

# **RESEARCH ARTICLE**

#### ON THE ISSUE OF VERIFICATION OF THE RESULTS OF ELECTRO-PUNCTURE DIAGNOSTICS (EPD) IN THE COMPREHENSIVE PATIENT REHABILITATION WITH MYOCARDIAL INFARCTION (MI)

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Manuscript Info	Abstract				
<i>Manuscript History</i> Received: 30 June 2021 Final Accepted: 31 July 2021 Published: August 2021	The methods of studying the objective condition of the patient in the treatment and rehabilitation in traditional oriental medicine from pulse diagnostics to electro-puncture diagnostics (EPD) have been analyzed. It is noted that the development of medicine seeks to level the subjectivity of the diagnostician through the use of objective parameters of sympathetic and parasympathicotonia of representative of biologically active points (BAP). Methods that are not able to perform such a task (Foll's EPD) cannot be considered scientific. The author's technique of the Nakatani EPD variant, protected by a patent, on the example of examination of patients with MI when prescribing cardioselective BAB is presented. The "physiological" indicators of maxima and minima of electro-skin potential of BAP as daily and monthly cycles of an organism are described by the east medicine considered. It is reasonable to believe that the physiological rhythms of the body recorded in the EPD are a valuable method of verification and interpretation of research results.				
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#### **Introduction:-**

The most "plain" method for verifying the functional state of a person in traditional medicine is the study of the pulse in certain areas of the radial arteries. It should be noted that Hippocrates (Ιπποκράτης) gave a description of the main types of the human pulse. Galen ( $\Gamma \alpha \lambda n v \delta c$ ) distinguished twenty-seven different types of pulse depending on certain diseases and Paracelsus (Paracelsus) recommended conducting a comprehensive study of the pulse on the upper and lower extremities, neck, temples and so on.As to the Oriental medicine (India, China and Tibet), they traditionally distinguish several practical systems of pulse diagnostics, which differ both in the location of the palpation zones and in the means of interpreting the received signals, the connections of the zonal pulse signals with the state of the functional systems of the human body etc. [1]. Having described the subjective impressions of the diagnostician on palpation of the pulse wave, Y. Macheret notes that even in traditional China the pulse diagnostics have been mastered by a specialist for more than ten years, and few are able to master all its subtleties. Analysis of the environment and processes in the circulatory system has become widespread in modern medicine. A description of the method of palpation of the pulse can be found in the monograph of the famous Czech cardiologist V. Jonas. He also describes the method of listening to the arteries [2]. It should be noted here, that these methods are no longer available in more modern editions of this monograph. It is explained by the general opinion of medical science about the subjective nature of the perception of a pulse wave by a doctor, which should be replaced by objective indicators that do not have ambiguous interpretation. Therefore, in the medical practice of modern society there is a need for

means of assessing the state of functional systems of the human body on the basis of pulse diagnostics according to the canons of Eastern medicine, which is solved by tools, for example, within the medical industry of Ukraine [3].

#### **Theoretical Review**

Even today, there is no appropriate medical equipment that would be able to replace a person with pulse diagnostics methods. Therefore, in the postwar period, on the synthesis of classical oriental reflexology and traditional Western medicine, namely in Japan I. Nakatani in 1950 and in Germany R. Foll in 1953 created a method of electro-puncture diagnostics (EPD). It was a method for determining and assessing the functional state organo-tissue formations of the human body on the basis of the results of measurements of the electrical conductivity of the skin, non-invasive are carried out at the representative biologically active points (BAP) of the corresponding meridians of the human body. The phenomenon of increased electrical conductivity of BAP is the basis of EPD. As follows, the state of which changes depending on the state of the corresponding organs and body systems associated organo-tissue structures through the lines of the human body.Each of the organo-tissue formations has its own electrical potential. It is determined by biochemical and biophysical processes occurring at the subcellular, cellular and organ levels. This potential generates electrical energy that circulates through the indicated channels and constitutes the electrical conductivity of the measured BAP.

