RELATIONSHIPS BETWEEN THE NEURO-ENDOCRINE PARAMETERS AND VIRTUAL CHAKRAS ENERGY AND ASYMMETRY

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Abstract

Background. Earlier, we found a close correlation between EEG and gas-discharge image (GDI) parameters. The aim of this study is to analyze the relationship of EEG parameters with the energy and asymmetry of virtual chakras, reconstructed on the basis of GDI parameters.

Material and Methods. We observed twice 31 women and 29 men aged 26-76 years with dysfunction of neuroendocrine-immune complex. In the morning in baseline condition at first registered GDI by the method of GDV by the device “GDV Chamber” (“Biotechprogress”, SPb, RF). Than we registered EEG. Results processed by method of canonical analysis, using the software package “Statistica 64”. Results. The coefficients of canonical correlation between the EEG parameters and virtual Chakras Energy are in the interval 0,415±0,564 and 0,358±0,528 when registering without a filter and with a filter, respectively. Additional inclusion of HRV and endocrine parameters increases the strength of the canonical correlation to 0,768 and 0,772, respectively. The coefficients of canonical correlation between the EEG parameters and individual virtual Chakras Asymmetry are in the interval 0,284±0,634 and 0,152±0,458 when registering without a filter and with a filter, respectively. Integral coefficient of the canonical correlation is 0,820. Conclusion. The above data, taken together with the previous ones, state that between parameters of neuroendocrine-immune complex and GDV exist strong canonical correlation suggesting suitability of the latter method.

Key words: Gas Discharge Visualization, virtual Chakras, EEG, relationships.
According to Ayurvedic medicine, Chakras are power centers, related to the endocrine glands and neural plexus as well as to some organs. Chase CR [9] provides a table according to which the first Chakra is associated with adrenals, pelvic nerve plexus, spine, kidneys, bladder, large intestine; second Chakra with testes/ovaries, inferior mesenteric ganglion, ileum, organs of reproduction; third Chakra with [endocrine] pancreas, celiac plexus ganglion, liver, gall bladder, stomach, duodenum, pancreas, spleen; fourth Chakra with thymus, celiac plexus, heart, circulation, vagus nerve; fifth Chakra with thyroid and parathyroid glands, inferior cervical ganglion, lungs, bronchus, larynx, pharynx, large intestine, vagus nerve; sixth Chakra with pituitary and pineal glands, thalamus, hypothalamus, superior cervical ganglion, left brain, lower brain, ears/nose, left eye; seventh Chakra with pineal gland, right brain, upper brain, right eye. Korotkov KG [12] put forward the concept that each Chakra is associated with a part of the finger. This approach is embodied in the “GDV Chakras” program, which allows us to quantify the state of virtual Chakras.

Earlier, we found a close correlation between EEG and gas-discharge image (GDI) parameters [6]. The aim of this study is to analyze the relationship of EEG parameters with the energy and asymmetry of virtual chakras, reconstructed on the basis of GDI parameters

**MATERIAL AND METHODS**

The object of observation were 60 volunteers: 31 women and 29 men aged 26-76 years with dysfunction of neuro-endocrine-immune complex and dysmetabolism.

In the morning we registered the GDI (Dubkova GI) by the method of GDV by the device of “GDV Chamber” (“Biotechprogress”, SPb, RF). The first base parameter of GDV is Area of GDI in Right, Frontal and Left projections registered both with and without polyethylene filter. The second base parameter is a coefficient of Shape. The third base parameter of GDI is Entropy. Program estimates also Energy and Asymmetry of virtual Chakras [11-13]. Than EEG recorded (TA Korolyshyn) a hardware-software complex “NeuroCom Standard” (KhAl MEDICA, Kharkiv) monopolar in 16 loci (Fp1, Fp2, F3, F4, F7, F8, C3, C4, T3, T4, P3, P4, T5, T6, O1, O2) by 10-20 international system, with the reference electrodes A and Ref tassels on the ears. The duration of the epoch was 25 sec. Among the options considered the average EEG amplitude (µV), average frequency (Hz), frequency deviation (Hz), index (%) as well as absolute (µV²/Hz) and relative (%) power spectrum density (PSD) of basic rhythms: β (35÷13 Hz), α (13÷8 Hz), θ (8÷4 Hz) and δ (4÷0,5 Hz) in all loci, according to the instructions of the device. In addition, calculated coefficient of Asymmetry (As) and Laterality Index (LI) for PSD each Rhythm using formulas:

\[
As, \% = 100\times\frac{(Max - Min)\times Min}{\Sigma [200\times(\text{Right} - \text{Left})/(\text{Right} + \text{Left})]} / 8
\]

