correlation dimension indicator, which makes it possible to assert that current information is processed at a higher speed and more accurately. In other words, in the presence of an AIRES resonator, a mobile phone's external EMR transforms from a negative factor into a factor that harmonizes the functional state of the central nervous system, the body's central control system, with the essential state of the environment.

CONCLUSION

Using the example of the influence of a mobile phone's EMR, we analyzed how the human brain's BEA, the chief link in the regulation of the body's structural and dynamic processes, responds to the external multifrequency influence of technogenic EMR. The influence of a mobile phone's EMR on the human brain's BEA indicators that reflect a decrease in the level of functional state of the central nervous system has been reliably demonstrated. A group of persons possessing so-called "flat" EEGs, who respond most acutely to the disorganizing influence of a mobile phone's EMR, was identified.

Comparative analysis of the influence of of a mobile phone's EMR on EEG indicators in the presence of an AIRES resonator and outside of its presence made it possible to conclude that the presence of the AIRES resonator minimizes the negative influence of a mobile phone's EMR

, involving regulatory structures of the diencephalic level in the response. Thus, the presence of an AIRES resonator creates the conditions for the formation of structural and dynamic consistency with the current level of the functional state of the central nervous system and the biological organism's habitat, following the minimum variations in the dominant frequencies of the environment.

The obtained results provide reliable evidence of the effectiveness of using AIRES resonators to minimize the negative effects of external technogenic fields and radiation.

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APPENDIX

SCENARIO TABLE�TABLE 1

No.	SURNAME	BASELINE1 2020	WAITING 2020	MP 2020	MP(+) 2020	SURNAME	BASELINE2	MP 20-19	MP(+) 20-19
1	BELOUSOV	25.3	25.03.	26.03	27.03	BELOUSOV	25.03	26.03	27.03
2	VOROBYEV	19.3	19.03	24.03	20.03	VOROVIEV	19.03	24.03	20.03
3	GRIGORIEV	20.3	20.03	25.03	24.03	GRIGORIEV	20.03	25.03	24.03
4	KOZLOV	19.3	19.03	20.03	24.03	KOZLOV	19.03	20.03	24.03
5	KUZNETSOV	05.03	05.03	13.03	12.03	KUZNETSOV	05.03	13.03	12.03
6	LOSEV	25.3	25.03.	26.03	27.03	LOSEV	25.03	26.03	27.03
7	NABIEV	26.3	26.03.	-	27.03	ODINTSOV	19.03	20.03	24.03
8	ODINTSOV	19.3	19.03	20.03	24.03	PROCHIK	19.03	24.03	20.03
9	POPOVKI	26.3	26.03.	27.03	-	RYBIN	02.03	05.03	05.03
10	PROCHIK	19.3	19.03	24.03	20.03	FEDOR.O.	13.03	20.03	11.03
11	RYBIN	02.3	02.03	05.03	03.03	SHICHKIN	25.03	26.03	27.03
12	RYBINA	12.03	12.03	16.03	18.04	BARDAKOV	12.04	18.04	12.04
13	FEDOR.O.	13.03	13.03	20.03	11.04.	KAZAKOV	11.04	11.04	19.04
14	FEDOR.A.	11.03	11.03	13.03	11.04	MASYUKOV	11.04	11.04	12.04
15	SHICHKIN	25.3	25.03.	26.03	27.03	TARANOV	11.04	11.04.	12.04.

1. BASELINE - AFTER EYES CLOSED - Base1 (4 min)+ Base2 (4-5 min) = MP powered on in "waiting" mode;
2. MP - AFTER EYES CLOSED MP powered on. = "talk" mode without sound;
3. MP(+) - AFTER EYES CLOSED MP (microprocessor) powered on. = "talk" mode without sound

