CLINICAL EFFICACY AND MAJOR PATHOGENICITY-SUPPRESSIVE EFFECTS OF SU JOK THERAPY IN CASES INVOLVING FORM OF HYPERTENSION

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In today's modern society, hypertensive disease (HD) is a condition affecting a majority of the population. Since the disease process involved is notable for its chronicity, and the relevant complications prove to be of considerable severity - this would call for a continual use of medical preparations. Such an approach, however, has its negative aspect, including drug dependency, drug pathogenesis and various complications, plus a diminished "quality of life". Under the circumstances, coming in as an alternative to medicinal treatment will be nonmedicamentous treatments, which are especially indicated for individuals who showed "milder" forms of hypertension.

In dealing with hypertensive disease, the Su Jok technique would stand out from the rest of nonmedicamentous methods of therapy. Its advantage lies in the fact that it has undergone fundamental studies in terms of methodology, and it is noted for the higher efficacy and simplicity in its mastering. At our Institute the Su Jok therapy (SJT) has been applied for several years. The treatment of hypertensive disease, among other things, has proved to be a success.

At the same time, the greatest possible study ought to be given to the cited therapeutic approach so that it might be employed in clinical practice with far better performance. We have, therefore, instituted a thorough investigation to find out - on the more comprehensive and multivariate basis - the therapeutic potentialities of the Su Jok method in managing hypertensive disease.

Material and methods of the investigation

The study and therapy involved 87 patients who had a "milder" form of HD (with DAP equal to 104 mm Hg). The mean age of the examined was 42±2 years, the proportion of males and females being 73.5% and 26.5%, respectively. There were 26 persons who had borderline arterial hypertension (BAH); 33 had HD, 1st stage; and 28 patients had HD, 2nd stage. In the course of examination, the symptomatic character of arterial hypertension was entirely ruled out. The placebo group comprised 23 patients.

As to hemodynamics, it was studied using the methods of tetrapolar chest rheography and echosonography in compliance with standard procedures. The status of microcirculation was ascertained based on the method of quantitative thermography. The way the cardiorespiratory system responded to physical exercise was studied in the course of the repeated treadmill-test.

The status of the leading pressoreceptor and depressive neurohumoral systems was established following the plasma renin activity (PRA), the plasma aldosterone concentration (PAC), prostaglandins (PG) concentration of E and F series - all based on radioimmunological method of analysis using test-kits made by Cis, Sorin, and Clinical Assay firms. Meanwhile, the system of eikosanoids (the levels of prostacyclin - PG1 and thromboxane B(2) was studied with the aid of the Isotopes Institute test-kits of Hungarian make. The opiates of the b-endorphines and leucine-enkephaline group were analyzed by means of commercial test-kits produced by Incstar. Hormonal quotients such as cortisol and testosterone were determined using the Steron-type test-kits. The lipids repertoire indices were revealed based on the enzymatic technique. Diurnal excretion of adrenaline (A) and norepinephrine (N) along with urine, as well as the content of these monoamines in the plasm and erythrocytes of the blood of the patients were investigated following the method proposed by L.K.Bakhova and P.I.Kaliman (2).

A most comprehensive examination included the study of the vegetative status of the patients (index), as well as of their psychological (MMPI) and neurophysiological characteristics - the latter based on the findings of the rheoencephalography (REG) and electroencephalography (EEG) investigations.

A single Su Jok course of acupuncture comprised 7 to 10 sessions that were conducted on a day-to-day basis, or with 1 to 2 days interval. A procedure lasted for 20-30 min. The length of an interval was varied according to the clinical symptoms observed and the current value of arterial pressure.

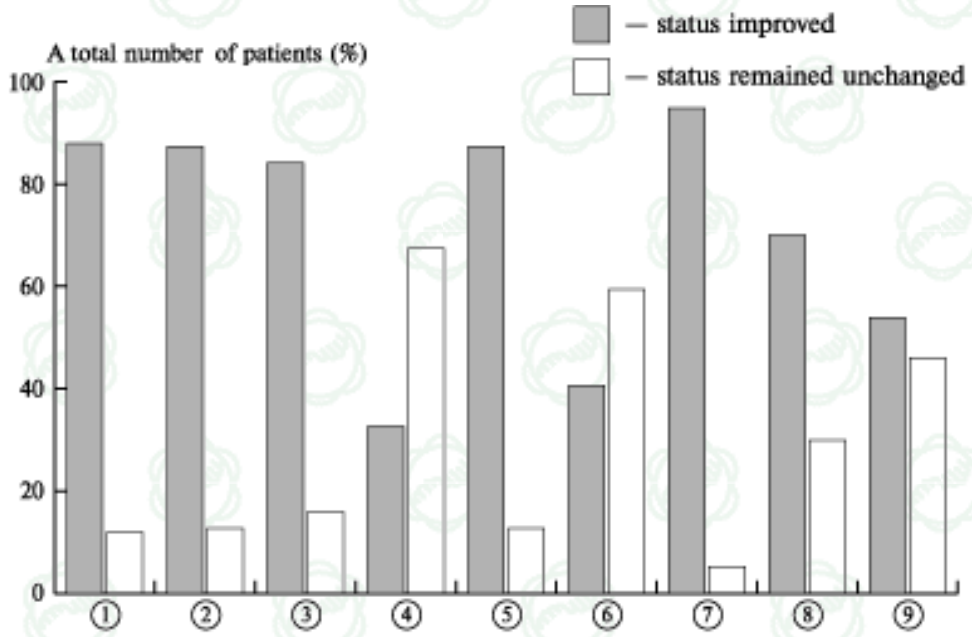
The acupuncture-oriented recipe was devised taking into account the disease pattern and the findings of the muscular and pulse-related Onnuri diagnosis. Furthemore, Spiritual points were taken care of; the regional and functional approaches were employed; and the cross-correspondence with time-based energies was taken into consideration. The soughtafter therapeutic modality was provided through the use of byol-meridians, byol-chakras, ungual areas, the correspondence zones involving hands, feet and auricles of ear. Involved in the activity were the functions of subordination and countersubordination. The combined approach and horizontal therapy were applied, the symmetrical axial constitutions being given appropriate attention. The patients' treatment was performed with regard to physical, emotional or mental dimensions, depending on specific patterns of disease.