We calculated also for each locus EEG Shannon’s [18] Entropy (h) of normalized PSD using Popovych’s formulas [10,17]:

\[
h_{\text{EEG}} = - [\text{PSD}_\alpha \times \log_2 \text{PSD}_\alpha + \text{PSD}_\beta \times \log_2 \text{PSD}_\beta + \text{PSD}_\theta \times \log_2 \text{PSD}_\theta + \text{PSD}_\delta \times \log_2 \text{PSD}_\delta] / \log_2 4
\]

**RESULTS AND DISCUSSION**

Screening (Table 1) revealed the closest link between relative PSD of β-rhythm in locus T5 and virtual Chakras 1 and 6 Energy registered with filter (Figs. 1 and 2).
Ch1E(f) = 0.093 + 0.0061*T5B%
Correlation: r = 0.30

Ch6E(f) = -0.20 + 0.00616*T5B%
Correlation: r = 0.30

Fig. 1. Scatterplot of correlation between relative PSD of β-rhythm in locus T5 (X-line) and virtual Chakra 1 Energy (registration with filter) (Y-line)

Fig. 2. Scatterplot of correlation between relative PSD of β-rhythm in locus T5 (X-line) and virtual Chakra 6 Energy (registration with filter) (Y-line)

The coefficients of canonical correlation between the EEG parameters and virtual Chakras Energy are in the interval 0.415±0.564 and 0.358±0.528 when registering without a filter and with a filter, respectively (Fig. 3).
Fig. 3. Multiple correlation coefficients between EEG parameters and Energy of raw virtual Chakras and registered with filter