The degree of severity of changes in these formations are directly proportional to the state of the BAP, and vice versa, the electrophysiological characteristics of the BAP can get an idea of the intensity of processes occurring in the studied structures.BAP are located on the skin of the distal and proximal phalanges of the fingers, metacarpal, carpal and metatarsal regions of the upper and lower extremities on the right and left (symmetrically), where anatomical landmarks are used - the places where the head of the phalanx passes into the body or the transition of the phalanx body to the base. The establishment of low electrical conductivity in BAP indicates the insufficiency of the function of the corresponding meridian, and a high one - of its redundancy.

Despite the fact that representative of BAP for EPD are anatomically located on the wrist of the hand on which pulse diagnostics is performed, the method could not overcome the subjectivity of diagnostics. Thus, the results of the study were influenced by many factors: from the force of pressing the electrode on the BAP to the general state of the human skin. This partly explains why EPD were so slowly introduced into the practice of the post-Soviet space. It was not until the late 1990s that the only methodological recommendations (RF Ministry of Health) for Foll's EPD have appeared [4]. The introduction of the new method was accompanied by loud scandals: "... at the Bauman Moscow State Technical University students have long been tested on a device developed by Imedis and working on the basis of electro-puncture diagnostics by the Foll's method. There are a lot of examples of false positive results... Narcologists see in this device almost a scam. In the United States, the use of such devices is prohibited and considered fraudulent"[5].

## Procedure and Methodology:-

In Ukrainian practice, the main research of the EPD is focused on the Nakatani method, provided the use of certified equipment and the correct research methodology, as evidenced by the patent search in Ukraine. We consider that the vulgarization and profanation of EPD, in particular according to Foll, is associated with complex diagnostic equipment and research methods, both for express diagnostics. The electric potential of the BAP is small, which requires a complex circuit of a cascade amplifier in which the power of the input signal is increased due to the energy of the auxiliary power supply. But the BAP potential itself will be insignificant in comparison with the adjacent (noise) potentials, which the mentioned amplifier will also automatically amplify. This will require differentiation of the BAP signal and noise suppression of adjacent signals. The author's method is based on the task of eliminating the shortcomings of the known methods that is simplifying its usage with the use of conventional devices, such as a power source, a laboratory ammeter, predominantly of the first accuracy class and two electrodes. The problem is solved by the fact that in the method of measuring the electric potential, the measuring electrodes are installed on two BAPrepresentatives. Twelve organs of classical Oriental medicine have been divided into four equal groups: The first two groups of the hand area are Yang (GI, IG, TR) (hereinafter the international French classification of meridians) and Ying (P, MS, C). The next two groups are the leg area: Yang (V, VB, E) and Ying (F, R, RP) A larger number of measurement points, which are called the source point of the corresponding meridian, are located on the area of the radial wrist joint on the arm (P9, MC7, C7, IG5, TR4, GI5) and on the areas of the foot (RP3, F3, R3, V64, VB40, E42). The three representative points of each main group are taken as three unknown quantities: x1, x2 and x3. The sum of two unknown quantities is  $\Sigma Y$ , measured and obtained, is not the absolute value of the electric parameter BAP, but is a relative parameter and is the sum of unknown quantities that form three equations calculated algebraically, i.e. the solution of a system of equations of several unknowns [6].

A group of 45 people (men aged 32-48 years) were involved in the study in order to decide the advisability of prescribing cardioselective  $\beta$ -adrenergic blockers (BAB). The patients were followed up for 30 days of the rehabilitation period after myocardial infarction (MI) in the Yubileiny sanatorium, Sloviansk (Ukraine), Cardiology Department, 1. The diagnosis of MI is verified by diagnostic and clinical observations. Additionally, electrodermal resistance (EDR) was measured for 1, 5, 10, 15, 20, 25, 30 days. Diagnostic signs of MI were direct and indirect signs of hypoxic and necrotic lesions of the myocardium. The former include pathological values in relation to C and MS, the latter IG, TR, F, R, V, E (names of meridians are given in descending order of pathological values of EDR in BAP). The identified pathological changes are characterized by the predominance of parasympathicotonia and sympathicotonia, respectively patients were divided into two main groups who received BAB drugs and a control group who received conventional treatment (all groups of 15 people). Conclusions were made about the feasibility of using the original method of rhodorac for solving the current problem of cardiology of cardioselective  $\beta$ -blockers in the comprehensive rehabilitation of patients with myocardial infarction and cardiovascular system [7].