BASELINE(1) BEA VALUES TABLE 2

		AbsPwr		Relative power value		DFV			AbsAmp		
	SURNAME	Δ+Θ	α	Δ+Θ	α	Δ	Θ	α	Δ	Θ	α
1	BELOUSOV	323,78	396,51	24,19	34,61	2,71	6,21	9,91	136,05	187,12	279,96
2	VOROBYEV	168,46	387,71	17,43	25,51	2,92	6,01	10,71	135,84	117,06	204,71
3	GRIGORIEV	165,29	138,96	24,88	16,81	1,14	2,17	10,97	116,26	83,33	126,31
4	KOZLOV	205,07	68,74	12,99	34,33	2,31	5,08	10,18	54,64	125,71	283,51
5	KUZNETSOV	327,78	243,66	24,49	21,16	3,02	7,19	9,25	121,64	94,04	140,53
6	LOSEV	444,95	300,07	29,17	20,17	2,54	6,58	9,38	180,11	112,72	106,09
7	NABIEV	247,81	14,79	10,56	52,53	2,23	4,16	9,54	130,89	112,57	396,21
8	ODINTSOV	277,88	279,89	16,51	31,64	2,91	5,51	10,73	113,82	91,38	153,55
9	POPOVKI	248,99	24,19	1,97	5,42	2,35	5,69	10,82	162,83	106,33	309,13
10	PROCHIK	230,68	720,95	21,2	45,54	2,82	4,73	9,82	165,51	7,22	297,41
11	RYBIN	329,4	693,53	15,65	28,31	2,26	5,45	10,67	154,79	172,11	206,12
12	RYBINA	161,77	1361,76	10,16	45,28	2,53	4,11	10,31	65,05	124,54	344,53
13	FEDOR.O.	405,93	1479,42	15,57	42,48	2,61	6,15	9,26	133,46	173,61	383,82
14	FEDOR.A.	513,44	1669,09	18,05	34,33	2,81	6,48	10,21	206,61	182,35	358,71
15	SHICHKIN	475,13	273,05	17,3	26,45	1,97	5,42	12,08	205,61	182,75	358,71

BEA VALUES IN "WAITING" MODE TABLE 3

		AbsPwr		Relative power value		DFV			AbsAmp		
	SURNAME	Δ+Θ	α	Δ+Θ	α	Δ	Θ	α	Δ	Θ	α
1	BELOUSOV	348,51	93,08	20,37	17,73	2,72	6,34	9,89	107,11	183,11	188,11
2	VOROBYEV	533,24	66,16	22,43	12,35	2,66	4,93	8,88	186,22	174,27	89,38
3	GRIGORIEV	318,11	54,56	48,99	6,75	3,06	4,84	9,26	154,79	119,41	82,01
4	KOZLOV	267,51	48,22	36,34	10,76	2,35	5,45	9,16	105,18	97,19	77,51
5	KUZNETSOV	305,57	274,47	33,22	27,42	2,79	6,13	8,58	142,64	131,91	153,02
6	LOSEV	486,65	85,11	48,01	8,63	2,52	4,85	8,82	145,89	195,04	361,57
7	NABIEV	248,61	147,66	10,51	52,93	2,23	6,16	9,58	130,89	182,57	206,21
8	ODINTSOV	109,03	114,98	16,98	19,22	2,66	4,71	9,28	79,93	80,11	113,18
9	POPOVKI	384,29	106,01	37,13	10,25	2,58	5,17	10,04	126,72	126,17	114,18
10	PROCHIK	315,77	49,98	42,26	5,92	2,27	4,56	8,67	135,01	147,73	78,56
11	RYBIN	253,59	857,74	11,01	23,87	2,06	4,03	10,06	116,99	127,78	313,13
12	RYBINA	354,48	718,66	28,82	10,77	2,55	5,35	8,71	111,7	166,08	121,17
13	FEDOR.O.	316,11	742,66	15,72	33,06	3,16	5,26	8,55	141,49	137,05	290,79
14	FEDOR.A.	379,75	716,91	15,64	33,7	2,51	4,31	10,0	143,47	164,19	295,09
15	SHICHKIN	475,13	99,29	39,95	8,68	4,93	5,42	9,89	152,49	154,92	83,63

