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English





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Daniela Hurajová, M. D.

PhDr. Valentín Dikarev

Technical Editor And Graphic Design

Ing. Juraj Solár

Contacts

E-mail:

office@naturalnamedicina.com

URL: www.naturalnamedicina.com

Adresa:

Ivanská cesta č. 23

821 04 Bratislava, Slovak Republic





Editorial

Associate Prof. Dr. Vojtech Gajdoš, CSc.

Dear readers,

You are holding the first edition of our magazine in this year. Every magazine is created because of the need to present new information which is a result of a certain groups' work. In our case, it is a group of people who are engaged in natural medicine, acupuncture and natural and social sciences that are connected with natural medicine. Human curiosity has no boundaries and the excessive amount of new pieces of knowledge, experiences and various connections that emerge from it ask for an adequate ventilation, a discussion, which is the case in our magazine. Despite its short existence, our magazine has managed to create a stable form of content, which it aims to maintain in the following time of the year. Articles on theory and practice of acupuncture complied with observations from acupuncture practice and perspectives from parallel interdisciplinary specializations create the base.

Continuing development in theory of acupuncture is presented in an important article of authors G. Solár, M. D., PhD. and Z. Solárová, M. P., PhD. In the previous parts of the cycle, conception of a complex dynamic pyramid model in acupuncture, principles of the model and horizontal connections that apply within it were presented and described. In this contribution, vertical connections between the components of the model will be analysed.

Another essential contribution done by T. Mochňáč, M. D., PhD. engages with the analysis of interactions of acupunctural structures from the view of intensity of their activity. Based on this analysis author presents a new diagnostic system

using a variety of graphical displays. The author tested the results of application of this system in practice and used them to formulate a hypothesis about the functioning of acupuncture in correspondence to the theory of orchestrated objective reduction of quantum coherence (ORCH OR).

An interesting and stimulating point of view is provided by an article of authors Prof. E. R. Muldashev, M.D., DrSc. and R.F. Galiakhmetov, M.D., CSc., who inform us about cellular and vascular reactions in biologically active points during local application of Alloplant biomaterial and a preparation from Aloe. The authors state that an injection of the biomaterial dispersed by Alloplant leads to an increase of the whole area of capillary lumen and perivascular infiltration by macrophages. Data collected in the presented experiment show the suitability of use of Alloplant biomaterials in pharmacopuncture.

Another one from the articles that widen the extent of topics that our magazine presents in the area of natural medicine is the contribution of authors Mgr. R. Klobucký, PhD., Dr. M. Kozánek, CSc., Associate Professor M. Čambal, M. D., PhD. and RNDr. P. Takáč, CSc. It is the first one of the prepared range and deals with the problems of larval therapy. In this part, the authors evaluate the social impact of diseases which are curable by larval therapy and provide an overview of prevalence of chronic (unhealed ones) wounds of lower limbs.

In an insight into acupunctural thinking, D. Hurajová, M. D. thinks about the importance of acupuncture in her life and medical practice. She declares the positive assets that acupuncture has provided for her understanding of overall approach to her patients and harmonization of her diagnostic and medical activity.





An inspiring view on the impact of natural, namely geological environment in terms of interdisciplinary points of view is provided by the authors Prof. Dr. F. Baliak, PhD., Mgr. M. Ondrášik, PhD. and Mgr. M. Brček, PhD. Except for the overview of fundamental terms, their contribution shows a summary of geological factors and their division into geo-potentials and geo-barriers. I believe that such division is useful in terms of recognition of natural factors and their impact on natural and human health.

The article also discusses a current issue of the impact of various geological materials – minerals on the health state of humans and stresses the need of a more exact approach to its evaluation.

Dear readers, we expect that the new volume of our magazine will – in its traditional form – bring information about natural medicine, acupuncture and interdisciplinary pieces of knowledge, which will allow to deepen and better interpret the knowledge that time brings in theory and practice of natural medicine. We believe that it will attract more members of this one but also a wider community of doctors and experts from interdisciplinary specializations with the aim to deepen the cognition and help to enhance the life of nature as a whole.

Associate Professor Dr. Vojtech Gajdoš, CSc.:

President of the Society of Interdisciplinary Studies

E-mail: vojtechgajdos@gmail.com

Scientific Council

Prof. Dr. František Baliak, PhD.

*STU Bratislava, Civil Engineering,
Department of Geotechnics*

Dr. Katarína Bíliková, PhD.

*Dpt. of Molecular Apidology, detached
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*Slovak University of Agriculture
Institute of Biodiversity Conservation
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*First Department of Surgery, Faculty
of Medicine, Comenius University,
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*Department of Medical Biochemistry,
Jessenius Faculty of Medicine in
Martin, Comenius University in
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Juraj Gajdoš, M.D.

*General Practitioners for Adults and
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and diabetic foot, Nitra*

**Prof. Marián Mokán, M. D.,
DrSc., FRCP Edin**
*Department of Internal Medicine I.,
Jessenius Faculty of Medicine
Comenius University and University
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**Prof. Ernst Rifgatovič Muldašev,
M. D., DrSc.**
*Russian Eye and Plastic Surgery
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Director*

**Prof. Rafik Talgatovič
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*Laureate of the State prize of the
USSR, academician
Chief of the Laboratory of
biomechanical systems of the
Mechanical Engineering Research
Institute of the Russian Academy of
Sciences, Moscow, Russian Federation*

**Associate Prof. Jana
Slobodníková, M. D., CSc.**
h. Prof.
*Faculty of Health, KLVM,
Alexander Dubcek University of
Trencin*

Gustáv Solár, M. D., PhD.
*The First Clinic of Acupuncture and
Natural Medicine of G.Solar s. r. o.,
professional supervisor*

Zlatica Solárová, M. P., PhD.
*The First Clinic of Acupuncture and
Natural Medicine of G.Solar s. r. o.,
executive director*

Prof. Miron Šramka, M. D., DrSc.
*St. Elisabeth Cancer Institute,
Bratislava, Department of stereotactic
radiosurgery, St. Elisabeth University
of Health and Social Sciences,
Bratislava*

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*President of Apitherapy Consulting &
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Director for Foreign Affairs*





Vertical relations of the pyramid model in acupuncture

Gustáv Solár, M. D., PhD., Zlatica Solárová, M. P., PhD.

Summary

A complex dynamic pyramid model in acupuncture and its horizontal relations were presented in the previous sections of this periodical. This study analyses the vertical relationship of this model. While the horizontal plane of the model is a balanced arrangement of Yang and Yin and the mutual relationships of meridians are derived from the basis of triplets, the vertical plane is mainly dynamical, but also significantly stabilizing. One of the key roles is played by the bladder meridian (VU). This study confirms the interdependence of all twelve meridians as well as the linking of the vertical and horizontal planes. The links are dynamic, spatial and multidimensional and form an energy-informative network.

Key words:

Acupuncture system, complex dynamic pyramid model in acupuncture, yin yang chains, energy-informative networks

Introduction:

A complex dynamic pyramid model in acupuncture and its horizontal relations have been described.⁽⁵⁾ In the horizontal plane, the interactions between meridians are pursued through triplets. Triplets in the horizontal plane are formed by eight meridians excluding the triplets of the circadian rhythm. The triplets represent triangles with different aspect ratios in a spatial geometric depiction. This study analyses the vertical plane of the complex dynamic pyramid model. Meridians located on the vertical axis are the meridians of the large intestine (IC), stomach (VE), liver

(HE), bladder (VU) and of the heart (CO). These four meridians are located only on the vertical axis of the pyramid model (Fig. 1).

Fifth meridian on the vertical axis of the pyramid is the meridian of the bladder (VU), which is located in both the vertical and the horizontal planes as the only one of all twelve meridians (Fig. 2). Also from the functionality point of view, the bladder meridian (VU) is responsible for the verticalisation of the organism and the journey to one's inner self and is the longest meridian on the body.⁽³⁾ In the classical sense of TCM, it is the only meridian containing corresponding Shu points, which carry the information about all the other meridians. Verticalisation of the organism, in the sense of its evolution over time, as well as information about all twelve meridians on the Shu points, have a logical parallel to the horizontal and the vertical alignment of the pyramid model.

“Classical Egyptian pyramid” is arranged so that its part above the ground on the vertical axis has its base, top. The so called pharaoh's chamber is located at the interface of the lower and middle third. The underground section hides an inverted top of the pyramid at the distance of 1/3 of the pyramid's axis in the above ground part.

Hence, we get four projection points of the meridians on the vertical axis in the following order: large intestine (IC) – inverted top of the pyramid, stomach (VE) – base of the pyramid, liver (HE) – at a distance of 1/3 of the height of the pyramid and the heart (CO) – peak of the vertical axis (3/3) (Fig. 1).





The sequence in the vertical plane is formed by two yang meridians IC and VE in the bottom part and two yin meridians HE and CO in the top part of the pyramid model (Fig. 1).

Four out of the five elements are thus represented in the following order from bottom to top METAL, EARTH, WOOD and FIRE. If the VU meridian is placed at the interface of 2/3 of the top part of the pyramid model, then the vertical axis is the representation of all the five elements in proportion of Yang and Yin 3: 2.

Yang and yin meridians are in a 3:2 ratio on the vertical axis. The presence of yin is greater as opposed to the standard yin yang chain that has a ratio of 3: 1. On the other hand, all the meridians on vertical plane, with the exception of the stomach meridian VE (VE is in the basal plane) have a yang pakua universal at the base of their pyramid.^(4, 5, 6) This suggests, therefore, that the vertical plane is the major carriers of dynamics and that four out of the five pyramids have a yang nature. There seems to be an apparent difference in such vertical arrangement of element in comparison with the projection of the arrangement on the human body (vertical configuration of a pentagram). For example, the element projection in the vertical arrangement on the spine is as follows:

- FIRE – Calvaria and C spine
- WOOD – Th spine
- EARTH – L spine
- METAL – sacrum
- WATER – tailbone

The projection of the WATER element is under the FIRE element in the primary vertical axis of the pyramid model, which creates serious tension as a prerequisite for dynamics, while in the other dimensions, the arrangement changes.

Objective

The aim of the study was to analyse the relationship of meridians located in the vertical plane of the pyramid model and the relationship between the horizontal and vertical planes.

Hypothesis 1

Meridians in the vertical plane of the pyramid model are interconnected by means of triplets of the horizontal plane through interconnection with paired meridians according to the circadian rhythm.

Solutions:

- Connection of meridians of the horizontal plane was demonstrated in a study of this plane.
- Meridians of the vertical plane are not connected through pakua FS, WEN, S1, S2.
- Meridians of the vertical plane are not part of the pakua (FS, WEN, S1, S2) and are connected to it via meridian pairs.
- Meridians of the vertical plane form triplets through the system of circadian rhythm.

Hypothesis 2

Meridians of the vertical and horizontal planes interact with each other.

Solutions:

- Interconnection of meridians of the horizontal and vertical planes runs through triplets to form energy-informative network, which links all meridians.
- Imbalance of meridians in the energy-informative network is expressed through dynamics or choice of triplets.

Hypothesis 3

Meridians of the vertical plane create specific shape, angular and dimensional characteristics.

Solutions:

- Meridians of the vertical plane determine the peaks and thus the other characteristics of a pyramidal shapes.





- Changing of triplets' shapes (triangles), or their composite structures.
- These changes also determine the wave patterns and vibrations of the complex pyramidal model.

Sources and methodology

The authors have continued to analyse the out-patient findings.⁽⁵⁾ A random selection has been made from the clinic's patients. Relationships of meridians forming the vertical plane of the pyramid model have also been analysed in depth.

Characteristics of the examined group

The group consisted of 40 patients, average age 43.4 years (range 14–72 years). It included 32 women, mean age 43.0 years (14–66 years) and 8 men, mean age 44.6 years (29–72 years). They were examined within a time span of eight weeks (September–October 2014), out of which 22 patients were examined repeatedly (19 women and 3 men). Each patient was evaluated based on two consecutive examinations at the most.

A total of 62 tests were evaluated. Diagnostic composition can be evaluated as “pseudo-civilizational polymorbidity” in the ordinary course of acupuncture practice as patients gradually came to be examined.

