

## The relation between the acupoint structures and the clinical therapeutic effects

Feng Ifrim-Chen and Mircea Ifrim

Faculty of Medicine and Pharmacy, University of Oradea, Romania

*Key words:* acupoints; acid mucopolysaccharides; nerves; vessels; polymerization; connective tissue.

---

---

### SUMMARY

---

---

We performed a histological study upon the acupuncture points and their effectiveness of clinical treatment; the background was the clinic evidence that a multitude of points are used in treating a disease, but only some of which may have an efficacy, since the others did not. After a comparative histological and anatomic study, it comes out that those points, which are more effective from a structural point of view, identify a neural fibrillar concentration, a well developed capillary network and an increased mucopolysaccharides (MPS) concentration, in particular, acid mucopolysaccharides.

The present paper presents histological data, which demonstrate the difference in the structure of the acupuncture points, postulating their specific influence on clinical treatment.

### INTRODUCTION

Acupuncture, a main branch of Chinese medicine, accumulated clinical experience and wisdom by centuries and it is now developed and practiced in 140 countries worldwide (Sistenich, 2001; Im, 2000), attracting interest in research. Its theories explain the use of the meridians and collaterals on the bases of their effects on nerve system, blood vessels, lymphatic system, bio-electricity and cybernetics (Yu, 1997; Yu, 1999; Murray, 2002). There has been also a number of morphological studies of acupoints that reported some findings: (1) there is a very rich vascular network beneath the point; (2) the point are closely related also to nerves and lymphatics; (3) no special changes were found concerning neurovascular pathways; (4) a special network of capillaries have been found beneath the points; (5) "the point of the stereo-constructionism" has been proposed; (6) "multi-mineral-element-concentrated" loci and areas have been found; (7) the  $Ca^{++}$  density increases in needle points; (8) the existence of a length of 15.5  $\mu m$  spontaneously shape-narrowed wave

in each point suggested a radiation structure with focused energy of a particular nature (Frenkel, 2002; Li, 1997).

Clinical observations that multiple acupoints are often used in treating a single ailment with firm points yielding good results (Ma, 1992) while others are poor ones (Yentis, 1992), promoted the present study which was aimed firstly to reconfirm the relative effectiveness of these points, secondly to examine any associating factors. We designed experiments through anatomic and histological examination of the structures of the subjacent regions corresponding to the respective points in order to correlate clinical effectiveness with specificities in structures.

### MATERIAL AND METHODS

We applied the electro-acupuncture method by using a Contilabo-Philips instrument (made in France), which has the ability of detecting the acupuncture points by a light signal lit by electricity based. The principle is that when a point is properly stimulated, it emits a beam of electric energy, which counters and neutralizes that emitted by the apparatus, dimming the light signal. The instrument can thus perform, in dependence of the imparted intensity, dispersion equivalent to using the silver electrode or concentration equivalent to using the gold electrode on the respective points.

From classical anatomic viewpoint, we know that some points represent agglomeration sites of neural formations and vascular ones, especially arteriolar, lymphatics as well as tendinous formations or projection sites of vegetative plexuses, such as the celiac plexuses, the hypogastric and other plexuses. The density of the formations varies in dependence on the points, permitting a hierarchization, which we have achieved in the two groups of treated patients.

In our study, 1245 patients afflicted by various diseases were treated with electro-acupuncture using the above mentioned apparatus. We indicate the acupoints in the following manner: LI, the large intestine meridian (fig. 1a); S, the stomach meridian (fig. 1b); SP, the spleen-pancreas meridian (fig. 1c); GB, the gallbladder meridian (fig. 1d). 110 of studied subjects suffered of hemiplegia, and the present research referred to these. In 50% of those, designed Group I, we used the points LI 11, 15, 4; S 36, 43; SP 5; GB 34, 39, whose adjacent regions are rich in the formations of nerves, vessels, lymph nodes and tendons. In the other group, we chose acupoints, namely LI 8, 10; S 32; SP 8; GB 38. The bioptic samples were taken from the acupoints up-mentioned, fixed in 10% formalin and stained by Hematoxylin-Eosin and PAS.