BASELINE(2) BEA VALUES TABLE 4

		AbsPwr		Relative power value		DFV			AbsAmp		
	SURNAME	Δ+Θ	α	Δ+Θ	α	Δ	Θ	α	Δ	Θ	α
1	BELOUSOV	323,78	396,51	24,19	34,61	2,71	6,21	9,91	136,05	187,12	279,96
2	VOROBYEV	168,46	387,71	17,43	25,51	2,92	6,01	10,71	135,84	117,06	204,71
3	GRIGORIEV	165,29	138,96	24,88	16,81	1,14	2,17	10,97	116,26	83,33	126,31
4	KOZLOV	205,07	68,74	12,99	34,33	2,31	5,08	10,18	54,64	125,71	283,51
5	KUZNETSOV	327,78	243,66	24,49	21,16	3,02	7,19	9,25	121,64	94,04	140,53
6	LOSEV	444,95	300,07	29,17	20,17	2,54	6,58	9,38	180,11	112,72	106,09
7	ODINTSOV	277,88	279,89	16,51	31,64	2,91	5,51	9,54	130,89	112,57	396,21
8	PROCHIK	230,68	720,95	21,21	45,54	2,82	4,73	10,73	113,82	91,38	153,55
9	RYBIN	329,41	693,53	15,65	28,31	2,26	5,45	10,82	162,83	106,33	309,13
10	FEDOR.O.	405,93	1479,92	18,05	34,33	2,81	6,48	9,26	133,46	173,61	383,82
11	SHICHKIN	475,13	273,05	17,31	26,45	1,97	5,42	9,81	205,61	182,35	358,71
12	BARDAKOV	361,89	1107,96	13,45	41,54	2,21	5,63	9,81	154,22	135,66	359,36
13	KAZAKOV	529,88	882,06	23,07	36,68	2,41	5,77	10,09	154,89	187,59	314,32
14	MASLUKOV	513,44	1669,09	18,05	34,33	2,81	6,48	10,21	206,61	182,35	358,71
15	TARANOV	509,15	1546,26	16,28	47,92	2,12	6,59	10,54	205,61	182,75	358,71

BEA VALUES IN MP MODE	TABLE 5

		AbsPwr		Relative power value		DFV			AbsAmp		
	SURNAME	Δ+Θ	α	Δ+Θ	α	Δ	Θ	α	Δ	Θ	α
1	BELOUSOV	348,51	93,08	20,37	17,73	2,72	6,34	9,89	107,11	183,11	188,11
2	VOROBYEV	533,24	66,16	22,43	12,35	2,66	4,93	8,88	186,22	174,27	89,38
3	GRIGORIEV	318,11	54,56	48,99	6,75	3,06	4,84	9,26	143,37	117,64	171,31
4	KOZLOV	267,51	48,22	36,34	10,76	2,35	5,45	9,16	105,18	97,19	77,51
5	KUZNETSOV	305,57	274,47	33,22	27,42	2,79	6,13	8,58	142,64	131,91	153,02
6	LOSEV	486,65	75,48	22,14	18,38	2,52	4,85	8,82	145,89	195,04	361,57
7	ODINTSOV	248,61	147,66	10,51	52,93	2,23	6,16	9,58	130,89	182,57	206,21
8	ODINTSOV	109,03	114,98	16,98	19,22	2,55	6,41	10,24	79,93	80,11	113,18
9	PROCHIK	384,29	106,01	37,13	10,25	2,58	5,17	10,04	126,72	126,17	114,18
10	RYBIN	315,77	49,98	42,26	5,92	2,27	4,56	8,67	135,01	147,73	78,56
11	FEDOR.O.	253,59	857,74	11,01	23,87	2,06	4,03	10,06	197,02	163,58	260,61
12	BARDAKOV	678,34	106,86	28,82	10,77	2,55	5,35	8,71	111,7	166,08	121,17
13	KAZAKOV	479,89	73,08	15,72	33,06	3,16	5,26	8,55	141,4	137,05	290,79
14	MASLUKOV	161,12	129,31	15,64	33,7	2,51	4,31	10,0	143,47	164,19	295,09
15	TARANOV	357,63	188,55	39,95	8,68	4,93	5,42	9,89	152,49	154,92	83,63

BEA VALUES IN MP+ MODE	TABLE 6

		AbsPwr		Relative power value		DFV			AbsAmp		
	SURNAME	Δ+Θ	α	Δ+Θ	α	Δ	Θ	α	Δ	Θ	α
1	BELOUSOV	391,23	765,53	18,91	36,25	2,33	5,66	10,47	137,11	168,55	300,53
2	VOROBYEV	422,28	96,89	22,06	5,15	2,61	5,05	10,62	175,47	146,16	108,87
3	GRIGORIEV	196,23	107,71	27,2	16,7	2,71	5,36	10,89	113,39	98,01	114,91
4	KOZLOV	413,65	115,81	37,65	11,21	2,23	5,81	10,6	163,23	157,47	120,54
5	KUZNETSOV	201,94	276,38	19,87	25,82	2,4	5,31	9,11	99,64	121,38	183,52
6	LOSEV	276,25	176,7	35,08	21,82	2,66	5,95	10,19	125,93	135,42	144,31
7	ODINTSOV	191,25	239,46	18,35	24,21	2,17	4,88	10,99	113,63	85,52	157,19
8	PROCHIK	591,42	318,26	39,41	19,98	3,31	6,62	9,71	170,35	203,35	189,19
9	RYBIN	284,23	439,99	20,06	30,34	2,79	3,94	9,89	109,61	149,12	226,29
10	FEDOR.O.	443,41	915,05	19,47	32,36	2,62	7,03	8,58	130,89	191,45	314,93
11	SHICHKIN	226,86	364,89	23,41	31,41	2,41	5,22	11,41	115,82	108,97	199,83
12	BARDAKOV	208,61	201,49	22,4	17,44	2,37	4,49	8,85	98,3	123,28	157,531
13	KAZAKOV	677,35	62,65	50,59	6,41	2,32	5,23	9,21	222,11	160,03	87,28
14	MASLUKOV	275,74	253,03	31,68	18,8	2,69	5,46	10,67	164,38	136,13	161,22
15	TARANOV	306,34	166,64	23,87	12,22	3,02	5,51	10,07	122,54	149,37	138,49