As we can see, the registration with the use of the filter reduces the strength of the connections of the EEG parameters with the Energy of the Chakras, mostly the sixth and seventh, except for the first Chakra. This is in perfect agreement with the classical ideas about the relationship of the former to the nervous system [9], as well as with the concept of Korotkov KG [11-13] that GDI, taken off without filter, characterizes the functional changes of organism, while taken with a filter characterizes organic changes.
| Variable | Ch1E | Ch1Ef | Ch2E | Ch2Ef | Ch3E | Ch3Ef | Ch4E | Ch4Ef | Ch5E | Ch5Ef | Ch6E | Ch6Ef | Ch7E | Ch7Ef |
|----------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|
| DF       | 0.16 | 0.27  | 0.11 | 0.16  | 0.11 | 0.24  | 0.13 | 0.14  | 0.10 | 0.18  | 0.14 | 0.22  | 0.15 | 0.22  |
| AF       | 0.24 | 0.22  | 0.24 | 0.22  | 0.17 | 0.16  | 0.19 | 0.21  | 0.14 | 0.12  | 0.19 | 0.14  | 0.19 | 0.19  |
| L4A      | 0.17 | 0.19  | 0.23 | 0.21  | 0.21 | 0.17  | 0.20 | 0.17  | 0.23 | 0.16  | 0.28 | 0.17  | 0.24 | 0.20  |
| FP1H     | 0.20 | 0.16  | 0.26 | 0.18  | 0.25 | 0.18  | 0.26 | 0.15  | 0.09 | 0.11  | 0.17 | 0.14  | 0.28 | 0.15  |
| FP2H     | 0.18 | 0.12  | 0.21 | 0.14  | 0.22 | 0.12  | 0.24 | 0.15  | 0.09 | 0.12  | 0.19 | 0.14  | 0.17 | 0.10  |
| FP2B%    | 0.21 | 0.26  | 0.16 | 0.19  | 0.17 | 0.19  | 0.17 | 0.20  | 0.10 | 0.21  | 0.20 | 0.24  | 0.15 | 0.17  |
| F3H      | 0.21 | 0.19  | 0.19 | 0.16  | 0.23 | 0.15  | 0.25 | 0.14  | 0.18 | 0.23  | 0.24 | 0.22  | 0.17 | 0.16  |
| F3B%     | 0.19 | 0.22  | 0.15 | 0.16  | 0.12 | 0.18  | 0.13 | 0.18  | 0.14 | 0.19  | 0.23 | 0.23  | 0.14 | 0.17  |
| F3T%     | 0.25 | 0.22  | 0.24 | 0.20  | 0.22 | 0.20  | 0.35 | 0.25  | 0.17 | 0.17  | 0.19 | 0.19  | 0.25 | 0.18  |
| F3A      | -0.07 | -0.21 | -0.08 | -0.15 | -0.06 | -0.18 | -0.13 | -0.22 | -0.04 | -0.11 | -0.01 | -0.08 | -0.10 | -0.13 |
| F4H      | 0.25 | 0.19  | 0.29 | 0.23  | 0.28 | 0.21  | 0.28 | 0.18  | 0.15 | 0.18  | 0.24 | 0.22  | 0.28 | 0.25  |
| F4T%     | 0.19 | 0.14  | 0.25 | 0.19  | 0.19 | 0.17  | 0.31 | 0.24  | 0.09 | 0.08  | 0.12 | 0.12  | 0.27 | 0.18  |
| F7T%     | 0.22 | 0.13  | 0.28 | 0.18  | 0.24 | 0.10  | 0.33 | 0.23  | 0.06 | 0.01  | 0.11 | 0.07  | 0.28 | 0.15  |
| F8H      | 0.15 | 0.18  | 0.22 | 0.23  | 0.20 | 0.18  | 0.22 | 0.19  | 0.12 | 0.14  | 0.18 | 0.19  | 0.27 | 0.22  |
| F8T%     | 0.21 | 0.13  | 0.23 | 0.16  | 0.16 | 0.10  | 0.26 | 0.19  | 0.09 | 0.05  | 0.14 | 0.09  | 0.28 | 0.15  |
| T3H      | 0.18 | 0.13  | 0.23 | 0.16  | 0.23 | 0.11  | 0.25 | 0.15  | 0.12 | 0.10  | 0.20 | 0.13  | 0.21 | 0.15  |
| T4H      | 0.21 | 0.20  | 0.29 | 0.24  | 0.30 | 0.21  | 0.28 | 0.25  | 0.12 | 0.13  | 0.23 | 0.21  | 0.29 | 0.28  |
| T4A      | 0.05 | -0.06 | 0.06 | 0.02  | 0.08 | -0.03 | 0.03 | -0.08 | 0.11 | 0.01  | 0.17 | 0.09  | 0.07 | 0.05  |
| T4D      | -0.08 | -0.17 | -0.12 | -0.20 | -0.15 | -0.24 | -0.12 | -0.19 | -0.08 | -0.14 | -0.14 | -0.17 | -0.13 | -0.21 |
| C3T%     | 0.15 | 0.14  | 0.20 | 0.12  | 0.14 | 0.13  | 0.27 | 0.23  | 0.11 | 0.11  | 0.14 | 0.15  | 0.23 | 0.12  |
| T5B%     | 0.25 | 0.30  | 0.15 | 0.20  | 0.21 | 0.24  | 0.17 | 0.22  | 0.23 | 0.29  | 0.27 | 0.30  | 0.14 | 0.20  |
| T6H      | 0.13 | 0.15  | 0.19 | 0.17  | 0.18 | 0.14  | 0.25 | 0.22  | 0.09 | 0.16  | 0.16 | 0.21  | 0.21 | 0.16  |
| T6B      | 0.22 | 0.22  | 0.26 | 0.28  | 0.25 | 0.27  | 0.20 | 0.18  | 0.24 | 0.17  | 0.29 | 0.21  | 0.26 | 0.29  |
| P3A%     | -0.08 | -0.16 | -0.06 | -0.14 | -0.06 | -0.14 | -0.18 | -0.24 | -0.13 | -0.15 | -0.10 | -0.13 | -0.06 | -0.12 |
| P4A      | -0.02 | -0.15 | -0.03 | -0.13 | -0.03 | -0.12 | -0.14 | -0.23 | -0.02 | -0.11 | -0.00 | -0.10 | -0.04 | -0.12 |
| O2B%     | 0.19 | 0.28  | 0.15 | 0.18  | 0.20 | 0.27  | 0.18 | 0.20  | 0.27 | 0.27  | 0.29 | 0.14  | 0.18  | 0.18  |
| O2D      | -0.21 | -0.17 | -0.21 | -0.15 | -0.24 | -0.15 | -0.21 | -0.15 | -0.07 | -0.12 | -0.14 | -0.13 | -0.17 | -0.15 |
Further, for canonical analysis, EEG parameters were combined with HRV parameters and hormones (see previous article [6]).