The evaluation was based on the findings of classical TST executed via an examining probe:

1. CES (total energy-informative status)
2. TDR (trans-dimensional rotary microsystems)
3. RMTr. (rotary tragi microsystems)
4. RMM dx. (rotary microsystem of the breast dx)
5. RMM sin. (rotary microsystem of the breast sin)
6. RM Yin – (yin rotation)

We are using the Latin/Greek nomenclature with the names of meridians similarly as in the previous issues to make the terminology accessible and understandable in every language.

Results

Mutual relationships and context of meridians of vertical and horizontal planes based on the circadian rhythm (Tab. 1).

Tab. 1 Meridian couples according to the circadian rhythm

The following meridian form a direct link between the vertical and horizontal planes: CO (cor), IT (intestinum tenue), VU (vesica urinaria), RE (ren), PE (pericard), VF (vesica fellea), HE (hepar), PU (pulmo), IC (intestinum crassum), VE (ventriculus)

Peak hour of the meridian	11 a. m. – 1 p. m.	1 p. m. – 3 p. m.	3 p. m. – 5 p. m.	5 p. m. – 7 p. m.	7 p. m. – 9 p. m.	9 p. m. – 11 p. m.
Meridian	<u>CO</u>	IT	VU	RE	PE	TC
Meridian	VF	<u>HE</u>	PU	<u>IC</u>	<u>VE</u>	LP
Peak hour of the meridian	11 p. m. – 1 a. m.	1 a. m. – 3 a. m.	3 a. m. – 5 a. m.	5 a. m. – 7 a. m.	7 a. m. – 9 a. m.	9 a. m. – 11 a. m.

Circadian rhythm was chosen for the analysis of meridians in the vertical and horizontal planes, as it contains all meridians. Meridians form couples according to the *midnight – noon* rule and

four meridians CO, HE, IC, VE are meridians that form the vertical axis. Vertical matching determines the interrelations of vertical and horizontal planes.



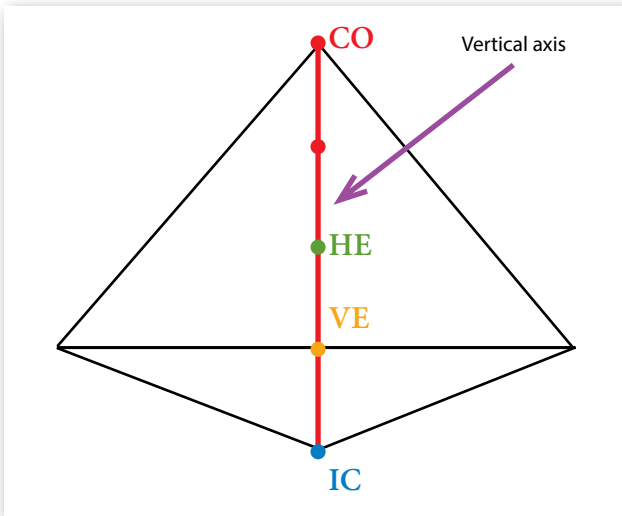


Fig. 1 Vertical axis meridians

Vertical axis meridians: CO (**cor**), HE (**hepar**), VE (**ventriculus**) and IC (**intestinum crassum**).

Meridians VF, IT, RE a PE are the only ones from the horizontal plane which are linked to vertical axes of the meridian. Lung meridian (PU) has a dual interaction with the bladder meridian (VU). A pair of PU and VU also occurs in the horizontal and in the vertical plane. Paired meridians TC and LP are not directly represented in the vertical plane, nevertheless they communicate with it.

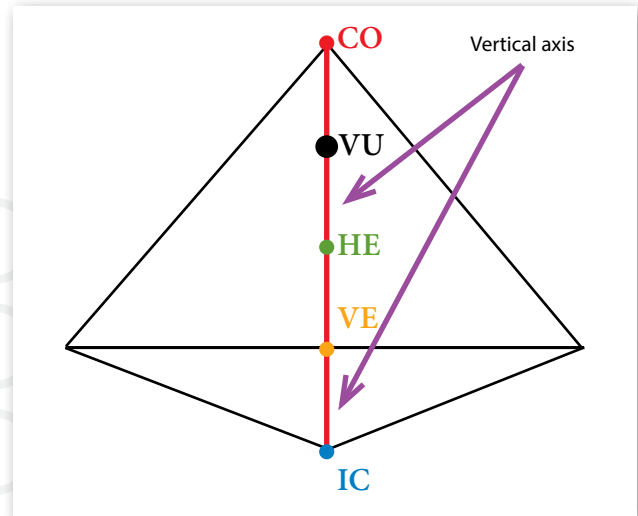


Fig. 2 Vertical axis meridians

Vertical axis meridians: CO (**cor**), VU (**vesica urinaria**), HE (**hepar**), VE (**ventriculus**) and IC (**intestinum crassum**).

It is not possible to exclude peculiarities and differences in dynamics of these two meridians, which is not the subject of this study. The first hypothesis was 100 % confirmed.

Relationships of meridians of the vertical and horizontal planes are all interconnected through triplets as shown in Tab. 2.



Tab. 2 Interconnection of vertical and horizontal planes through triplets

Meridians	WEN	FU-SI	S1	S2	CON	CDR	Meridians	WEN	FU-SI	S1	S2	CON	CDR
IT - HE	LP - IT - PE	PU - IT - PE	VF - IT - PE	PE - IT - VU	VU - IT - VF	CO - IT - VU	TC-LP	RE - TC - VF	VU - TC - LP	LP - TC - VF	RE - TC - VF	PU - TC - PE	PE - TC - VF
IT - HE				IT - VU - LP	RE - VU - IT	IT - VU - RE	TC-LP		PE - VU - TC				
IT - HE	IT - PE - PU	IT - PE - VU	IT - PE - VU	PU - PE - IT			TC-LP	VU - RE - TC			LP - RE - TC		
IT - HE			TC - VF - IT		IT - VF - RE		TC-LP					TC - PE - LP	RE - PE - TC
IT - HE		VF - PU - IT					TC-LP	TC - VF - LP		TC - VF - IT	TC - VF - PU		TC - VF - HE
IT - HE	VF - LP - IT						TC-LP					LP - PU - TC	
VU - PU	PU - VU - RE	PE - VU - TC	PE - VU - PU	IT - VU - LP	RE - VU - IT	IT - VU - RE	TC-LP		TC - LP - RE	RE - LP - TC			
VU - PU				PE - IT - VU	VU - IT - VF	CO - IT - VU	VF-CO	TC - VF - LP	RE - VF - PU	TC - VF - IT	TC - VF - PU	IT - VF - RE	TC - VF - HE
VU - PU	VU - RE - TC				VF - RE - VU	VU - RE - PE	VF-CO		VF - PU - IT		VF - PU - PE		
VU - PU		IT - PE - VU	IT - PE - VU				VF-CO	VF - LP - IT					
VU - PU		VU - TC - LP					VF-CO			VF - IT - PE			CO - IT - VU
VU - PU	PE - PU - VU		VU - PU - RE				VF-CO		LP - RE - VF				
VU - PU			VU - LP - RE				PU - VU	PE - PU - VU	VF - PU - IT	VU - PU - RE	VF - PU - PE	LP - PU - TC	HE - PU - IC
RE - IC	VU - RE - TC	TC - RE - VF	PU - RE - LP	LP - RE - TC	VF - RE - VU	VU - RE - PE	PU - VU				VU - LP - RE	PE - LP - PU	
RE - IC	PU - VU - RE				RE - VU - IT	IT - VU - RE	PU - VU		PU - IT - PE		PE - IT - VU	VU - IT - VF	CO - IT - VU
RE - IC	RE - TC - VF			RE - TC - VF			PU - VU	PU - VU - RE	PE - VU - TC	PE - VU - PU	IT - VU - LP	RE - VU - IT	IT - VU - RE
RE - IC		RE - VF - PU			IT - VF - RE		PU - VU	VU - RE - TC		PU - RE - LP		VF - RE - VU	VU - RE - PE
RE - IC			VU - PU - RE				PU - VU	IT - PE - PU	IT - PE - VU	IT - PE - VU	PU - PE - IT		
RE - IC		TC - LP - RE	RE - LP - TC	VU - LP - RE			PU - VU		VU - TC - LP			PU - TC - PE	
PE - VE	IT - PE - PU	IT - PE - VU	IT - PE - VU	PU - PE - IT	TC - PE - LP	RE - PE - TC	PU - VU		RE - VF - PU		TC - VF - PU		
PE - VE	LP - IT - PE	PU - IT - PE	VF - IT - PE	PE - IT - VU			LP - TC	VF - LP - IT	TC - LP - RE	RE - LP - TC	VU - LP - RE	PE - LP - PU	VE - LP - CO
PE - VE		PE - VU - TC	PE - VU - PU				LP - TC	LP - IT - PE					
PE - VE						VU - RE - PE	LP - TC		PE - VU - TC		IT - VU - LP		
PE - VE					PU - TC - PE	PE - TC - VF	LP - TC	VU - RE - TC	TC - RE - VF	PU - RE - LP	LP - RE - TC		
PE - VE	PE - PU - VU			VF - PU - PE			LP - TC					TC - PE - LP	RE - PE - TC
PE - VE					PE - LP - PU		LP - TC	RE - TC - VF	VU - TC - LP	LP - TC - VF	RE - TC - VF	PU - TC - PE	PE - TC - VF
PE - VE							LP - TC	TC - VF - LP		TC - VF - IT	TC - VF - PU		TC - VF - HE

The table clearly shows that each meridian is interconnected through a triplet with the other meridians. From this point of view, the set of findings of specific patients provides the same conclusion as far as the meridian interconnection is concerned. Thus, the second hypothesis was also 100 % confirmed.

Meridians of the vertical plane create specific shape, angular and dimensional characteristics. (Hypothesis 3)

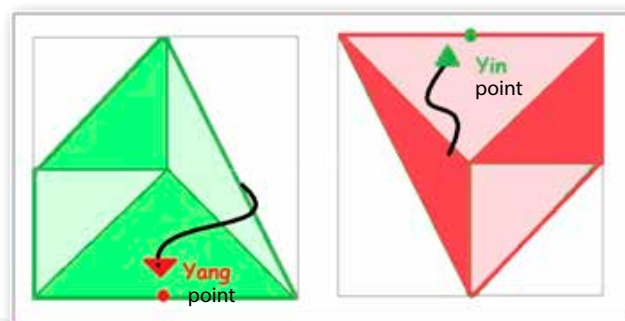


Fig. 3 The base of a yin and yang pyramids seen from above

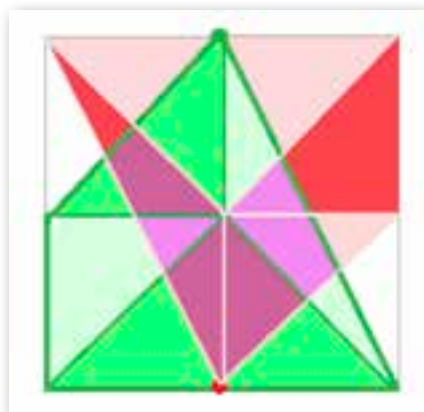


Fig. 4 The base of a yin and yang pyramids general view from above

A complex dynamic model as we know it is the sum of yang and yin pyramids. Figures 3 and 4 show a complex pyramid model viewed from above. These images demonstrate the fact that none of the sides of a “classic pyramid” are equivalent in function.¹ Complex dynamic pyramid model in acupuncture consists of one yin pyramid, which is located at the base of the pyramid, in three yang pyramids above the base and one pyramid oriented upside down below the base of the pyramid (Fig. 5).