TABLE 7

STATISTICAL PROCESSING OF PAIRWISE COMPARISION

BASELINE and waiting	Wilcoxon Matched Pairs Test Marked tests are significant at p <.05000			
	Valid N	T	Z	p-value
AbsPwr Baseline alpha and AbsPwr Waiting alpha	15	16	2,499032	0,012454
Relative power value Baseline delta theta and Relative power value Waiting theta	15	16	2,499032	0,012454
Relative power value Baseline alpha and Relative power value Waiting alpha	15	10	2,839809	0,004514

TABLE 8

BASELINE2 and MP	Wilcoxon Matched Pairs Test Marked tests are significant at p <.05000			
	Valid N	T	Z	p-value
AbsPwr α and AbsPwr α	15	10	2,839809	0,004514
Relative power value α and Relative power value α	15	15	2,555828254	0,010593997

TABLE 9

MP+ and Talk	Wilcoxon Matched Pairs Test Marked tests are significant at p <.05000 Marked tests are significant at p <.05000			
	Valid N	T	Z	p-value
AbsPwr α and AbsPwr α	15	18	2,385440	0,017059

A B

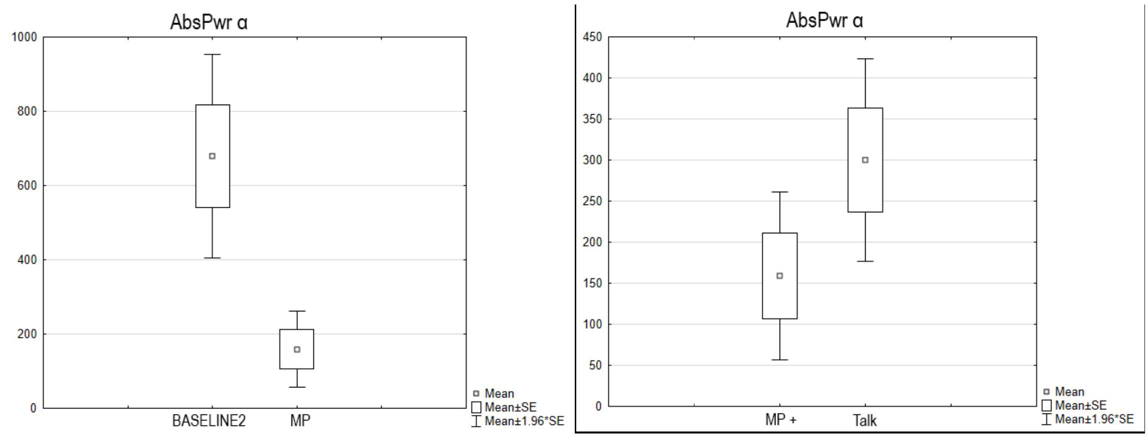
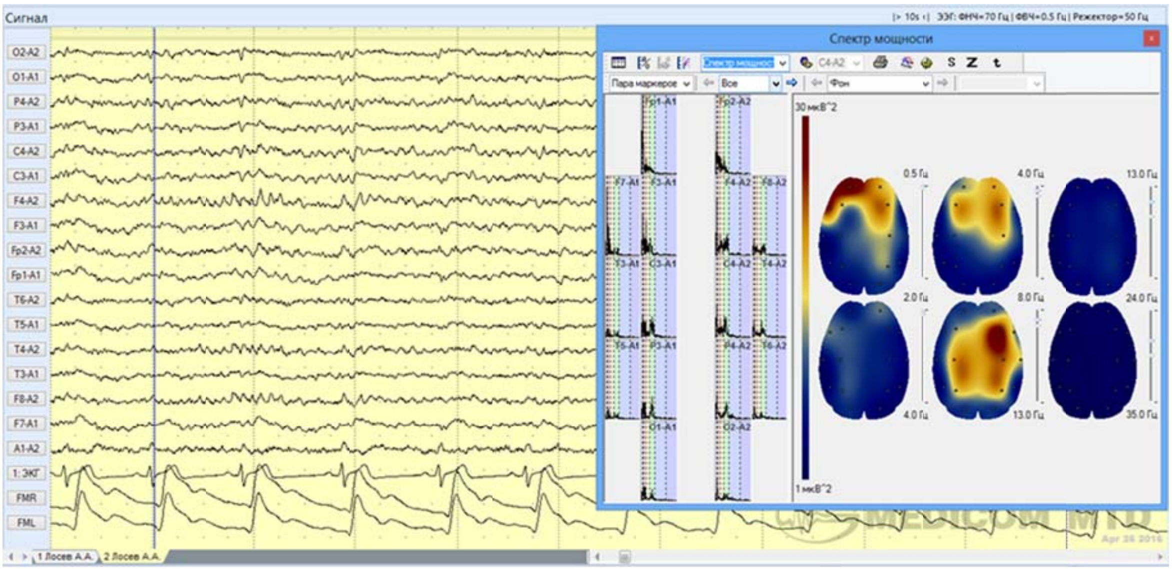