### RESULTS

We compared the results in both groups. Firstly, treatment in patients of the Group I was more effective than those in the Group II. Secondly, stratigraphic-topographic anatomy and histology indicated that the points employed for treat-

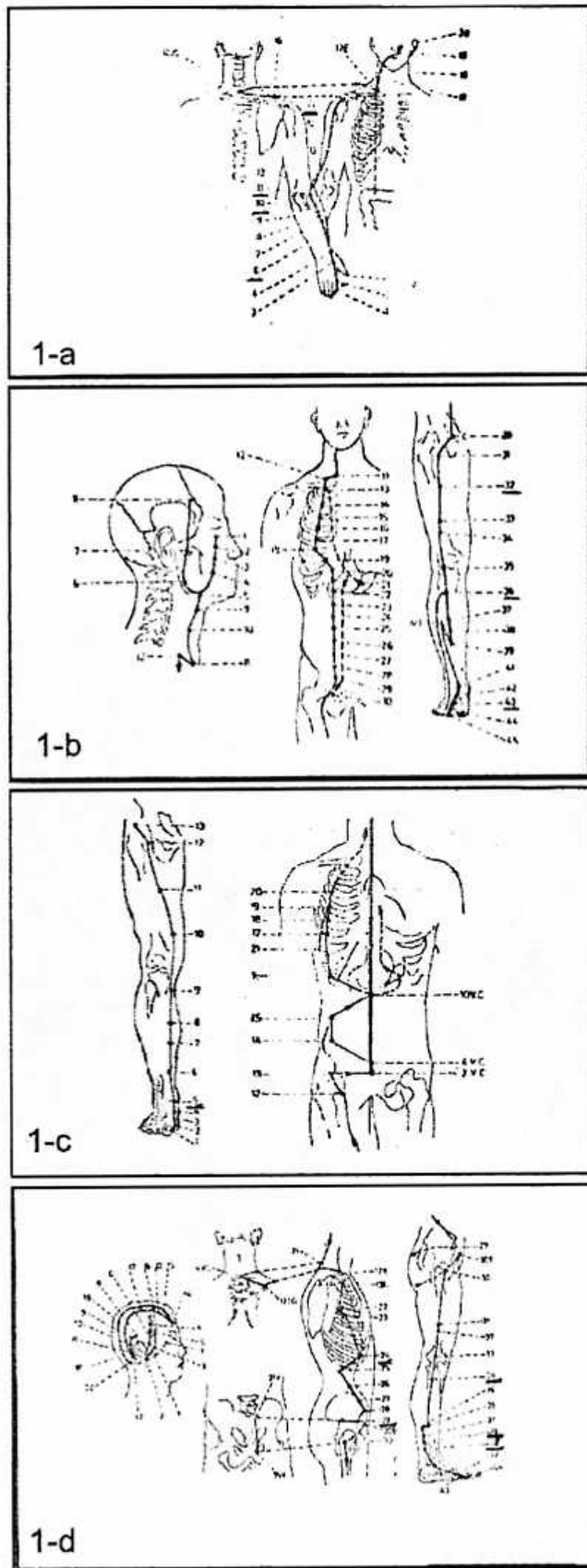


Fig. 1 — a: the large intestine meridian points (LI). b: the stomach meridian points (S). c: the spleen-pancreas meridian points (SP). d: the gall bladder meridian points (GB).

ment of Group I patients had high density of agglomerations of fine nerve fibers, small blood vessels, lymph nodes, and tendons (Figure 2 a-c); by contrast, points used in Group II, were associated with atrophic small nerve fibers and perinervous edema (Figure 2 d). Thirdly, PAS and Hematoxylin-Eosin showed that in Group I the derma kept up a correspondence to the points of high density of acid mucopolysaccharides (MPS) (Figure 2 b-c).