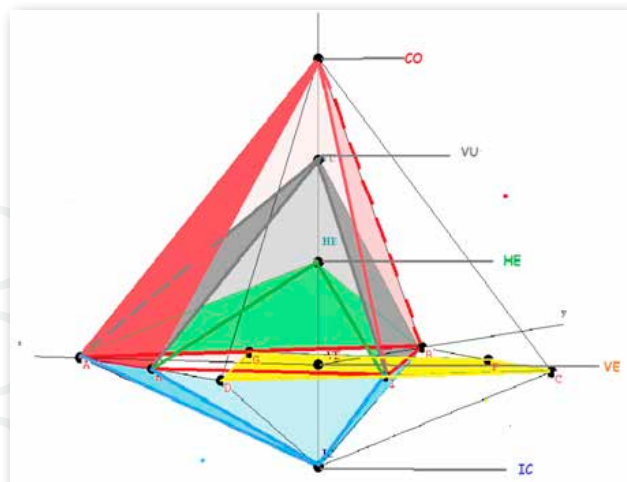


Fig. 5 Complex dynamic pyramid model – side view

The figure explains that the meridian of vertical and horizontal planes creates spatial structures, whose angles, sides and peaks analogically fix information. For example angles, formed by a water molecule which creates elementary physical features (they are modified during the change of physical state). It can also be assumed that the yang and yin pyramid pass into each other and thus pulsate and create relationships that are multi-level in nature and show other physical characteristics that are subject to further research. These facts fully confirm the third hypothesis.

Discussion

This study is a continuation of the study of horizontal relationships of the pyramid complex model in acupuncture. For the time being, there are no references in the available acupuncture literature about the complex pyramid model in acupuncture or about the use of the pyramid model for clarifying the interrelationships of various components of the biological system. General understanding of the pyramid model is based more on social understanding of a pyramid as a hierarchy model arrangement of a system (e.g. Multi-level marketing, various pyramid games, or any other hierarchy arrangements.⁽⁸⁾ The vertical plane thus expresses the hierarchy of such models. In the

¹ “Classical Egyptian pyramid” is arranged so that its part above the ground on the vertical axis has its base, top. The so called pharaoh’s chamber is located at the interface of the lower and middle third. The underground section hides an inverted top of the pyramid at the distance of 1/3 of the pyramid’s axis in the above ground part.



pyramid model of acupuncture, vertical structure is not a hierarchy arrangement, but a characteristic of the system on different levels.

Pyramid model of acupuncture is based on the structural arrangement of relations without hierarchical components. Such understanding of the pyramidal structures can be encountered only occasionally. For example, in the field of nanotechnology, where different types of pyramidal nanostructures are being developed that have different chemical and biological functionality on various sides of the pyramid.⁽²⁾ The so called irregular pyramids used in the graph theory can also be included in this category. Their vertical structure is not determined in advance, as in conventional pyramids.⁽⁷⁾ We have not found any data on such understanding of the pyramid model in medical literature. Its acceptance could be a promising – after a comprehensive embodiment – contribution of acupuncture to the translational research in medicine. The slow rate of transformation of knowledge from acupuncture to medical science, has not yet been systematically addressed.⁽¹⁾

The simplest principle of the construction of the pyramid is based on the principle of triangles. E.g. Classical Egyptian sacred triangle with an aspect ratio of 3 : 4 : 5, which forms the basis of the Egyptian pyramids.

Another example is isosceles triangles that are applied in spatial configuration H₂O (H-O-H), where subsequent structures, formed through hydrogen bonds, form other complex spatial arrangements of molecules that determine the properties of water.

Even in the vertical and horizontal planes of the pyramid model, it is true, that these are only potential possibilities of interrelations and ar-

rangements which affect particular applications. For example; morphic fields, emotions, thinking process, etc.

The pyramid model was chosen because it combines known acupuncture principles, models, and other knowledge of natural medicine (pentagram, pakua, system of 9 palaces, circadian rhythm, etc.). This means that the pyramid model represents a universal integrating model of arrangements of interrelations of meridians, elements, triplets and other components of the energy-informative system. The existence of a fractal principle may be presumed – analogically as in the acupuncture model of a pentagram – and model multidimensionality, which is probably beyond the scope of acupuncture. Individual characteristics of the model (such as the spatial arrangement of the points, angles, distances) are both carriers of information and allow postulate other physical characteristics such as wavelength characteristic of a model. The vertical plane provides peculiar characteristics of the pyramid model and adds a third dimension to it.

Conclusion

All hypotheses have been confirmed.

The study confirmed the interconnectedness of meridians in vertical and horizontal planes of the complex pyramid model in acupuncture. Any meridian imbalance has repercussions for all the other meridians. The scope and character is also determined by other factors. Such factors also include external and internal factors and, with high probability, the morphogenetic fields. Dynamics' dominance is reflected in the vertical plane of the complex pyramid model. Pyramid model is a universal arrangement integrating





model of interrelations of meridians, elements, triplets and other components of the acupuncture system.

Gustáv Solár, M. D., PhD., Zlatica Solárová, PhD., M. P.

Contact:

Prvá klinika akupunktúry a naturálnej medicíny G.Solára, s. r. o.

Ivánska cesta 23, Bratislava, Slovak Republic

E-mail: klinika@akupunktura.sk

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TST DS-M in acupuncture

Teodor Mochnac, M. D., PhD.

Summary

Various processes in the world, in the body and in the universe may be carried out only if a certain dynamism is present.

In principle, if we want to express these processes in the language of Physics, gradients arise within interactions between attractors. Various types of interactions and algorithms depend on the attractors' potency. The pathophysiology of the acupuncture energo-interactive relationships can be seen in the dynamics of these relations, especially in diagnostics and treatment.

The author of this work presents a new diagnostic system TST DS-M (TST data system-M), which is based on a comprehensive evaluation of examined microsystems expressed in a weight chart, which is compatible with the graphical representation of the IDS-M (Impedance data system-M). This examination was developed with the intention to facilitate the therapists' orientation in the diagnostic and therapeutic process in acupuncture treatment. The author compared the TST DS-M results with the patient's clinical condition improvement and with the IDS-M (Impedance data system-M) results. The work also represents a new understanding of acupuncture functioning according to the theory of Orchestrated objective reduction of quantum coherence (ORCH OR) what presents a self-collapse of superpositioned states in quantum mechanics.

Key words

TST data system-M (Tactile Solar's Test data system-M), acupuncture, Orchestrated objective reduction

Speaking of skin (cutis), we must realize that it is the largest organ of the body. The skin surface is about 2 m², which represents about 16 % of human body weight.

It has a number of external and internal functions.

Basic functions of the cutis:

1. **Thermoregulation:** (sweat glands and vascular network provide thermal insulation and heat exchange between the organism and its surroundings).
2. **Resorption:** (absorption of fat-soluble substances).
3. **Protective:** (anatomical barrier against pathogens from the external and internal environment, the Langerhans cells are a part of the Adaptive immune system).
4. **Absorptive:** Ying Qi (Jing Qi)-Nourishment Qi)
5. **Excretory:** (dispensing of water, salts, CO₂, nitrogen compounds, lipids).
6. **Reserve:** (metabolism of fats, water, minerals and vitamins).
7. **Sensory:** (includes different nervous endings and therefore, the somatosensory system provides haptic function, touch, perception of pain, heat and cold, perception of shape and orientation in space).
8. **Energy-interactional:** provides the system of acupuncture points, meridians and microsystems.

Several skin derivatives – skin appendages are parts of the skin, too. These are: hair, moustache, beard, nails (horny derivatives) and sweat and sebaceous glands.





Observation of traditional Chinese medicine, where the pifu (pchi-fu) – skin, including body hair and sweat glands, is an area of the qi (Chi) flow that interacts with the meridian of the lungs and METAL element, reflects a number of internal processes and is a valuable informant of the organism state. The skin participates in the thermal regulation and water management, it is the place of nutrient, fluid and blood transmission. Skin is a projection of all acupuncture meridians and it is a source of our protection.⁽²⁾ Skin tells us not only about the relationship between various skin dermatomes, informs us about the level of the nervous system disability as such; and it tells us about microsystems, subsystems in their bio-morphological and energy-informational projection. There are hidden relationships applying to the five-element theory (wu-sin) wuxin.⁽¹⁾

Meridian palpation was the principal diagnostic technique in the early stages of the acupuncture development. Nei Jing (Nei t'ing) includes descriptions for meridian palpation techniques and tissue changes. The physical-mathematical info-interactional approach towards the selection of acupuncture points is considered to be false in modern acupuncture clinical practice. The meridian palpation technique includes an examination of meridian projections in order to determine the quality of qi (Chi), and xue (süe). Diagnostic palpation is partly successful in the areas below the elbow and knees, where qi meridian develops from its base to the jingxue (t'ing-süe) points on fingers and toes and continues towards their final points of confluence hexue (che-süe). Observed changes include palpable thickening of the skin, swelling, tension, inequality, increasing or decreasing muscle tone. Palpation and tactile changes are an important part, which reflect a certain status of meridians and internal organs. According to this information, we are able to determine the diagnostic hypotheses. This con-

cept of meridians and acupuncture points however, does not correspond with the usual understanding of the anatomical structures, as we are used to. The meridian palpation provides us with a convenient, verifiable and measurable way to confirm the diagnostic hypotheses based on the mainstream of traditional Chinese medical approaches.

In addition, such an examination provides important information about the status of organ functions and it helps to focus on the diagnostics and treatment.⁽¹²⁾

Tactile changes of element projections on the surface of the skin (the bio-morphological level) inform us about the state of the energy-informational level. They serve us to determine the actual acupuncture diagnosis as well as the basis of treatment. Very important is the ability to control the effect of acupuncture treatment, and the possibility to establish the prognosis for the development of patient's condition. It gives us information on relationships between the microsystems. These can be mathematically evaluated.

So far described microsystems are based on the anatomical or functional microsystem projection on the body surface.

Various processes in the body and in the universe may be carried out only if a certain dynamism is present.

In principle, gradients arise within interactions between attractors. Various types of interactions and algorithms depend on the attractors' potency. The pathophysiology of acupuncture energy-interactional relationships can be seen in the dynamics of these relations, especially in diagnostics and treatment. In some of our studies^(5, 6, 7, 8), we have confirmed certain principles that can be derived on the basis of gradients between the systems.





In such a way, we can say that even in the sphere of non-instrumental acupuncture diagnosis we can work with tactile gradients.

The principle of TST microsystems is based on the functional projection of elements, trigrams and hexagrams, which gives us a picture of the organism's energy-interactional state from the perspective of the wuxing (wu-sin), ba-gua (pa kua) and Yi Jing (Y t'ing) theory. These are TST pentagram microsystems, rotary microsystems and TST DS-M hexagram sequences (Teo Mo sequences). Nowadays we use the tactile and electro impedance examination of 38 microsystem skin projections.⁽⁵⁾ These projections provide us with the context according to which we are able to determine the current energy-interactional state of not only examined systems but also of un-investigated microsystems. That is the state of the current moment. They also provide the trans-dimensional context.

Given that the dynamics is carried out via the gradients and gradients determine the nature of interactions and algorithms, the tactile diagnostics should also reflect this dynamics.

If we want to ensure that the examination would reflect certain dynamic parameters, it should meet the abovementioned characteristics. Therefore, we introduce a tactile examination methodology, which is based on the tactile gradients evaluation; and right from the examination, we are able to determine the character of interactions and algorithms among the energy-interactional states (elements). For the patient, this means to answer the 3 options of tactile feelings, the strongest, the weakest, or the same. The graphical picture is then compatible with the IDS-M (impedance data system-M) projection.⁽⁵⁾ According to this result, we select the acupuncture point, which characteristics serve to treat the microsystem disharmony.

In this way, we come to a new understanding of the acupuncture dynamics. Because it is a conscious process, the mechanisms applied in quantum mechanics apply also here. As in the previous work, we assume that consciousness is a quantum phenomenon, and the latest work of mathematical physicist Sir Roger Penrose, OM, FRS and Stuart Hameroff, M.D., confirm our suggestions.

Conventional explanations portray consciousness as an emergent property of classical computer-like activities in the brain's neural networks. These approaches, however, fail in explaining certain features of consciousness:

1. Subjective nature of experience.
2. Coherent concept of myself.
3. Pre-conscious to conscious processes transition.
4. Non-computability of consciousness, consciousness cannot be simulated.
5. Self-determination.
6. Subjective passage of time.