Fig. 1 Statistical processing chart: A – baseline and MP; B – baseline MP+ and "talk"

A



B

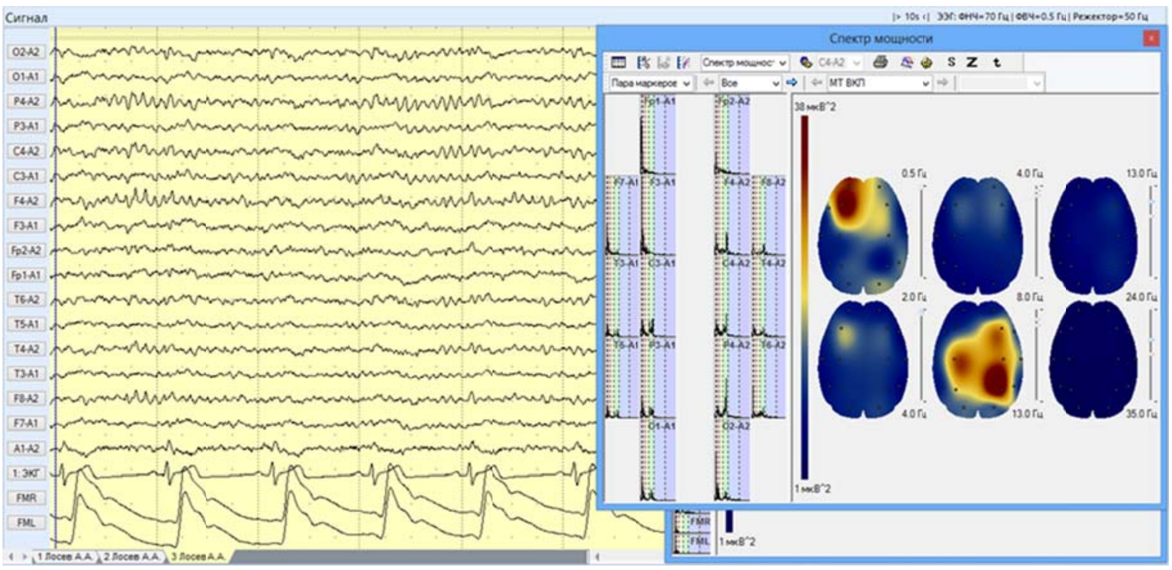
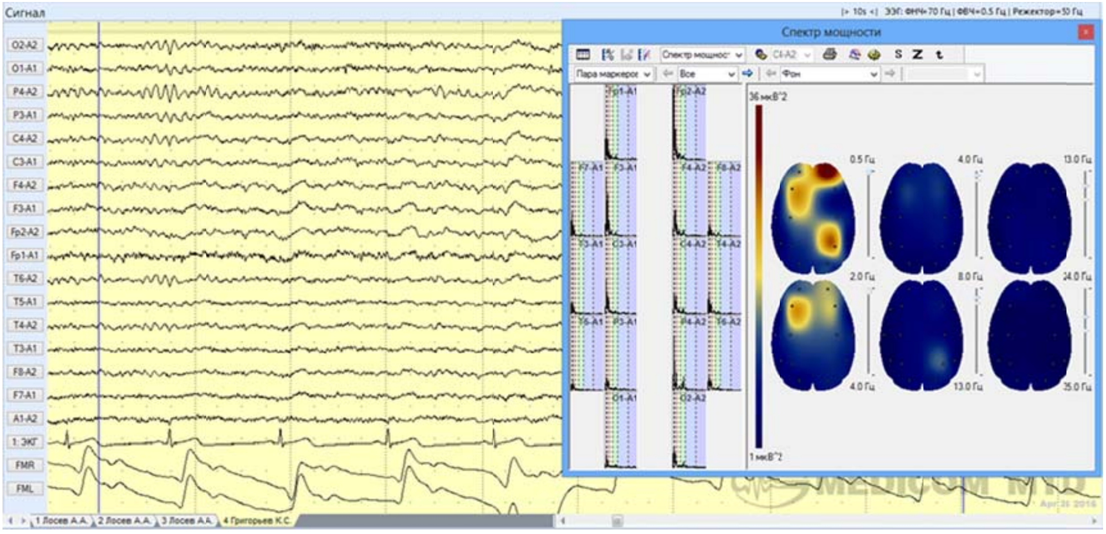