The above works did not focus on the process of verification of the results. So, further investigations are needed toprovide with the methodology proved to be efficient for solving tasks set by the author. Therefore, it should be further said that the practical work, according to the author's method additionally revealed in each subject among the 12 indicators of EPD (P, GI, E, RP, C, IG, V, R, MC, TR, VB, F) at least 4 "pathological syndrome"(two Yan and two Yin), which differed from the average normotonic values by 15-30%. These syndromes could be divided into two groups depending on the indicators, the first group is characterized by "high" relative valuesof parasympathicotonia and sympathicotonia up to 30% of normotonicthe second is characterized by "low" relative values of parasympathicotonia and sympathicotonia up to 15%. Please note that the indicators of the first and the second groups were directly related to each other in the group "distance" of 5 units. For example, parasympathicotonia in 1 EPD indicator (P meridian) determined sympathicotonia in 6 EPD indicator (IG meridian), etc. The obtained additional EPD results are on the border of Nakatani's actual EPD and traditional pulse diagnostics. Thus, in the first medical treatises of Huangdi Bashiyi Nanjing IV 八十一難經 section IV, certain seasonal changes in the nature of the pulse wave are described as physiological "Normally, the pulse should change according to the four seasons of the year.Little Yin rules in the seventh and eighth months (according to the Chinese calendar) when autumn defeats the excess Yang and Yin Qi begins to flourish. Accordingly, the pulse becomes firm, large and long" [8].In the study of EDR in BAP by EPD, such subjective characteristics will be quite objective, as numerical indicators (high, low or medium) which are interpreted as sympathicotonia, parasympathicotonia (vagotonia) or normotony of the BAP-related internal organ. The study shows that these syndromes are physiological and correspond to the diurnal (group I) and seasonal (group II) rhythms of classical Chinese medicine described in the works of Macheret and others[9]. (Table 1)

Р	GI	E	RP	С	IG	V	R	MC	TR	VB	F
3-5	5-7	7-9	9-	11-	13-	15-17	17-19	19-21	21-23	23-1	1-3
			11	13	15						
Februar	Marc	Apri	Ma	Jun	Jul	Augus	Septembe	Octobe	Novembe	Decembe	Januar
у	h	1	У	e	у	t	r	r	r	r	у

According to the author, the named table (Yev. Macheret and others), allows to verify the obtained results of EPD for which the researcher must record not only the measurements in the representative BAP, but also the Date and Time of the survey. According to Table 1, named parameters show the maximum values (Jan syndromes) of diurnal and seasonal rhythms in the Time and Month of the survey. For example, patient M. 45 years old was examined at 10 am on March 15. According to Table 1, the physiological indicators for it should be and were Yan syndromes in RP (I gr.) And GI (II gr.) And Yin syndromes in TR (I gr.) And R (II gr.). Accordingly, if the diurnal and seasonal rhythms were not detected in EPD, the results were considered incorrect and were not taken into account in the study (only 4 out of 45 or 8.89%). Normally, not all parameters of physiological rhythms corresponded to the parameters of Table 1. For example, patient N. 39 years old was examined at 11 am on April 6. According to Table 1, the physiological indicators for the first group and E for the second group. In accordance, Yin syndromes in TR (the first group) and MS (the second). In fact, the first group of C and the second of G1 have Yang syndromes. As to the Yin syndromes, VB indicator – Group 1 and R Group II. According

to Table 1, these are "neighboring" indicators, which are interpreted by pulse diagnostics as individual features of the organism.

## **Conclusions:-**

Nakatani EPD (provided the use of certified equipment and sufficient qualification of the diagnostician) is a valuable auxiliary method of verification of the previous diagnosis in a comprehensive examination of the patient, similar to traditional pulse diagnostics. In the EPD study, Nakatani showed greater sensitivity compared to pulse diagnostics, since it recorded the individual characteristics of the patient's body at the level of monthly cycles (1/12 of the possible deviation), while in traditional eastern pulse diagnostics, this indicator does not exceed seasonal fluctuations (1 / 4) described in traditional treatises starting with 黃帝八十一難經. In the overwhelming majority of patients (91.11%) examined by the author's method, there were daily and seasonal rhythms of the traditional Chinese calendar described by Macheret and summarized in Table 1.

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