Sir Roger Penrose, OM, FRS and Stuart Hameroff, M.D., proposed a theory of quantum coherence and a newly established physical phenomenon of quantum wave function "self-collapse" (OR-objective reduction), which are essential for consciousness, and occur in cytoskeletal microtubules and other brain structures of each neuron. Microtubule-associated proteins (MAPs) and other tubulin modifications act as "nodes" to tune microtubule coherence and help to orchestrate the collapse ("orchestrated objective reduction" (**Orch OR**)). In providing a connection among 1) pre-conscious to conscious transition, 2) fundamental space-time notions, 3) non-computability and 4) binding of various (time scale and spatial) superpositions into an instantaneous event (conscious "now"), the Orch OR in brain microtubules could be an explanation of consciousness.⁽⁹⁾





In terms of using the connection among binding of various superpositions into an instantaneous event, we approach the treatment. We do not treat the disease, but we balance the organism state, as a whole, which is quite a different approach, as is applied in Western medicine. At the same time, dynamic characteristics of energy-informational state expressed by acupuncture diagnosis, ensure strictly individual approach towards the treatment of each patient.

The aim of this work was to create a compatible system of non-instrumental TST DS-M diagnostics with instrumental diagnostics of IDS-M (impedance data system-M).

We called it TST DS-M. The principle is to find the highest and the lowest tactile sensitivity of microsystems. The result is a certain gradient, that points to the dynamics of the process and it can be evaluated. In terms of certain interaction sand algorithm types, it shows us, where to focus during our therapeutic acupuncture performance.

Hypothesis

H1: We assume, that TST summary presents a superpositional state of the organism that shows a complex image of the energy-interactional state, where we can evaluate various algorithm types.

H2: We assume that, on the basis of an image of general energy-interactional state, we select an acupuncture point projection with the characteristics that will lead to balance of microsystem sensitivity.

H3: We assume that this system status can be graphically evaluated.

The aim of the study

1. To point out the similarities between the quantum processes and the new principles in acupuncture.

2. To create a compatible graphic image of non-instrumental TST DS-M and instrumental IDS-M examinations.
3. To objectify the therapeutic effect on the TST DS-M basis.
4. To objectify the therapeutic effect in the electrical conductivity of the skin level.

Methodology

Our group consisted of 20 patients, who were examined 58 times by TST DS-M and by IDS-M, before the treatment, 7 days after the treatment and after the end of the total treatment.

TST DS-M examines the highest and the lowest tactile sensitivity of the microsystems. The output of such examinations is a summary weight chart of microsystems, which we have decided to examine. The more microsystems we examine, the higher is the accuracy. The complexity of examination does not lead to the significant extension of the examination time.

In terms of the quantum mechanics principles, the TST DS-M examination uses the quantum principle called “orchestrated objective reduction” (ORCH OR).

This examination, includes the expression of several states of the organism at the same time – superpositional state, which include different tactile sensitivity in different microsystems. After the treatment, there is a balance (reduction, coherence, collapse) of microsystems.

Acupuncture microsystems are thus the practical example of functioning of such a phenomenon.

Results

1. In a group of 20 patients 58 TST DS-M examinations were performed. Based on the examination, the patients underwent the therapy of one acupuncture point, which led to the balanced microsystems in 82.8 % of cases (Fig. 1).



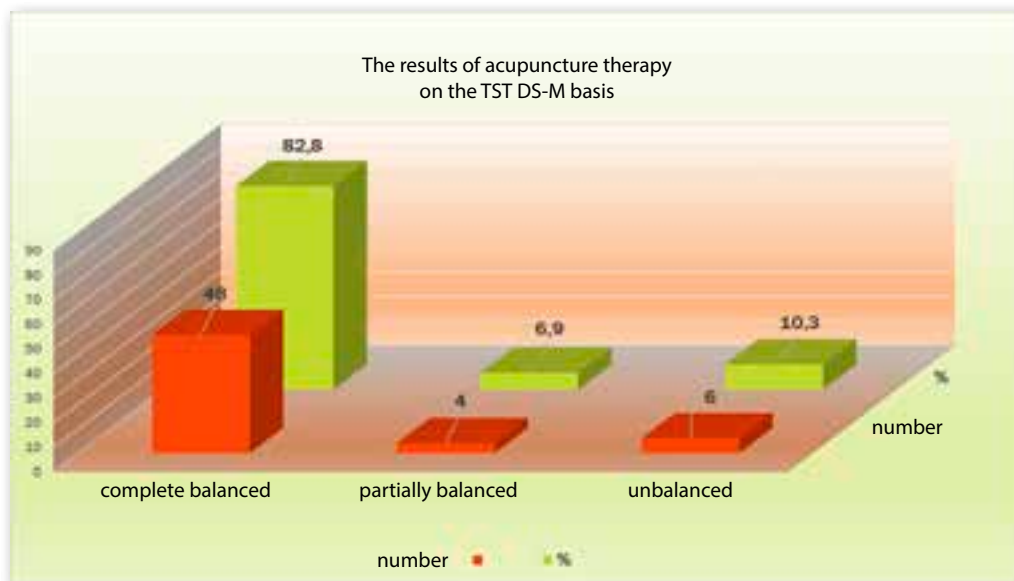


Fig. 1 The success rate of acupuncture treatment based on the TSTDs-M diagnostics.

2. In a group of 20 patients, who underwent 58 examinations, we recorded the hyper compositional turbulent algorithm (HCT) 13 times and the decompositional clean algorithm (DCC) 13 times, the supralgorithm 12 times,

qualitative changes 12 times, the decompositional turbulent algorithm 11 times, the hyper compositional clean algorithm (HCC) 8 times and quantitative changes 2 times (Fig. 2).

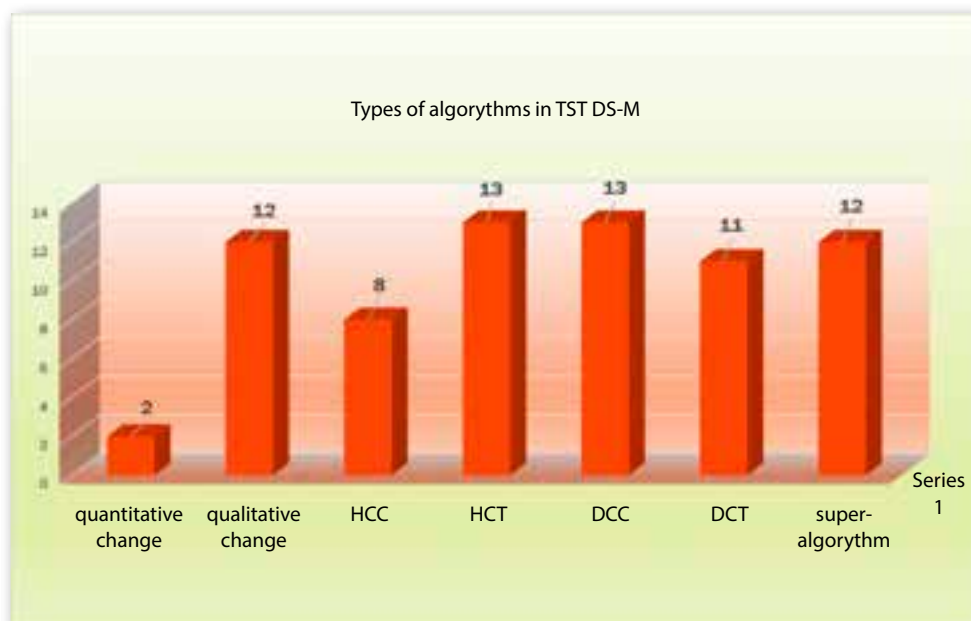


Fig. 2 Acupuncture findings based on the TST DS-M (tactile Solar's test data system-M).



3. In a group of 20 patients, who underwent 17 examinations by the IDS-M (Impedance data system-M), were corded the hyper compositional turbulent algorithm (HCT) 2 times, the decompositional clean algorithm (DCC)

2 times, the decompositional turbulent algorithm (DCT) 2 times, the superalgorithm 2 times, qualitative changes 4 times, the hyper compositional clean algorithm (HCC) 1 time and quantitative changes 4 times (Fig. 3).

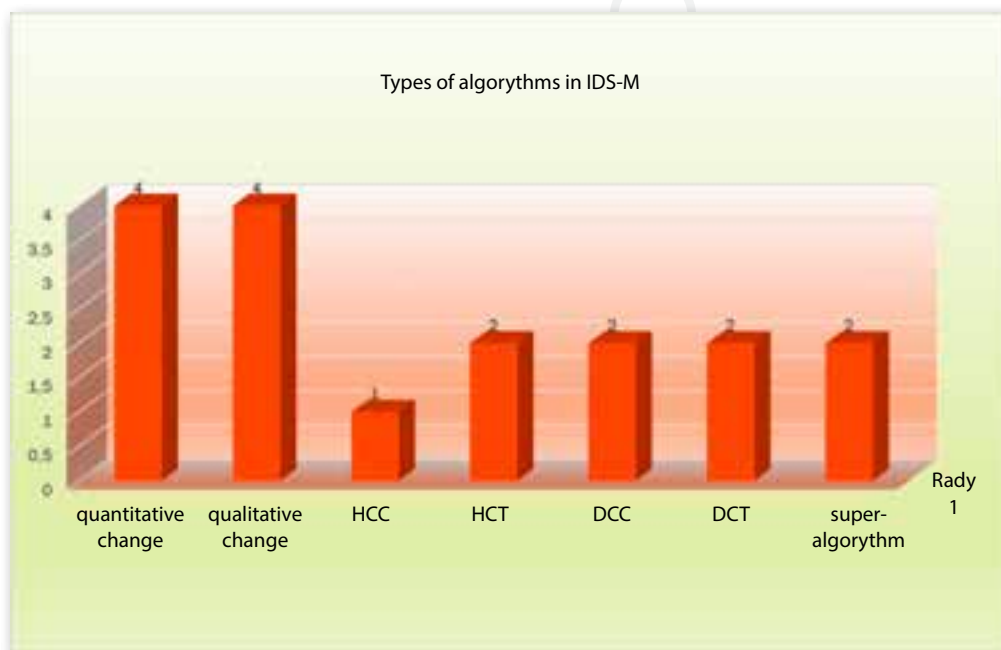


Fig. 3 Acupuncture findings based on the IDS-M (Impedance data system-M)

4. The findings of the RmRCM (regime Rotary microsystem of complex meridians) IDS-M in 15 examinations do not correspond with the findings of the TST DS-M.

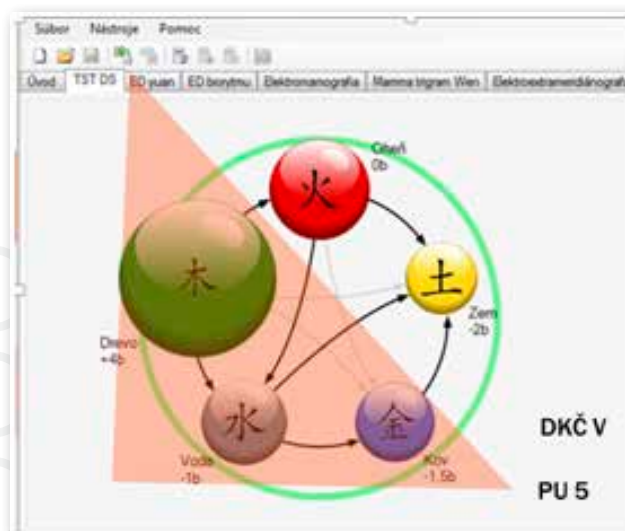


Fig. 4 The example of the WATER decompositional clean algorithm treatment with the therapeutic use of water characteristics of LU 5 acupoint.

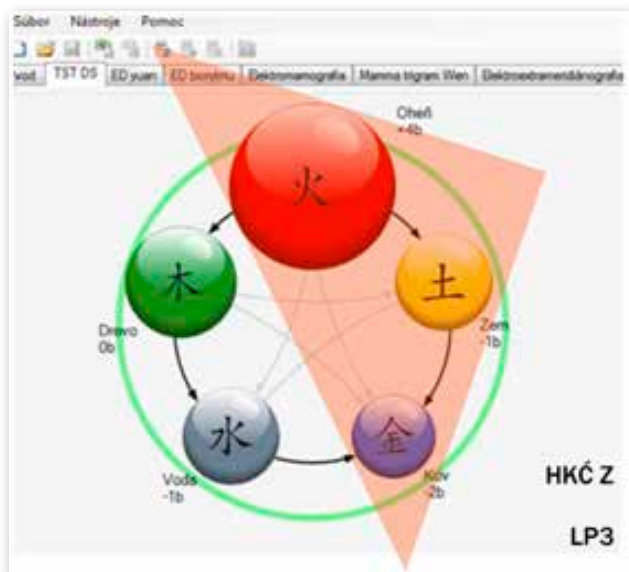


Fig. 5 The example of the EARTH hypercompositional clean algorithm treatment with the therapeutic use of transdimensional metallic characteristics of SP3 acupoint.