Fig. 2 EEG L-EVA: A – baseline; B – MP+

L-ev1. Correlation dimension D2 and correlation entropy K2 for Column No. **1**. Shift for the reconstructed phase space ⍰t=3. The attractor converges well for a shift of T=3

	D2	K2, bit/s
L-ev1	6.56	129

A



B

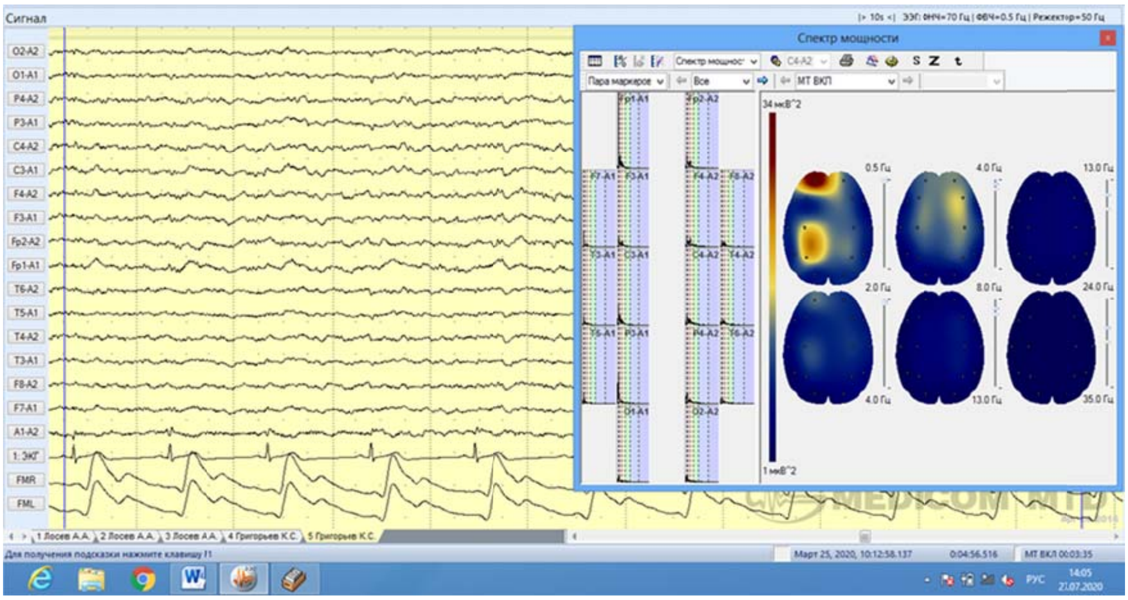


Fig. 3 EEG G-EVA: A – baseline; B – MP+

G-ev1. Corr. dimension D2 and correlation entropy K2 for Column No. 1. Shift for the reconstructed phase space t=1.

	D2	K2, bit/s
G-ev 1	5.28	468

The attractor converges only for a very small shift (t=1) . This suggests that there is a very weak correlation even between adjacent encephalogram potential values. Very high entropy suggests the same.