RESULTS OF RESEARCH ON THE ELECTRIC FIELD GENERATED BY THE HUMAN ORGANISM

By Marcus Bongart

Hunger for Knowledge

From the very beginning of my involvement in Traditional Chinese Medicine I have been striving to understand the nature of phenomena occurring during acupuncture and Qigong exercises and treatment. These phenomena are inseparable from the concept of Qi energy. However, the question remained whether Qi is a philosophical notion adopted by Oriental philosophers in order to explain natural phenomena which they had been unable to understand, or a description of real, albeit unknown, energetic processes occurring in cells, organs and whole organisms.

Observations of numerous functions of living organisms, as well as records of clinical experience gathered in the course of many centuries by Oriental doctors, have led me towards the latter concept. The longer I considered questions posed by Oriental medicine, the harder it was for me to accept Qi energy theory as a philosophical dogma.

My own clinical experience and personal convictions not only attracted criticism from my medical colleagues, but also aroused other controversies and were often ridiculed as irrelevant. An overwhelming desire to deepen my knowledge, document my experience and impressions and attempt an explanation of healing phenomena created a stimulus to undertake research and provide adequate scientific proof.

The initial goal of research was to test whether it might be possible to register Qi energy generated by living organisms. I was aware of the difficulties and, fascinated by theories of Professor W. Sedlak[1] and, particularly, by the concept of the fifth state of the matter which he defined as *bioplasma* and its electromagnetic structure, I was desperately seeking experts on the issue.

According to the current state of our knowledge, the human organism generates physical fields and radiation of various types, some of which are already well researched and used for medical purposes. A good example is magnetic cardiography (MCG), or measurement of the magnetic field of the heart. Tomography, or measurement of infrared radiation, is used in the diagnosis of tumours. Other types of energy emitted by living organisms, such as extremely weak photon emission, infrared sounds or electric field still

---

1

require further research. Qi energy, which is a mysterious, universal force regulating living processes, cannot be considered as a simple equivalent of the magnetic field, infrared emission or some other well known physical phenomena. This can often be proved by simple experiments.

However, many years of observation on the process of Qi energy transfer between a therapist and a patient, also taking into account the environment where treatments are conducted, allow for speculation that the information might be transferred by the electric field. To a certain extent, this hypothesis was confirmed by Professor W. Sedlak's work.

Historical Background

In 1986 one of my students introduced me, coincidentally, to Professor E. Ziobro of the Technical University of Wrocław, Poland. Despite two years of failed attempts I still hoped that some day I would be able to conduct efficient measurement of the field generated by the human organism. I continued to look for other researchers in this area and finally contacted Dr Jan Szymański.

Following a long period of intensive discussions, Jan A. Szymański, Zbigniew Garnuszewski and I commenced joint research work in 1988 in Vellinge, Sweden. Our aim was to establish research procedures and construct electronic measurement instruments which could be used for medical diagnosis.

Jan A. Szymański had been working in this area since 1977, long before our joint work began. He wrote a Doctor's thesis at the Agricultural Academy in Cracow, Poland in 1987, receiving title of the Doctor of Natural Sciences.

We have continued joint research in a laboratory in Vellinge since1988, and from 1989 some of the experiments were carried out in Warsaw, under personal supervision of Professor Zbigniew Garnuszewski, until his death in 1997.

The idea of measuring the electric field is not a pioneering concept. Results of research on the electric field of animals and human beings have been published in a number of countries in the last fifty years. Also, a number of patents have been approved for apparatus used for such research. However, these devices were difficult to use and failed to provide exact measurements. They were therefore unsuitable and unreliable as treatment tools for practical application[2].

2

On the other hand, contact measurements of electrical activity of internal organs such as the heart, muscles and brain have been used in medicine for almost a hundred years. They encompass electrocardiography (ECG), electromyography (EMG) and electroencephalography (EEG). All of these procedures involve the use of electrodes applied to the skin surface or needle electrodes introduced into the body. Such measuring devices can register very low voltage generated during the flow of ionic and electron currents in the body.

In 1947, Lorente de No[3] made a breakthrough in research on electric fields by discovering alternating electric field around a stimulated nerve. Russian researchers (Gulayev et al., 1968[4]), using improved measurement techniques, were able to register the electric field generated by nerves and muscles from the considerable distance of 25 cm from the body. American researchers (Richardson and Keefe, 1968) also registered alternating electric field, generated by the working heart.

However, the research of that time failed to provide convincing and repeatable results. From the modern perspective, it was a period of solving methodical and technical problems. Electronic equipment of that time was not sufficiently precise to provide measurement of the subtle electric field generated by the living organism, which is indeed weak: the field generated by the human heart, measured at 5 cm from the body, is some hundred times weaker than outside electric interference, generated mostly by the electricity supply network of 220 V, 50 Hz. Therefore, the research has to be conducted in shielded areas, so-called Faraday cages, and requires special measurement techniques.

In 1970, Russian researcher E. Kulin discovered that living organisms generate another type of electricity, which is static or semi-static and results from natural electric polarisation of tissues. Living organisms consist of orderly structures such as cell membranes, collagen membranes, muscle cells and bones. Their molecular electric charges build up and generate areas on the surface of the skin, with potentials ranging from - 10 to + 10 V. Gradual fluctuation of such potentials in time and resulting changes in the electrostatic field are due to metabolic changes in tissues and also to piezoelectric and pyroelectric phenomena. Being generated by so-called tied charges, which are non-movable and may be discovered and measured only through investigation of the electric field with which they surround themselves, they are not measurable by contact methods. Living organisms are not static and are subject to constant change; the electrostatic field varying with different parts of the body and for each individual over time. For this reason it was called the *semi* static

---

3

4

electric field. Its variance provides information which may prove to be of immense importance for medical diagnostics and for the development of new methods of therapy.