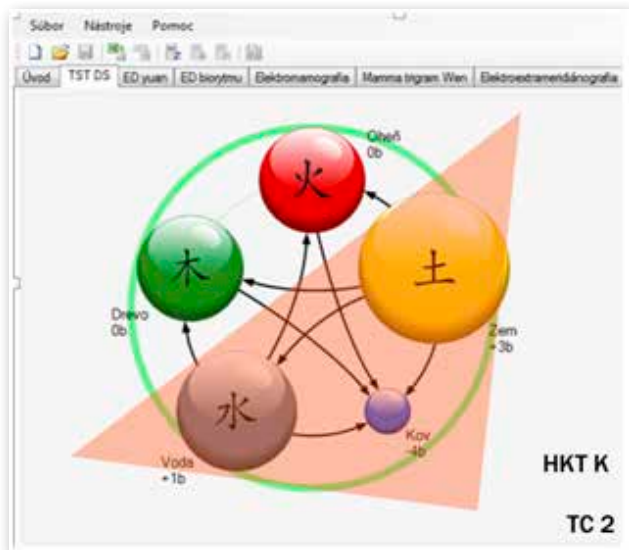


Fig. 6 The example of the METAL hypercompositional turbulent algorithm treatment with the therapeutic use of fire and metallic characteristics of TE2 acupoint.

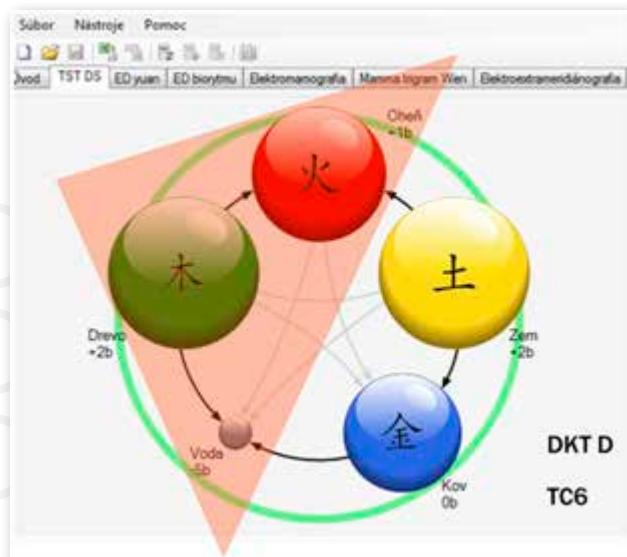


Fig. 7 The example of the WOOD decompositional turbulent algorithm treatment with the therapeutic use of transdimensional water characteristic of TE6 acupoint.

Discussion

TST DS-M (Tactile Solar's data system-M) is a new diagnostic approach in acupuncture, which takes into account the already clinically proven diagnostic and therapeutic procedures, based on the microsystem diagnostic. It is the result of 10-year experimental verification and development of diagnostic and therapeutic procedures. It presents the physical-mathematical evaluation of phenomena in acupuncture using quantum mechanics principles. It is this on the hexagram sequences based diagnostic and therapeutic model that uses the principles of the orchestrated objective reduction (Orch OR) theory, which represents the self-claps of superpositional states in quantum mechanics. Modelling in TST-M allows the incorporation of new theoretical diagnostic procedures such as algorithms, triplets, gradients, the pyramid model, the IDS-M (impedance data system-M) model, models of transdimensional hexagram sequences, which actually represent the energy-informative network in acupuncture.⁽¹¹⁾





This is also confirmed by preliminary findings and treatment results of a small group of patients (Fig. 4, 5, 6). The results of the therapy were verified by the instrumental methodology IDS-M (impedance data system-M), which controls the therapeutic procedure. Therefore, we can talk about targeted controlled acupuncture therapy.⁽⁷⁾

Conclusion

1. TST DS represents the use of the quantum superposition principle and quantum coherence in the acupuncture treatment.
2. It allows us to facilitate the diagnostics, evaluation and treatment.
3. In this way, the phenomena of energy-interactional level can be explained in a completely new way, by the language of quantum mechanics. It extends the possibility of understanding energy-interactional phenomena also in interdisciplinary contexts.
4. TST DS-M can be correlated with IDS-M (Impedance data system-M) and MKBD-S.⁽¹⁰⁾

Teodor Mochnac, M. D., PhD.

*AKUPUNKTUM, Centre of Acupuncture and Diabetic foot
Pod vinohradmi 14 A*

949 01 Nitra, Slovak Republic

E-mail: tmochnac.akupunktura@gmail.com

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Experimental justification for using dispersed forms of allografts in acupuncture

Prof. Ernst Rifgatovich Muldashev, M. D., DrSc.,
Radik Fayazovich Galiyakhmetov, M. D., CSc.

Summary

Cellular and vascular reactions in biological active points when locally inserting Alloplant biomaterial and Aloe preparation are described in the article. It is shown that the injection of Alloplant dispersed biomaterial results in the increase of the total capillary lumen and perivascular infiltration by macrophages. As this takes place, morphofunctional activity in the injection zone is maintained up to 30 days. The obtained data allowed to utilize Alloplant biomaterials for pharmacopuncture.

Key words

bioactive points, Alloplant biomaterials, vascular reactions

Introduction

The investigations of a number of authors^(1, 2, 3) are devoted to the peculiarities of the structure, blood supply and innervation, as well as to biophysiological properties of acupuncture points (AP). Biologically active point (BAP) is a certain skin area and adjacent tissues to which different methods of impact are applied that assume functional state normalization of the body's organs and systems.

In a view of reflexotherapy it is a morphofunctional unit of the body.⁽⁴⁾ In modern traditional medicine an independent research area was established – pharmacopuncture based on the introduction of different preparations in BAP. It is an accepted fact that to determine indications and contraindications for the insertion of diffe-

rent biological stimulators it is necessary to know the character and duration of vascular and cellular reactions in the zone of their injection. However up to the present time there are no special works devoted to studies of the effect of biologically active substances upon morphofunctional state of AP. On this basis, we have formulated the following **aim of our work** which read as follows: to carry out a comparative morphological analysis of reactive processes in acupuncture points when inserting two types of biologically active substances i.e. dispersed Alloplant biomaterial (DAB) “stimulator of regeneration” and Aloe extract.

Materials and methods of investigation

This investigation was carried out in the department of morphology of the Russian Eye and Plastic Surgery Centre. Neoangiogenesis processes in the grafting area of two selected biomaterials were studied in the experiment. The investigations were performed on 30 male chinchilla rabbits, one year of the age with their weight ranging from 2.5 to 3 kg. 70 mg of DAB dissolved in 2.5 ml of physiological solution were inserted in the first experimental series. DAB is made in the tissue bank of the Russian Eye and Plastic Surgery Centre in accordance with the requirements of Specification 42-2-537-2006. In the second experimental series an Aloe extract was injected into the acupuncture points. This biomaterial is produced by Darnica pharmacological firm (Ukraine, Kiev, www.darnica.ua). Biologically





active points were determined with the aid of “AcuVision-04” apparatus by the parameters of cutaneous impedance as per the rear middle meridian T (V, G) T9–T13. The biomaterial injection was performed in the specified points under ketamine narcosis. The aloe extract (2.5 ml) was inserted in the second experimental series under similar conditions. The dynamics of reactive changes were studied on 3, 7, 14, 30 days. A calculation of the capillary lumen total area (CLTA) was performed on histological preparations in the biomaterial insertion area. The morphometrical analysis was carried out with the use of Biovision 3.0 programme and apparatus complex including MC-50 investigative microscope, digital camera Nikon CP 4500 and personal computer. The optic activity of dispersed Alloplant biomaterial was determined by the method of polarizing microscopy of the non-stained histological sections with *Мин8* microscope. Then with the aid of the preliminary calibrated Biovision programme for lens 20 a relative optic activity was registered with the use of “segmentation” function. The obtained results were automatically converted to Microsoft Office Excell 2003 programme to eliminate production errors. Then the processed data were converted to Statistica 5.5 programme for plotting. A quantitative calculation of macrophagal infiltration was also carried out in the micro-preparation area unit ($10,000 \text{ mcm}^2$). When doing it we used the unit based on the squared size $100 \times 100 \text{ mcm}^2$.

Results of the carried out investigations

A polymorphocellular infiltration was revealed in the subdermal layer on the 3rd day in DAB insertion area. Macrophages with their density being 32.5 ± 0.54 dominated in the infiltrate composition. On the 7th day the number of macrophages in the graft made up 16 ± 0.27 cells, eosinophils 2.5 ± 0.07 (Fig. 1). On the 14th day reactive processes decreased. Macrophages were

preserved in the injection area but their number was significantly less compared with the earlier period of the experiment (8.5 ± 0.26 cells per area unit). Eosinophils completely disappeared. Connective tissue structures of the biomaterial were practically totally resorbed on the 30th day which was confirmed by the polarizing microscopy data (Fig. 2) as well as by the change of the relative optic activity of DAB fragments (Fig. 3). However in DAB injection area paravasal infiltration was revealed within the described periods by which we can judge about prolonged morphogenetic processes in the acupuncture point. The density of macrophages in the given periods were kept on the level of 9.1 ± 0.57 cells. The relative optic activity is a parameter which depends both upon the volume of the retained biomaterial in the tissue and its structure. In this case the decrease of this parameter reflects not only quantitative but also qualitative changes in the biomaterial subjected to biodegradation. Just after the injection the biomaterial fragments exercised relative high optic activity in the transplantation area equal to $67 \pm 2.48 \%$ and this phenomenon was connected with the fragments of collagen fibres in their composition. CLTA parameter peak was observed on the 14th day of the experiment. In later periods a gradual reduction of CLTA took place. The value obtained on the 30th day of the experiment exceeded the normal one, which testifies to the prolonged character of vascular reactions (Fig. 4). In general, angiogenesis processes in the biomaterial correlate with the dynamics of cellular reactions, resorption of its fibrous and amorphous matrix. In case of aloe extract insertion an infiltration by neutrophils, eosinophils, tissue basophils was observed in early periods (3–7 days) in the biostimulator injection area. A vascular reaction of short duration in the form of hemocapillary dilatation, insignificant dilatation of postcapillary – venular component of microcirculatory bed was also noted. Tissue exudates were revealed in the injection area. Cellular





and vascular reactions subsided on the 7th day. The cellular infiltrate density decreased in this period. It was difficult to identify the injection area in the derma due to the extract resorption and minimum cellular invasion. The aloe extract caused a local reaction of the microcirculatory bed which resulted in increase of CLTA (Fig. 5). In early period (on the 3rd day) the selected parameter made up $185.49 \pm 10.85 \text{ mcm}^2$. Then (on the 5th day) the given parameter reached its peak value $335.26 \pm 10.37 \text{ mcm}^2$. Then a gradual reduction of CLTA took place on the 14th day and it made up $177.80 \pm 9.98 \text{ mcm}^2$.

Conclusion

The described dynamics of cellular and vascular reactions in case of biomaterial insertion into AP fits into modern concept of pharmacotherapy.⁽⁵⁾ Infiltrate cells in particular (tissue basophils, macrophages, eosinophils etc.) releasing a complex of pain and inflammation mediators effect upon local receptor apparatus, including the receptors of blood vessels.

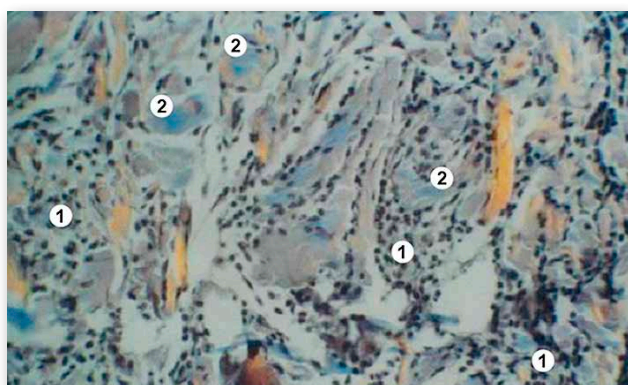


Fig. 1 Macrophagal infiltration
(1) in the insertion area of dispersed Alloplant biomaterial
(2) on the 7th day. DAB fragments are labelled by number "2".
Hematoxylin and eosin stain. Polarizing microscopy. Lens 60. Ocular 3.