Interim results are shown in Tables 2 and 3 and Figures 4 and 5.

Table 2. Factor structure of EEG, HRV & Endocrine and virtual Chakras (without filter)

Energy Roots

| Left set EEG, HRV & Hormones | R   |
|-----------------------------|-----|
| Entropy T4                  | 0.506 |
| Entropy F8                  | 0.436 |
| Entropy Fp1                 | 0.416 |
| Entropy F4                  | 0.408 |
| Entropy T6                  | 0.361 |
| Testosterone standard, Z    | 0.356 |
| F8-0 PSD, %                 | 0.353 |
| Entropy Fp2                 | 0.318 |
| Laterality α, Hz            | 0.305 |
| VLF, msec²                  | 0.302 |
| F4-0 PSD, %                 | 0.301 |
| T6-β PSD, μV²/Hz            | 0.296 |
| F7-0 PSD, %                 | 0.295 |
| VLF+ULF, msec²              | 0.287 |
| Entropy T3                  | 0.285 |
| C3-0 PSD, %                 | 0.250 |
| Total Power HRV, msec²      | 0.233 |
| O2-β PSD, %                 | 0.196 |
| T4-α PSD, μV²/Hz            | 0.181 |
| F3-0 PSD, %                 | 0.179 |
| Entropy F3                  | 0.155 |
| Frequency α, Hz             | 0.134 |
| Heart Rate                  | 0.124 |
| Amplitude Mode HRV, %       | 0.108 |
| Vegetative Balance Index    | 0.089 |
| T5-β PSD, %                 | 0.083 |
| P3-α PSD, %                 | 0.081 |
| Testosterone, nM/L          | -0.315 |
| LFnu, %                     | -0.229 |
| O2-δ PSD, μV²/Hz            | -0.215 |

Right set Chakras Energy R

| 7 E                          | 0.694 |
| 2 E                          | 0.600 |
| 4 E                          | 0.467 |
| 3 E                          | 0.446 |
| 6 E                          | 0.387 |
| 1 E                          | 0.282 |
| 5 E                          | 0.155 |
Fig. 4. Scatterplot of canonical correlation between Neuro-endocrine parameters (X-line) and virtual Chakras Energy (registration without filter) (Y-line)

R=0.768; $R^2=0.590$; $\chi^2_{(245)}=313; p=0.002; \Lambda \text{Prime}=0.039$
Table 3. Factor structure of EEG, HRV & Endocrine and virtual Chakras (with filter)

| Left set EEG, HRV & Hormones | R   |
|------------------------------|-----|
| Entropy T4                   | 0.416|
| HF/TP                        | 0.237|
| Testosterone standard, Z     | 0.235|
| Frequency $\alpha$, Hz       | 0.216|
| F3-0 PSD, %                  | 0.209|
| T6-β PSD, $\mu V^2/Hz$       | 0.209|
| Heart Rate                   | 0.192|
| F3-β PSD, %                  | 0.168|
| Laterality $\alpha$, Hz      | 0.159|
| Frequency $\delta$, Hz       | 0.119|
| T5-β PSD, %                  | 0.075|
| O1-β PSD, %                  | 0.073|
| O2-β PSD, %                  | 0.060|
| Total Power HRV, msec$^2$     | 0.063|
| VLF, msec$^2$                | 0.043|
| Testosterone, nM/L           | -0.468|
| P4-α PSD, $\mu V^2/Hz$       | -0.196|
| Amplitude Mode HRV, %        | -0.189|
| T4-δ PSD, $\mu V^2/Hz$       | -0.183|
| P3-α PSD, %                  | -0.159|
| Vegetative Balance Index     | -0.145|
| LFnu, %                      | -0.143|
| F3-α PSD, $\mu V^2/Hz$       | -0.120|
| Cortisol, nM/L               | -0.106|