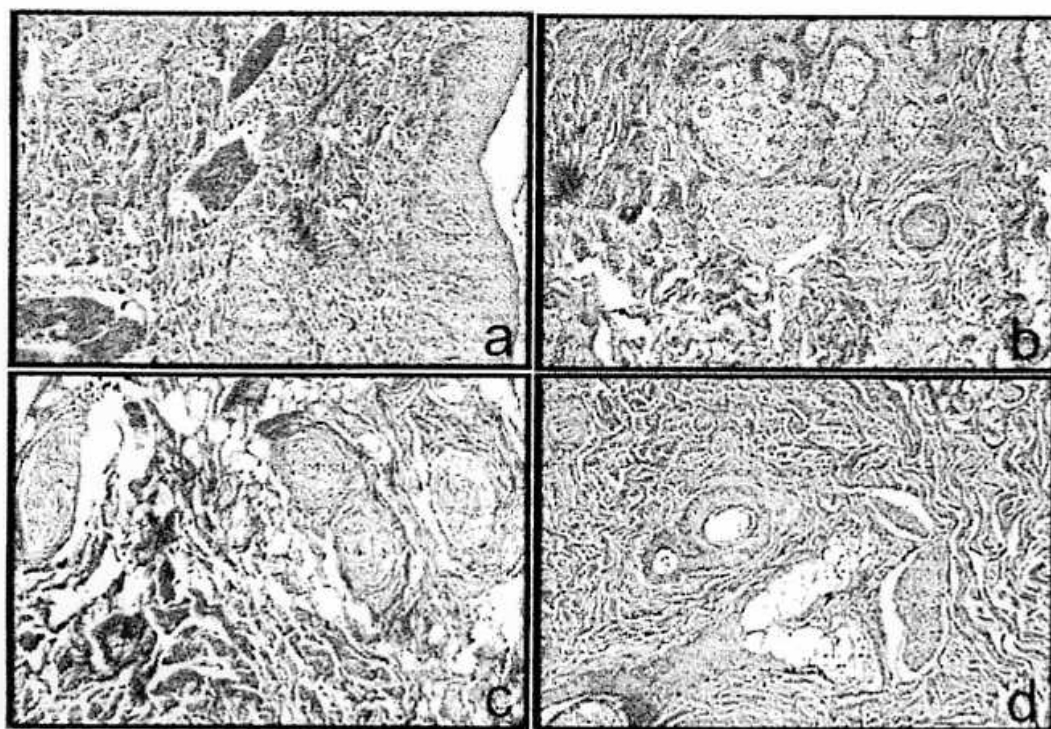


Fig. 2 — In the first group, Hematoxylin-Eosin showed an increased quantity of nerve fibres (a), while PAS staining showed a high density of both MPS (b) and nerve fibres (c). In the second group, PAS showed atrophic nerve fibers and perinervous edema (d). Magnification: 20x.

## DISCUSSION

The Traditional Chinese Medicine, for instance acupuncture, has advanced by thousands of years of clinical experience. Chinese acupuncturists practice acupuncture according to the holistic theory involving *kings*, *ministers*, *assistants* and *messengers*. In general, they choose a *king point*, one or two *minister-points* and a couple of *assistants* during each practice. However, little is known in the identification and assignment of *king-points*, *minister-points* and *assistant-points*, specifically, how to choose these points.

In Western medicine, the physiological roles and functions of nerves, blood vessels and lymph nodes, are clearly defined. The evidence that some acupoints function better than others (Yuan, 1996) determined the research for underlying physiological mechanism.

Indeed, anatomical and histological studies indicated that clinically successful acupoints used to treat the patients in Group I showed dense small nerve fibers, rich

nerve endings, fine blood vessels, lymph nodes and tendons while those in Group II, which had much less clinical effectiveness, also had much less concentrations of those structures. Cross-over studies by switching the acupoints used in Groups I and II yielded the same results.

Consistent with expectations, higher MPS content was observed in the points used for Group I patients than those used for Group II. These results are associated with clinical effectiveness of acupoints.

In conclusion: 1) The acupuncture points may be objectively defined based on the anatomical and histological distribution of nerves, vessels and lymph node formation which are concentrated around the clinically effective points; 2) Concentration of acid mucopolysaccharides was observed in the dermis with high degrees MPS content in the epidermis of the clinically effective acupoints. Functional significance awaits further investigations; 3) Present findings may contribute to better understanding of the clinical application of acupuncture, moxibustion and therapeutic massage.

Arrived 10/12/2004. Accepted 10/03/2005

#### REFERENCES

- Frenkel M, Frenkel J. 2002. Oculomotor nerve palsy treated with acupuncture. *Alten. Ther. Health Med.* 8:118-120.
- Im po, Yolton RL. 2000. Concepts of traditional oriental medicine. *Optometry.* 71:621-629.
- Li WD, Du Z, Fang ZQ. 1997. On safe needling manipulation and the anatomic structure of *Fengfu* point. *J. Acup.* 8:505-506.
- Ma Y, Wang C. 1992. Clinical application of point-through-point acupuncture. *J. Tradit. Chin. Med.* 12:154-157.
- Murray PI, Aboteen N. 2002. Complication of acupuncture in a patient with Behcet's disease. *Br. J. Ophthalmol.* 86:476-477.
- Sistenich V. 2001. East and west eye to eye - an elective report. *Acup. Med.* 19:66-68.
- Yentis SM, Bissonnette B. 1992. Ineffectiveness of acupuncture and droperidol in preventing vomiting following strabismus repair in children. *Can. J. Anesth.* 39:151-154.
- Yu AS, Zhao YX, Yan ZG. 1997. Grossly stereo-morphological observation of the *Sanyinjiao* point. *Chin. Acup.* 1:42-44.
- Yu AS, Zhao YX, Yan ZG. 1999. Micro-structure of the *Zusanli* point. *Chin. Acup.* 1:27-28.
- Yuan XJ. 1996. The influence of needling *Fengchi* point on blood flow of the brain. *J. Tradit. Chin. Med.* 37:285.

*Correspondence to:*

FENG IFRIM-CHEN and MIRCEA IFRIM  
Faculty of Medicine and Pharmacy,  
University of Oradea, Romania  
No. 10, Str. 1, Decembrie 1918,  
3700 Oradea Romania  
Fax: 40-259-418266;  
e-mail: cfeng@uoradea.ro