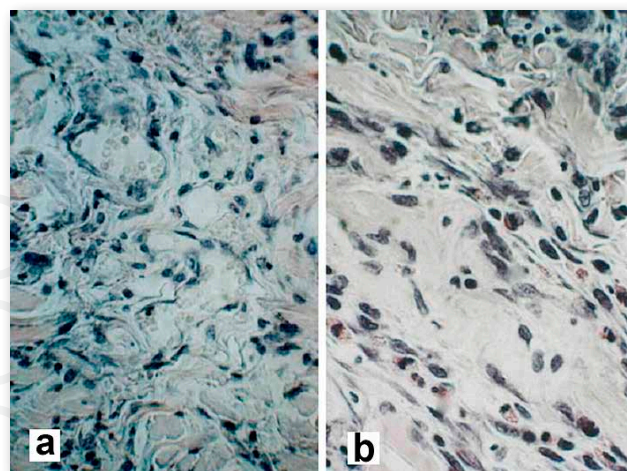


Fig. 2 Experimental insertion of dispersed Alloplant biomaterial
a – 14th day; b – 30th day. Mallory's stain. Polarizing microscopy. Lens 20. Ocular 3.

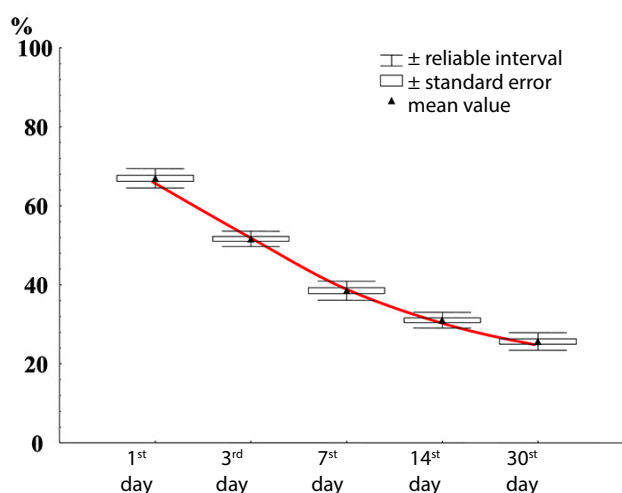


Fig. 3 Relative optic activity [%] of fibrous DAB structures in its experimental insertion

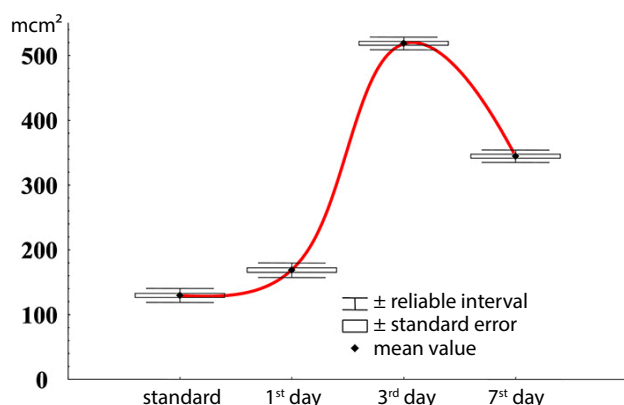


Fig. 4 CLTA dynamics (mcm^2) in case of DAB experimental insertion into rabbit acupuncture points.

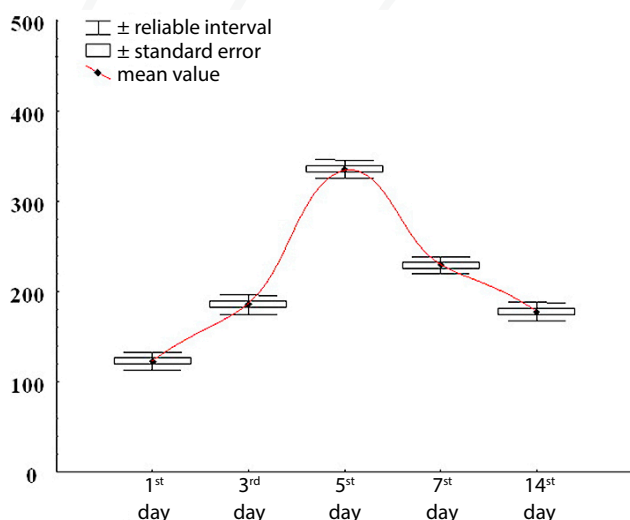


Fig. 5 Experimental insertion of aloe extract into acupuncture points of the rabbit
Axis of abscissa: capillary lumen total area in the extract insertion area, mcm^2 Y-axis: periods of experiment.

Then a transmission of information takes place, involving the nerve, endocrine and immune systems. These processes are obviously subordinated to the principle of self-regulation in accordance to the theory of functional systems.⁽⁶⁾ Thus the carried out experiments showed that biologically active substances under study when inserted into acupuncture points caused vascular and cellular reactions. However the time of their manifesta-

tions and intensity were determined by the type of biostimulator. The Aloe extract insertion, for example, maintained reactive processes in the point for 7 days. Local cellular and vascular reactions against the background of DAB insertion were more evident and kept up to 30 days. When choosing the methods of pharmacotherapy it is necessary to take the described dynamics of reactive processes in AP into account. The aloe injection, in particular, is preferable to provide a relatively short duration effect of AP activation (up to 7 days). At the same time an insertion of biomaterials containing fibrous and amorphous matrix of connective tissue is justified to realize relatively durative courses of therapy.

The obtained results allowed to implement the methods of pharmacopuncture utilizing Alloplant biomaterials in clinical practice (Patent No. 2238076, issued on 20.10.2004).⁽⁷⁾

The restorative medicine department (Galiyakhmetov R. F., head of the department) of the Russian Eye and Plastic Surgery Centre is the base for promoting these methods. Indications and contraindications for the treatment of somatic diseases have been worked out to the last detail in the department over the recent years. Positive results were obtained in the combined treatment of gastrointestinal tract, bronchial asthma, chronic bronchitis, chronic pyelonephritis. Neuroses, diseases of vegetative nervous system, climacteric states are compensated. A combined therapy is performed for the diseases of the central nervous system as of cranial neuropathies and initial stages of encephalopathies of the vascular origin. Pharmacopuncture utilizing organ specific Alloplant may be included into the combined treatment of the diseases of urinogenital sphere.

Alloplant biomaterials are also used for the correction of cosmetic defects such as scars and age changes of skin, for the treatment of the skin neurotrophic diseases like atopic dermatitis, eczema,



neurodermatitis, some types of psoriasis. Pains of various origin and localizations are successfully relieved and cartilage destruction processes are stopped in case of degenerative diseases of the spinal column and joints such as osteochondrosis, protrusion of disks, osteoarthritis deformans, scapulohumeral peri arthritis, coxarthrosis, gonarthrosis, chondrodysplasia, Dupuytren's contracture, styloiditis etc. In case of locomotor apparatus diseases the acupuncture treatment is supplemented by paravertebral or periarticular insertion of Alloplant biomaterial. A notable advance was achieved in the treatment of infantile cerebral paralysis especially of its spastic form. The treatment based on the pharmacopuncture method utilizing Alloplant biomaterial may be started in infants as from 6 months of age. Pharmacopuncture in early childhood may be combined with an operative treatment, i.e. it takes place in the operating room during anaesthesia. Investigations of the efficacy of the method in case of autoimmune diseases, inherited chondrodysplasia, myodystrophy are carried out. The gained experience of utilizing Alloplant biomaterials in different types of pathology will be presented in separate publications.

Professor Ernst Rifgatovich Muldashev, M. D., PhD.
*Director General of the
Russian Eye and Plastic Surgery Centre,
67/1 Zorge str., Ufa, 450075, Russian Federation
E-mail: centre@alloplant.ru*

Radik Fayazovich Galiyakhmetov, M. D., PhD.

*Head of the Department of Restorative Medicine,
the Russian Eye and Plastic Surgery Centre,
67/1 Zorge str., Ufa, 450075, Russian Federation
E-mail: grf-61@mail.ru*

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The socioeconomic impact of diseases that can be treated using maggot debridement therapy

Mgr. R. Klobucký, PhD., Dr. M. Kozánek, CSc.,
Associate Prof. M. Čambal, M. D., PhD.,
Dr. P. Takáč, CSc.

Review article, part I

The social impact of diseases that can be treated using maggot debridement therapy

For the analysis of the social impact of diseases that can be treated with maggot debridement therapy (MDT), epidemiological data are crucial. Unfortunately for most MDT-treatable diseases, such as chronic, non-healing wounds of the lower limb, we do not have data available on the prevalence in Slovakia; therefore, we will try to obtain these data based on international epidemiological studies.

Treatment of chronic wounds of the lower extremities is an important component of health systems worldwide. Margolis (2012) stated that the global cost of such treatment is more than one billion U.S. dollars, while in the U.S. it is about \$ 12 million a year.

Sherman (2009), on the other hand, indicated that the costs of treating non-healing wounds were \$ 20 billion worldwide, in which the loss of two million working days was not included.

Chronic wounds are usually associated with venous insufficiencies, diabetes and bedsores. The emergence of chronic wounds affects factors such as older age and diabetes mellitus. Given the increasing average life expectancy in the popula-

tion, as well as the increasing prevalence of diabetes mellitus in the population, it is reasonable to assume that there will be an increase in the prevalence of chronic wounds in the population.

Margolis (2012) reported that the most prevalent wounds on the lower extremities are associated with venous disease. Ulcers associated with a venous disease represent 40–70 % of chronic wounds of the lower extremities with an unequal representation in the percentage of individuals with leg ulcers in the elderly population or women. It is estimated that venous ulcers affect 500,000 to 2 million of Americans. However, much of the epidemiological literature on this type of healing is poor compared with the literature on diabetic foot ulcers.

The problem is the uniform definition of this issue. In subjects with venous leg ulcers, a chronic venous hypertension is expected. Clinical diagnosis of venous leg ulcers is usually determined with any chronic wound in the shins with clinical signs compatible with venous system abnormalities (e.g. varicose veins, redness, lipodermatosclerosis etc.). While some believe that the diagnostic gold standard for this condition is duplex ultrasound, this test is not always consistent with clinical observations. Health care providers often diagnose venous leg ulcers based on the presence of chronic wounds in the predilection area of the lower extremities and in patients with other clinical signs that are compatible with abnormalities of the venous system (veins, redness, lipodermatosclerosis etc.). Patients with chronic





wounds in this area have intact function of the arterial system of the lower extremities and abnormalities of the vein system of this part of the leg. In fact, the clinical diagnosis of venous leg ulcers probably represents a spectrum of diseases that manifest themselves as a group, in which prevention and treatment can be performed with similar procedures. In fact, some authors argue that since venous pressure in the majority of patients is measured during walking, it would be preferable to use the term “leg ulcer” in patients who have adequate arterial flow to the extremities. These ulcers tend to occur in the tibia, while diabetic ulcers of the foot occur on the sole of the foot.

As mentioned above, venous ulcers are often associated with clinical findings consistent with diseases of the venous system. Varicose veins have a prevalence of 50 % in the adult population. Severe chronic venous insufficiency findings are present in approximately 10 % of the adult population. Overall, the incidence of venous leg ulcers is between 0.6 % and 2 %. Generally the presence of venous leg ulcers is indicated in approximately 1–2 % of the population over 65 years. Peak prevalence of the disease is the age of 60. These wounds are more common in women. In addition, approximately 15–45 % of patients have a history of deep vein thrombosis and more than half of them present deep venous reflux. With these patients, there are many other health problems (comorbidities); for example, 20 % of them suffer from depression, 30 % hypertension, 25 % osteoarthritis and 10 % diabetes.