| Right set Chakras Energy     | R   |
|------------------------------|-----|
| 4 E f                        | 0.633|
| 7 E f                        | 0.586|
| 2 E f                        | 0.530|
| 1 E f                        | 0.296|
| 3 E f                        | 0.283|
| 6 E f                        | 0.208|
| 5 E f                        | 0.007|
In the end, it was found (Table 4) that the prominent places in the factor structure of the root of Chakra Energies are occupied by the seventh, second and fourth Chakras, which are responsible for: the pineal gland, right brain, upper brain, right eye; testes/ovaries; and heart, circulation, vagal nerve, respectively [9]. On the other hand, the factor structure of the neuro-endocrine root is represented primarily by Entropies and PSD right-handed (paired) loci, as well as testosterone.
Table 4. Factor structure of EEG, HRV & Endocrine and virtual Chakras Energy Roots

| EEG, HRV & Hormones       | R    |
|---------------------------|------|
| Entropy T4                | -0.460|
| Testosterone standard, Z  | -0.343|
| F7-θ PSD, %               | -0.320|
| Entropy F8                | -0.318|
| F8-θ PSD, %               | -0.315|
| T6-β PSD, µV²/Hz          | -0.298|
| F4-θ PSD, %               | -0.283|
| Laterality α, Hz          | -0.280|
| Entropy F4                | -0.277|
| Entropy T6                | -0.266|
| C3-θ PSD, %               | -0.233|
| Entropy T3                | -0.230|
| F3-β PSD, %               | -0.226|
| Frequency α, Hz           | -0.220|
| Heart Rate                | -0.213|
| Entropy Fp1               | -0.211|
| HF/TP                     | -0.189|
| Entropy Fp2               | -0.172|
| T4-α PSD, µV²/Hz          | -0.165|
| Fp2-β PSD, %              | -0.161|
| F3-δ PSD, %               | -0.154|
| Frequency δ, Hz           | -0.122|
| O2-β PSD, %               | -0.111|
| O1-β PSD, %               | -0.106|
| VLF, msec²                | -0.108|
| Total Power HRV, msec²    | -0.088|
| T5-β PSD, %               | -0.078|
| Entropy F3                | -0.055|
| Testosterone, nM/L        | 0.398|
| T4-δ PSD, µV²/Hz          | 0.217|
| O2-δ PSD, µV²/Hz          | 0.136|
| LFnu, %                   | 0.124|
| P4-α PSD, µV²/Hz          | 0.094|
| Cortisol, nM/L            | 0.053|
| Amplitude Mode HRV, %     | 0.017|

| Chakras Energy            | R    |
|---------------------------|------|
| 7 E                       | -0.583|
| 7 E f                     | -0.578|
| 2 E                       | -0.531|
| 2 E f                     | -0.522|
| 4 E f                     | -0.544|
| 4 E                       | -0.487|
| 3 E                       | -0.333|
| 3 E f                     | -0.286|
| 6 E                       | -0.306|
| 6 E f                     | -0.274|
| 1 E f                     | -0.283|
| 1 E                       | -0.259|
| 5 E                       | -0.111|
| 5 E f                     | -0.058|
Fig. 6. Scatterplot of canonical correlation between Neuro-endocrine parameters (X-line) and virtual Chakras Energy (Y-line)

Another basic characteristic of virtual Chakras is their Asymmetry. This is consistent with the position of the existence of morpho-functional asymmetry of many, if not all, paired organs or their halves, including the hemispheres of the brain [7,8,14-16].

Screening revealed a number of significant correlations, the strongest of which are shown in Figures 7 and 8.