In Wrocław, from 1983 – 1987, Doctor Szymański conducted research on the alternating electric field and semi-static electric field generated by Polish bioenergy therapists. The research was continued in The Qigong Center, Vellinge, Sweden and in The Acupuncture Centre in Warsaw by Dr Szymański, Professor Garnuszewski and myself, measuring the field of Qigong patients, students and masters. At present the research is carried on in The CesamQ Centre in Malmo, under the supervision of Doctor Szymański.

Acupuncture and Medical Qigong Under Scientific Investigation

According to Traditional Chinese Medicine, acupuncture regulates Qi flow in the body. Qi energy is present in the whole body and, condensed, circulates through a system of meridians, linking the inside of the organism with the environment through acupuncture points.

In contrast to European bioenergy therapies and other healing methods, Qigong does not promote the spontaneous generation of some kind of general healing energy. The complex medical system founded on Qigong knowledge is based on the ability of Qigong Masters to generate different types of Qi energy and control it according to therapeutic requirements. Depending on the specific needs of each patient, the Qigong master will select groups of exercises designed to stimulate energy movement in individual meridians

Such were the main assumptions of our research.

Measuring apparatus

The prototype measuring instrument we have built permits the remote reception and registration of electric field generated by the human organism. The signals are received by an antenna, placed some centimetres away from skin, and are then amplified by electronic circuits. Picture 1 shows block diagram of the instrument.

Challenges

Research in this field presents a number of difficulties, the first of which is the very object of the investigation. The varying shape of the human body, muscular tremor, sweat and hair create considerable obstacles in the measuring process. Another challenge proved to be the construction of the Faraday cage, necessary to reduce outside interference to a minimum.

The third problem is the constant need to perfect measuring instruments. The fourth, correct analysis of the results and the fifth, last but not least, is the ongoing lack of funding.

Results of the Research

Some of the results have been published in reports presented at international scientific conferences in Bejing in 1989, 1990, 1992, 1994, 1996 and 1998, in Warsaw, Rome and Oslo in 1994, in Falsterbo in 1996 and in Poznań in 1998.

Some of the results of our research are presented below:

Picture 2 shows an example of a record of the alternating electric field of the human heart and, for comparison, a record of contact ECG.

Picture 3 shows records of the electric field of the hands of Qigong Masters Marcus Bongart and Wan Su Jian.

Results of measurements of the static electric field of the human organism are given in electric potential measurement units, or Volts (V) as registered on the surface of skin. The measurement is, naturally, conducted in a non-contact way, with an antenna located at 5 cm from the skin. Results of a large number of measurements (more than twenty) may be presented digitally or graphically, by depicting the shape of the static electric field around the silhouette of a human body. The results of several people undergoing such examination were subject to detailed statistical analysis, which indicated how different people show significant individual differences. However, there were only minor differences noted in the same individual over a period of several days.

The above results support the concept a static electric field specific to each individual human being, which would enable identification of a person.

Picture 4 shows examples of the static electric field surrounding a number of people.

Professor Zbigniew Garnuszewski, of The Centre of Acupuncture in Warsaw, contributed to the research for many years by measuring the static electric field of acupuncture patients before and after treatment. His results, which showed considerable differences of the field in various parts of the body, were presented at a number of acupuncture congresses.

Picture 5 shows lines of the static electric field in a man’s hand before and after acupuncture treatment. The differences can be clearly seen.

Summary of the Results

Conclusion

Our research has confirmed the original assumptions and hypotheses. The electric field generated by the human organism reaches far beyond the physical shape of his body. Part of the field is generated by the activity of the muscles and the heart. An alternating electric field of specific character is created by hand and body movements which generate and maintain their own semi electrostatic charges. The research on alternating electric fields generated by people performing Medical Qigong exercises confirmed that different people in a similar experimental environment generate similar signals. For example, in 1996 we provided research results on three characteristic types of the electric field accompanying three different kinds of energy generated by Marcus Bongart and Wan Su Jian. Records of the so-called Qi (-) show a prevailing series of long pulses, while Qi (+) generates a shorter series of pulses of higher amplitude and shorter growth and decline span. Apart from these two clearly identifiable Qi types, both Masters were able to generate so-called non-diversified Qi, or a very long series of multiphase pulses of average amplitude.

In 1998 a series of experiments was conducted which proved that the electric field accompanying generation of Qi to meridians pertaining to various organs (the heart, lungs and kidneys) also differs for each particular kind of emission. Such signals of the electric field, carrying information directly to the patient's organ, proved to be surprisingly strong. The intensity of the electric fields often reaches 20V/m. At present we are conducting detailed research in this area.

We have also examined twenty people who took part in Qigong instructor training during the same year. Statistical results of the investigation proved that the ability to generate alternating electric field with hands increases after completing each stage of training and the strength and frequency of measured signals shows increasing individual differences. The measurements of the electric field presented by our team are the first attempt to identify information carried by the so-called Qi energy or bioenergy.

At this stage of research we are not able to reach a final conclusion as to whether the electric fields we measured are identical to Qi energy, or they just accompany Qi. In our opinion, closer investigation of the messages carried by the electric field might lead to establishing new diagnostic and therapeutic techniques.