Ultimately, a significant number of patients with venous leg ulcers have a reduced quality of life due to a mobility disorder, depression, feelings of social isolation, fear, anger, anxiety, negative perception of themselves, and a reduction of time spent at work, causing job losses, can have a negative effect on the financial situation of the patient.

Approximately 170 million people worldwide currently suffer from diabetes. It is estimated that in 2025, 300 million people worldwide will have diabetes and this will rise by 2,030 to 360,000,000 people, which is equivalent to a global prevalence of more than 4 %. Patients with diabetes are expected to experience associated health complications such as kidney disease, heart disease and retinopathy. In addition, 10–15 % of patients with diabetes mellitus (DM) can be expected to develop foot ulcer; lower limb amputation is less common, but in extreme cases, this is a complication that is associated with DM and foot ulcers.

The incidence of foot ulcers and the necessity of amputations globally vary by geographic location. Diabetic foot ulcers can develop as a result of acute or chronic damage to the skin, arterial disease, peripheral neuropathy or a combination of these factors. Approximately 20 % of diabetics with foot ulcers have insufficient arterial blood supply to the lower extremities. Moreover, 50 % of those with diabetic foot ulcers demonstrate peripheral neuropathy and 30 % have a combination of both (i.e. neuroischaemia). The incidence of peripheral arterial disorders (PAP) in patients with foot ulcers is currently an increasing trend and there are indications that PAP are currently the leading cause of foot ulcers in patients with DM, whether primary or in combination with neuroischaemia.

Diabetics are probably the most studied group with chronic wounds. Many studies have been published on the epidemiology of this common complication. The annual incidence of foot ulcers is about 2 % for DM Type II and the prevalence is between 2 and 12 %, depending on the geographic location.

For an existing foot ulcer, the major risk factor is amputation of the lower extremity with this type of diabetes. In 40 % to 80 % of amputations of the lower extremity, an ulcer in a diabetic foot precedes. The annual incidence of diabetic





amputations of the lower extremity in the U.S. ranges between 2 and 30 per 1,000 diseases, again depending on location, ethnicity and race. The prevalence of major amputations in 2008 in the U.S. was 1.3 % and the prevalence of low amputations was 0.46 % (limited to the ankle joint).

Slovakia is home to nearly 350,000 patients who have been diagnosed with diabetes mellitus; as a result of poor compensation of diabetes, 19,000 of them have experienced complications called diabetic foot. In 2010, 7,663 cases with diabetic foot lesions were recorded (NCZI 2011). Diabetic foot is the most common cause of hospitalisation of patients with diabetes. It is considered to account for the largest cost in the treatment of diabetes. In 14 to 24 % of patients with a diabetic foot, amputation of the lower extremity is necessary. Up to 50 % of diabetic patients die within 3 years of the first limb amputation. Further amputation within 1–3 years is required in 42 % of patients. In Slovakia, 3,997 amputations are performed each year (2010) due to a diabetic foot (NCZI 2011).

The most common chronic wounds in a diabetic foot are ulcers or venous leg ulcers, which impair the patients' mobility. They have a negative impact on the quality of life and can lead to limb amputation. With good classical treatment consisting of cleaning and treating the infections and external compression, the wound can heal. In approximately a third of chronic wounds, classical treatment is not enough and you need to choose a more sophisticated approach. According to statistics, ulcers of the tibia occur in up to 1 % of the population. The number of patients is increasing with age. As much as 3.5 % of the population over 65 years of age suffer from this disease. The most common causes of ulcers are diseases of the vascular, venous and arterial system.

Overview of the prevalence of chronic (non-healing) wounds of the lower extremities

Based on our view of the relevant literature, we have compiled Table 1, which shows an estimate of the prevalence and incidence of chronic (non-healing) wounds.

Tab. 1 Overview of the estimated prevalence and incidence of chronic wounds

Source	Note	Prevalence
Pospíšilová A., 2012	The prevalence of ulcers in civilized countries	1–2 %
Kopal T., Kopalová I., 2010	Ulcers of the tibia, adult population	0.7 %
Margolis D. J., 2012	Prevalence of chronic wounds of the lower extremities, the adult population	0.18–1.3 %
Mekkes J. R. et al.: 2003	Prevalence of lower limb ulceration, adult population	1 %
Mekkes J. R. et al.: 2003	Prevalence of lower limb ulceration, 65+	3–5 % 1–2 %
Nelzen O., 2008	The prevalence of open ulcers of the adult population	0.8 %
	The prevalence of open ulcers, 65+	1.9 %
Fife C. E. et al, 2012	Prevalence of chronic wounds	2 %
Ruckley C. V., 1997	The prevalence of ulcers in civilized countries	1 %
Anderson, I., 2006	The incidence of venous ulcerations, the entire population	0.15–0.2 %

**The socioeconomic impact of diseases that can be treated using maggot debridement therapy**

Mgr. R. Klobucký, PhD., Dr. M. Kozánek, CSc., Associate Prof. M. Čambal, M. D., PhD., Dr. P. Takáč, CSc.

Source	Note	Prevalence
Posnett, J., 2008	The incidence of chronic wounds, the whole population	0.3 %
Harrison M. et al, 2001	The incidence of chronic wounds of the lower extremities, urban population	0.18 %

In this report, we should perhaps add that most of its linked texts mention the increasing prevalence of chronic wounds in recent years.

Based on the review of the prevalence and incidence of chronic wounds of the lower extremities, we will also try to estimate the Slovak prevalence of this disease. It seems that the prevalence of Western Europe oscillates around 1 % of the adult population. The literature, however, reports that the prevalence of one of the main causes of chronic wounds of the lower limbs, diabetes mellitus (DM), is geographically significantly different. While in the Mediterranean and southern European countries, the prevalence of DM is around 6–10 %, in Western and Northern European countries it is only around 3.5–4.5 %. According to recent research (Mokráň et al., 2008), it seems that the Slovak prevalence of DM is close to the values seen in Mediterranean and southern European countries, at around 7 %. Thus, if we consider the prevalence of chronic wounds of the lower extremities of the adult population estimated at 1 % of the West European level, given the higher prevalence of DM in Slovakia, this will be a conservative estimate.

However, since it is only an estimate and more exact data on the prevalence of chronic wounds of the lower extremities in Slovakia are not available, we will use a guideline recommendation by the Ministry of Health (Ministry of Health 2012a), which states that “... *using sensitivity analysis we can verify the effect of uncertain factors on the final results of the cost-effectiveness and the results will be indicated in a quantitative way. If the input data used in the analysis is uncertain, it is necessary to perform a sensitivity analysis to see how the final cost-effectiveness varies under different assumptions. Variables as a source of uncertainty are nec-*

essary to change in the entire theoretically possible range of at least ± 30 %.” In our case, we count the minimum and maximum estimates of the prevalence of chronic wounds of the lower extremities to be 0.7 % to 1.3 % of the adult population (15+, the international prevalence study for the adult population generally considered to be 15 years old and older population).

The median estimate is 1 % of the adult population in Slovakia, which means, according to the last census (Juhaščíková et al., 2012), that there are 45,692 people living with chronic wounds of the lower extremities; the minimum estimate is therefore 0.7 % of the adult population, which in Slovakia means that 31,984 people are living with chronic wounds of the lower extremities; and the maximum estimate is therefore 1.3 % of the adult population, which in Slovakia is 59,400 people living with chronic wounds of the lower extremities.

These estimates can be compared with the already mentioned data from the health statistics (NCZI 2011) on the prevalence of a diabetic foot with a lesion, which was 7,663 cases in 2010. From our calculated mean estimate of 45,692 people with chronic wounds of the lower extremities, this accounts for 16.8 % of patients with diabetic foot lesions. These figures correspond roughly with the American study, which showed that 13.7 % of all patients had diabetic foot with a lesion, accounting for 5,240 people with a chronic wound of the lower limb (Fife et al., 2012). The slightly higher Slovak proportion can also be explained by the fact that we automatically counted each lesion of the diabetic foot to be a chronic wound, which may in fact be true.





We can also compare our estimate of the statistics that monitor patients with leg ulcers in medical treatment. Such records from the NHIC in year 2011 were found for 27,660 individuals (NHIC, 2012), i.e. 60.5 % of our estimate of all cases of chronic wounds of the lower extremities; this agrees with the literature, which refers to an estimated 40–70 % share of the total of such healing of chronic wounds of the lower extremities (Margolis 2012).

For the potential use of Maggot debridement therapy (MDT), however, we can count a more modest numbers of patients.

According to an estimate made by Nelzena (2008), in patients with chronic wounds of the lower extremity, many are not aware of the treatment available in the health system, because they are not in contact with their doctor. Nelzena also states that only about half of the afflicted are in touch with doctors; in our case, this accounts for 22,846 patients treated for chronic wounds of the lower extremities.

We may also consider only those wounds in which the current method of treatment failed. Rippon et al. (2007) performed a review of the literature and indicated that approximately 10–20 % of chronic wounds do not heal, even after two years of treatment using the latest techniques. The predictor for the following hard-healing wounds include wound size ($> 10 \text{ cm}^2$) and duration (longer than 12 months). If we therefore consider such restrictions of the MDT, then the number of potential patients for the year is 2,284–4,569.

Continued in the next issue of the *Acupuncture and Natural Medicine* (PART II)

Mgr. Robert Klobucký, PhD.¹;

Dr. Milan Kozánek, CSc.²; Associate

Professor Marek Čambal, M. D., PhD.^{2,3};

Dr. Peter Takáč, CSc.^{2,4}

¹ *Institute for Sociology, Slovak Academy of Sciences, Klemensova 19; 813 64 Bratislava, Slovak Republic*

² *Scientica s. r. o., Hybešova 33, 831 06 Bratislava, Slovakia*

³ *1st Department of Surgery, University Hospital, Mickiewiczova 13, 813 69 Bratislava, Slovak Republic*

⁴ *Institute of Zoology, Slovak Academy of Sciences, Dúbravská cesta 9, 845 06 Bratislava, Slovak Republic*

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Mgr. R. Klobucký, PhD., Dr. M. Kozánek, CSc., Associate Prof. M. Čambal, M.D., PhD., Dr. P. Takáč, CSc.

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Rock environment and its impact on the human

Prof. Dr. František Baliak, PhD.,
Mgr. Martin Ondrášík, PhD.,
Mgr. Martin Brček, PhD.

Summary

This contribution follows the report, which was presented at the XVII. Medical Congress of Natural Medicine in Šamorín in 2014. The topic is a continuation of the issue of the impact of environmental geofactors to humans, which we presented in previous issues of this magazine (Baliak, Khun, 2012, Baliak, Ondrášík, Brček, 2013). In the paper Baliak, Khun, (2012), we have briefly described all geological hazards of the environment in general, and we have shown their impact on humans. In the paper by Baliak, Ondrášík, Brček (2013), we discussed in depth geofactors focusing on water.

This paper is devoted to the rock environment as a basic component of the geological environment and its effect on humans. In the introduction we briefly mention some basic terms on the subject, the next section provides an overview of environmental geofactors and finally we analyse the actual impact of the rock environment on the human.

Key words

Geological environment, rock environment, geological factors of the environment, geopotential, geo-barriers, rocks, construction materials, slope movements

Introduction

Environment – everything that creates natural conditions for the existence of organisms including humans and it is a prerequisite for their further development. Its components are mainly air,

water, rocks, soil, organisms, ecosystems and energy (§ 2 of Act no. 17/1992 Coll. On the environment).

Geological environmental factors – components of the geological environment and processes going in it, which affect the way the use of geological and landscape environment.

Geological environment – part of the lithosphere, which directly affects the conditions for the existence and development of society, which man uses and changes.

The most crucial components of the geological environment:

1. **Rock environment** – which materially and structurally constitutes an essential component of the earth's crust;
rock – diverse (heterogeneous) natural matter composed of minerals. The basic component of the earth's crust – lithosphere
mineral – uniform (homogeneous) natural matter composed of elements. The basic component of rocks.
2. **Groundwater** – represents the intersection of the earth's hydrosphere with lithosphere; significantly affects properties and behaviour of rock masses, it also creates a special kind of mineral resources precondition human life;
3. **Relief** – major lithosphere interface with external spheres of the Earth (atmosphere, hydrosphere and other), whose development is the result of endogenous, exogenous and anthropogenic processes;





4. **Soil** – the outermost layer of the lithosphere, arising from interpenetration and interaction of atmosphere, hydrosphere, and biosphere;
5. **Raw resources** – solid, liquid and gas accumulation (deposits) of useful minerals in the rock environment.