Fig. 7. Scatterplot of correlation between PSD of α-rhythm in locus T3 (X-line) and virtual Chakra 3 Asymmetry (Y-line)
Ch₃ A = 0.148 - 0.0016*Fp₁-B
Correlation: r = -0.31

Fig. 8. Scatterplot of correlation between PSD of β-rhythm in locus Fp₁ (X-line) and virtual Chakra 3 Asymmetry (Y-line)

Interestingly, the effect of the polyethylene filter on the strength of the bonds with the EEG parameters of the Asymmetry of the Chakras was much more noticeable compared to their Energy. This is especially true of the Asymmetry of the third and seventh Chakras, while the EEG connections of the sixth Chakra remain stable (Fig. 9).

Fig. 9. Multiple correlation coefficients between EEG parameters and Asymmetry of raw virtual Chakras and registered with filter

In general, the canonical correlation between EEG parameters and the asymmetry of virtual chakras is stated as strong (Table 5 and Fig. 10).
Table 5. Factor structure of EEG and virtual Chakras Asymmetry Roots

| Left set EEG, HRV&Hormones | R    |
|----------------------------|------|
| T5-0 PSD, μV²/Hz          | -0.488 |
| Fp1-θ PSD, μV²/Hz         | -0.471 |
| T4-θ PSD, μV²/Hz          | -0.436 |
| Fp-2θ PSD, μV²/Hz         | -0.432 |
| F7-θ PSD, μV²/Hz          | -0.430 |
| C3-0 PSD, μV²/Hz          | -0.415 |
| T3-α PSD, μV²/Hz          | -0.407 |
| O1-0 PSD, μV²/Hz          | -0.404 |
| Index β, %                | -0.400 |
| F3-0 PSD, μV²/Hz          | -0.337 |
| F4-θ PSD, μV²/Hz          | -0.329 |
| T5-δ PSD, μV²/Hz          | -0.314 |
| T5-δ PSD, %               | -0.245 |
| O1-α PSD, μV²/Hz          | -0.313 |
| F7-0 PSD, μV²/Hz          | -0.291 |
| C4-δ PSD, μV²/Hz          | -0.289 |
| Fp2-θ PSD, μV²/Hz         | -0.275 |
| Fp1-β PSD, μV²/Hz         | -0.274 |
| T-5α PSD, μV²/Hz          | -0.245 |
| F3-α PSD, μV²/Hz          | -0.240 |
| C4-α PSD, μV²/Hz          | -0.212 |
| T6-β PSD, μV²/Hz          | -0.179 |
| Frequency β, Hz           | 0.397 |
| Fp2-β PSD, %              | 0.289 |
| Frequency θ, Hz           | 0.282 |
| E3-β PSD, %               | 0.278 |
| Laterality δ, %           | 0.171 |
| P3-β PSD, %               | 0.120 |
| O2-β PSD, %               | 0.119 |
| Frequency δ, Hz           | 0.091 |

| Right set Chakras Asymmetry | R    |
|-----------------------------|------|
| 3 A                         | 0.519 |
| 5 A f                       | 0.515 |
| 2 A                         | 0.488 |
| 6 A f                       | 0.421 |
| 3 A f                       | 0.375 |
| 2 A f                       | 0.361 |
| 7 A                         | 0.343 |
| 7 A f                       | 0.260 |
| 4 A                         | -0.162 |
| 1 A                         | -0.147 |
| 6 A                         | -0.053 |
| 5 A                         | -0.048 |
| 1 A f                       | -0.037 |
CONCLUSION

We have been shown that exist strong canonical correlation between parameters of GDV and principal neuroendocrine factors of adaptation [1,6], EEG [2,6] as well as parameters of leukocytogram [5], immunity [3] and phagocytosis [4].

The above data, taken together with the previous ones, state that between parameters of neuro-endocrine-immune complex and GDV exist strong canonical correlation suggesting suitability of the latter method.

However, mathematics, despite the status of the queen of sciences, is unable to solve the problem of localizing the parameters of the chakras and neuro-endocrine-immune complex on the abscissa as the cause, or on the ordinate as a consequence …

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ACCORDANCE TO ETHICS STANDARDS

Tests in volunteers are conducted in accordance with positions of Helsinki Declaration 1975, revised and complemented in 2002, and directive of National Committee on ethics of scientific researches. During realization of tests from all participants the informed consent is got and used all measures for providing of anonymity of participants.

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