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ESTIMATION OF THE DIAGNOSTIC ACCURACY OF ORGAN ELECTRODERMAL DIAGNOSTICS

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ABSTRACT

My previous investigations have indicated that a connection exists between the state of health of specific internal organs and the electrical characteristics of related, although sometimes remote, skin areas. These skin areas are referred to as organ projection areas (OPA) and include acupuncture points. Pathology of a particular organ causes a related OPA to rectify electrical currents, once the resistance 'breakthrough effect' has been induced in the skin. The 'breakthrough effect' is a rapid reversible decrease in skin resistance which takes place under certain electrical stimulatory conditions. Only after it occurs, the skin resistance measured by means of a positively polarised point electrode is significantly higher for diseased organs' projection areas, when compared to the resistance for the same but negatively polarised measuring electrode (rectification / diode phenomenon). For healthy organs' projection areas, this phenomenon is not observed. The pathology of an internal organ also increases the impedance of the corresponding OPA. The location of the skin zone, where a high degree of rectification and increased impedance is observed, indicates which particular organ is diseased. The degree of rectification or difference in impedance indicates the extent of the pathological process

within the organ. These findings created the basis for a new non-invasive diagnostic method – organ electrodermal diagnostics (OED).

Although the electrical phenomena of the skin described above have been confirmed clinically, the resistance and impedance values involved have not been characterized statistically. Therefore, in order to determine the accuracy of OED, optimization of OED parameters was undertaken. Evaluation of electrical characteristics revealed that for AC measurements, low frequency and high amplitude were most suitable. Therefore 250Hz was selected as the measurement frequency, since lower frequencies produced uncomfortable sensations under the measuring electrode. Measuring current amplitude was chosen to be 25uA (peak) since it was observed to be below the perception threshold. For DC measurements, the highest amplitude of the measurement stimulus that does not cause uncomfortable sensations was the most suitable. Since the skin resistance is very low after the ‘breakthrough effect’, 25uA was chosen as optimal.

According to these parameters the OED device ‘Diagnotronics’ was built. The device specifies the actual condition of the organ related to the investigated skin area as 'HEALTHY', 'WITHIN NORMAL LIMITS', ‘SUBACUTE’ and ‘ACUTE’. A special display graded according to percentage of the disease intensity, makes it possible to specify accurately the activity of organ pathology. The locations of skin areas corresponding to the examined organs and final results are displayed on a screen.

A double-blind comparative study of OED results and clinical diagnoses, as a criterion standard, was performed on a group of 200 inpatients at Helen Joseph Hospital's surgical department. The study was restricted to the following organs: oesophagus, stomach, gall

bladder, pancreas, colon, kidneys, urinary bladder and prostate. These organs are relatively easy to access clinically, and their pathologies represent a variety of aetiological and pathogenetic factors e.g. infections, inflammation, neoplasms, immunological and metabolic disorders.

In total 630 true OED results were obtained from the 714 subjects considered: detection rate 88.2% (85,6-90,5%). Established OED sensitivity was 89.5% (85,2-92,8%) and OED specificity equaled 87.5% (84,0-90,4%). The predictive value for positive OED results was 81.7% (76,9-85,9%) and for negative OED results 93.0% (90,1-95,2%).

There were no significant differences in the results obtained from various internal organs. Healthy organs usually display the OED result 'HEALTHY' or 'WITHIN NORMAL LIMITS', while subacute pathology displays 'SUBACUTE' and acute pathology as an 'ACUTE'. The OED results were affected neither by the type nor the aetiology of disease i.e. OED estimates the actual extent of the pathological process activity within a particular organ but does not explain the direct cause of the pathology.

The OED results were not influenced by a patient's muscle tension, emotional state, skin humidity, environmental temperature or by procedure duration. The pressure of the measuring electrode had a limited influence (up to 5%) on the OED results and did not affect the final diagnoses. No side-effects of the OED examinations were observed.

The study confirmed the existence of OPA on the skin surface and proved that OED is a reliable bioelectronic method of non-invasive medical diagnostic testing, with high rates of sensitivity, specificity and predictive values. OED may detect diseased organs and estimate the activity of the pathological process.