Landscape – system of geospheres producing character of a country and conditions for development of life and society (Klukanová et al., 1995).

Overview of geofactors of the environment

In general, the geological environmental factors (geofactors) are essential components and processes of the geological environment ongoing in it.

Those geological factors that allow some use of the geological environment are referred to as **geopotentials**. Geological hazards that threaten the landscape and the environment, and make it difficult or impossible to use the geological environment are referred to as **geo-barriers**. Overview of the geofactors of the both groups are presented in Table 1 after Matula (1995).

Geopotentials represent various natural resources and opportunities that the geological environment can provide through the rock environment

for a positive development for the society. Not only traditional raw materials and groundwater are included among geofactors of this group, but also fertile soil, good foundation soil and building materials from the start condition for the development of human civilization. Potential geological environment, such as the appropriate options for waste storage and the like receive currently high rating.

Under geobarriers we can understand various obstacles and limitations of geological nature, which severely limit or completely preclude effective use of nature to favourable development of the society. Such barrier effects (sometimes very difficult to overcome) may cause:

- geological factors threatening the life and work of people;
- geological factors inducing adverse interaction in the geological environment and thus significantly reduce the efficiency, durability and safe operation of technical works;
- geological factors constituting retrospective negative effects of technical works that seriously harm geological environment and call for its protection and rehabilitation.





Tab. 1 Overview of the geofactors by M. Matula (1995)

GEOPOTENTIALS (resources and use of geological environment)		GEO-BARRIERS (geological barriers and constraints adversely limiting rational use of geological environment)	
1. factors enabling favourable development of the society	2. factors threatening life and works of man	3. factors reducing the efficiency of construction and operation of technical objects	4. factors affecting environment by negative anthropogenic impacts
<ul style="list-style-type: none"> – ore and non-metallic raw material, source of energy (coal, oil, earth gases, radioactive resources, geothermal energy etc.) – building material – drinking and healing groundwater – fertile agricultural soil – high quality of foundation soil – suitable area for landfilling 	<ul style="list-style-type: none"> – volcanic eruptions – earthquakes – catastrophic landslides, rock falls, mudflows – flood (by river, due to tectonic subduction) – toxic and radioactive impact of the geological environment on human 	<ul style="list-style-type: none"> – highly compressible and low bearing capacity of foundation soil – fast weathering, strongly karstic rocks – unstable slopes – high groundwater level and waterlogging – groundwater aggressiveness – seismic areas 	<ul style="list-style-type: none"> – mining subsidence – land subsidence after oil and gas exploitation – devastation of area after surface mining – mine tailings, sedimentation pond – waterlogging or drying territory by waterworks construction – pollution of ground water and rocks by improper waste dumping, agriculture etc.

Geofactors and processes, which have a direct impact on human life, are bolded in the table.

Concerning the review of the geofactors it is clear that from human stand point the geopotential has irreplaceable role since it represents various natural resources (minerals, building materials, groundwater, quality foundation soil), which the geological environment can provide.

On the other hand, slope failure, quick weathering and intensive karsting of rocks, waterlogging and drying due to constructions etc. (the geo-barriers) have an enormous impact on humans.

The geological environment and its impact on human

Geopotentials

On this basis, we can conclude that the geopotential generally improve the quality of human life. Plenty of ore, industrial minerals and energy resources, quality and availability of quality building materials, high-quality agricultural and foundations soils as well as the occurrence of a suitable environment for storing landfills, produce in humans feelings of well-being, wealth, feelings of balance and so on. These geofactors resulting from a particular area of the geological environment significantly contribute to improve the quality of life. When using them, we must always bear in mind that extreme exploitation of raw materials such as diamonds, gold, coal, oil, gas as well as geothermal heat can cause the op-









posite i.e. reduce the quality of human life and the geopotential becomes a geo-barrier difficult to repair.

A special chapter in the use of the geology as geopotential has for humans the “magic” power of some rocks and minerals (Ferko, 1985).

Minerals as a constituent of rocks forming the rock environment are “messengers of the earth energy”, which they gained in the process of their







creation. It is recognized that some minerals have positive vibrations that harmonize the human body i.e. renewing the body balance and act as a medicine and protection. This means that the energy and vibrations emitted by certain minerals awaken centres in the human body to its own therapeutic activity. Table 2 lists examples of curative effects of some minerals, including their identification (chemical composition in the form of formula and colour) (Bauer, Tvrz, 1993).

Tab. 2 Examples of curative effects of some minerals

Mineral	Identification	Effects	Zodiac	Illustration
AMAZONITE	$K(AlSi_3O_8)$ Green with white veins of feldspar	strengthens heart activity, calms nerves, relieves stress	Taurus	
AMETHYST	SiO_2 violet	insomnia, back pain, headache, weight problems, purity skin	Capricornus, Pisces, Aries, Sagittarius	
AVENTURINE	SiO_2 green, blue	skin diseases, migraine, a sense of harmony, anti-stress	Cancer	
AGATE	SiO_2 grey with design of “wheels” violet, blue, green	Relieves pain, heals skin diseases, hair fall, cleans the body, anti-allergic	Virgo	






Mineral	Identification	Effects	Zodiac	Illustration
CITRINE	SiO ₂ gold (transparent)	reduces stress, positively affects the digestive organs, pancreas, liver	Gemini	
HEMATITE	Fe ₂ O ₃ metallic	rheumatism, insomnia, promotes the formation of blood, strengthens the lungs	Aries, Scorpius	
CHALCEDONY	SiO ₂ sky-blue with a white drawing	treats cervical diseases, removes neurosis, stops bleeding, moderates temperature	Sagittarius	
CARNELIAN	SiO ₂ deep orange	strengthens heart function, cures rheumatism, helps with blood poisoning	Taurus	
THE CRYSTAL	SiO ₂ glassy transparent	charges the body with energy, neutralizes negative radiation, acts on heart and nerve diseases	Leo	
QUARTZ	SiO ₂ snow-white	relieves asthma problems, strengthens eyesight, relieves stress	Sagittarius, Pisces	





Mineral	Identification	Effects	Zodiac	Illustration
ROSE QUARTZ	SiO ₂ pink	dampens stress, strengthens the heart function, blood circulation in the skin, acts against insomnia	Gemini, Libra	

As can be seen from the table many minerals act on several health problems, they mutually complement and support each other. It should be noted that the treatment effect of minerals is never a substitute for the classical or natural medicine.

Geo-barriers

Unlike geopotentials, the geo-barriers generally have negative impact on the quality of human life. The negative effect of geo-barriers is manifested most significantly in the form of impact on the human psyche. Human psyche can be strongly influenced by concerns about the possible acting of geo-barriers directly connected to the land or acting of geodynamic processes that are directly caused by the geological environment. For instance, the occurrence of low-bearing capacity of foundation soil and quickly weathering and karsting rocks, which greatly affects the choice of building plot and the construction itself. In mining areas fear from land subduction after under-

mining and the like occurs frequently. (In Slovakia for example around the villages Cígeľ, Kôš, Handlová, Kremnica and elsewhere).

The most significant negative impact of the geo-barriers occurs on humans in areas with a potential for development of slope movements, which is directly affected by suitable rock environment. The resulting slope deformations have often disastrous consequences not only for land (engineering, construction sites, estates of people) but they also can cause losses of human life (for example, landslide in Shan-xi province in China in 1920 killed 200,000 people). In Slovakia the phenomenon of landslides is particularly important because up to 5.25 % of area of Slovakia is damaged by landslides. When well-known catastrophic landslide in Handlova was developed in 1961, about 150 homes were damaged (Baliak et al., 2014).



Fig. 1 Damaged houses January 1961 (photo Nemčok in Baliak, Stríček, 2012)



The reduction in quality of life occurs also as result of long-term activity of geo-barriers (rocks, soil, water), their geochemical, geophysical and hydro-chemical effects (Khun, Baliak, 2012).

Conclusion

Overall, it can be stated that the geological environment and phenomena caused by geology have a significant impact on human life. The geological environment is an important geofactor that positively (geopotentials) or negatively (geo-barriers) acts on human health. The use of the rock environment, for example the healing effect of minerals is never a substitute for the classical or natural medicine.

Prof. Dr. František Baliak, PhD.,

Mgr. Martin Ondrášik, PhD.,

Mgr. Martin Brček, PhD.:

Faculty of Civil Engineering of Slovak University of Technology, Department of Geotechnics, Radlinského 11, 813 68 Bratislava

E-mail: frantisek.baliak@stuba.sk, martin.brcek@stuba.sk, martin.ondrasik@stuba.sk

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Acupuncture in my life

Daniela Hurajova, M. D.

As a student of medicine I was thinking about my future specialisation. Mostly I was attracted to neurology. But I liked also other surgical or internal specialisations. Finally I decided for ENT surgery. I was impressed by this specialisation because of its wide range despite of her objects, which are “only” organs of head and neck. We can find most of our senses on the head. Thus the region of head and neck is some kind of “epicentre” of receiving and of sending of information. Breathing and swallowing ways meet here, hormonal system goes near nervous one. Neck organs are an inserting gate of our body. They are receivers and senders of our feelings.

At the beginning of my medical practice I was interested in specialisations like neurology, immunology, infectology, gastroenterology. ENT specialisation is directly cooperating with these specialisations. Each one and all together we look for reasons of problems and we try to solve them. I like to look at patient from more points of view; I try to solve his problems by conservative treatment, if surgical intervention for treatment is not necessary.

After some practice in hospitals, after my two children born I was thinking about my future way. With new work new problems arose, which had to be solved faster and faster. It was hard but also a nice part of my life, when my life started a trip on a railway toward ambulatory work.

I was always fascinated by the work of ambulatory physicians. They have to quickly examine a patient, evaluate his state, and decide about diagnosis and following treatment. I followed this way,

despite the better or worse instrumentation. There were some patients, who had symptoms without any positive outcomes of examinations and they came again to my ambulance. I realized limits of my possibilities in such cases. I started to think interdisciplinary, took into account reasons for illnesses that are connected with other organs and thus being only symptoms in our field.

Everyday contact with patients of wide range of age from little children to senile age was a big challenge for me. Despite of all possibilities of diagnostic and treatment of “western medicine” I missed other way on my search for the real reason of problems. I was searching for something that the patient could not name, be aware of, but it had an effect on his health. I started to look for new turn – out on my way through medicine. I think, I found it in acupuncture and natural medicine.

Maybe exactly acupuncture examination will show a change in physical processes some weeks or months before the beginning of illness. It would find possible interconnections, which are not detected by an apparatus, it would accelerate interdisciplinary diagnostic. It would help to give a patient really what he needs. It would not make a patient taking unnecessary drugs, it would help the patient to decrease the usage of drugs or side effects of drugs, and there would be less complications in a period after operation. Acupuncture helps in acute cases, in treatment of swellings, allergic reactions, aches. That is why I am interested in this branch of medicine. That is why I try to learn something about it and move by little steps further.





Acupuncture does not incite medicine to close eyes and to leave other kinds of treatment. On the contrary, it helps to see the human as a holistic being, who needs help. It enables to understand interconnections, not only the sick part of body that should be treated. It helps us to see more, to be aware of a mans' psyche, which has not a small influence on reactions of organs and tissues on pathogenic factors. It helps to better observe the influence of vegetative nervous networks; their dysfunction might be at a start of many illnesses.

I cannot get rid of a feeling, that happiness that we search for all our lives is in fact harmony. Nicely folded tones, which allow us to feel joy. Maybe exactly this method makes by its influence a temporary harmony in our body and soul.

Life taught me to use my senses for evaluation of different situations, acupuncture thinking is teaching me to see also by my hands, to perceive many things differently as before. I am happy, that this path shifted me somewhere, and I hope it will be helpful for my family, my friends and for my patients. I would like to thank our lecturers from Centre of Acupuncture (as new First clinic of Acupuncture). They taught me a lot; they showed me a lot in practice. They changed my view on world and so they helped me to better understand realities that are not clear at first.

Daniela Hurajova, M. D.

E-mail: phuraj@extel.sk

ENT ambulance, Košice





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