Prior to and after the cited procedure we exercised control over the systolic and diastolic arterial pressure (SAP; DAP), including the heart rate (HR). The SJT effectiveness was estimated in terms of the mean dynamic pressure (MDP) alteration in per cent. Accordingly, the effect attained was considered to be excellent provided the said parameter showed a drop of 20% or more. It was accepted as good when the therapy resulted in a 10-19% drop of MDP, and it was considered satisfactory following the dynamic average pressure drop of 10% or less.

The follow-ups were conducted for 12 months.

Results and discussion

Overall, the Su Jok therapy efficacy in the group was found to be as much as 88,0%, while the placebo therapy efficiency was nearing 35.7% (table 1).



1 - Efficacy of treatment in the group (as a whole)
2 - The number of cephalgia-afflicted cases decreased
3 - The number of asthenia-related complaints decreased
4 - Phenomena involving the patients' neuroticism and the level of neurotic anxiety became less manifest
5 - The number of cardial symptoms decreased
6 - Lessened degree of asymmetry of the brain vascular tension and improved venous drainage
7 - The number of vertebrogenic manifestations decreased
8 - Rise in the limbs temperature
9 - Increase in the tolerance to physical exercise; enhanced mental ability

Table 1. *The efficacy of application of Su Jok therapy in the group of patients with hypertensive disease (%)*

The clinical outcome of the SJT under discussion was observed to manifest itself by normalizing or reducing SAP, on an average, by 15 to 18%; DAP - by 11 to 15%; by slowing down HR by 2-3%. It also became evident in decreasing cephalgias with 87.3% of the patients; asthenia-related complaints - with 84.1% of the examined, in making the cardial and vertebrogenic manifestations less pronounced by 87.3% and 94.8%, respectively. The said therapy contributed to an increased physical and mental working capacity with 53.9% of the patients under examination.

A stable hypotensive effect in the cases presenting with BH and HD (1st stage) made itself felt starting from the 4th-6th sessions of the Su Jok therapy, and lasted upwards 6 to 9 months. The placebo group demonstrated no substantial objective alterations ($p>0.05$): the only improvement consisted in a slight shift to subjective symptoms.

In the course of the Su Jok therapy we saw how hemodynamics was coming to its optimum state (table 2). As with the BH and HD (1st stage) groups of patients, along with a slight lowering of the stroke volume (SV) and stroke index (SI), there was observed a statistically significant diminution of the motor function power (N)

generated by the left ventricle myocardium - from (6.4±0.5) to (5.0±0.4)W. Besides, there was a reduction in energy consumed for the transportation of 1 liter of blood (Po) from (15.1±0.75) to (11.2±1.3) W/l. All this is indicative of the fact that the heart functioning as seen in the performance of the SJT has reached its optimum. A significant decrease in the SV from (104.0±6.6) to (86.5±6.3) ml, and in the SI from (52.7±2.6) to (45.5±3.6) ml/m2 became evident in the HD (2nd stage) patients, along with a reduction in the volumic injection rate (VER) from (450±32) to (342±31) ml/s ($P<0.05$), all of which improved the efficiency of the myocardium functioning while at rest.

Indices	Units of measurement	Su Jok therapy (n=120)		Placebo (n=20)	
		Before	After	Before	After
Hyperkinetic type					
MBV SPVR	L/min $N.s.dm^{-5}$	11.0±0.55* 860±74*	9.50±0.50** 957±53	9.80±0.59 846±51*	9.20±0.65 901±67
Eukinetic type					
MBV SPVR	L/min $N.s.dm^{-5}$	7.1±0.57 1250±47*	6.8±0.6 1150±43**	7.25±0.67 1225±52*	7.02±0.61 1202±59
Hypokinetic type					
MBV SPVR	L/min $N.s.dm^{-5}$	4.1±0.46 2319±72*	4.8±0.50 1789±65**	4.35±0.65 2115±86*	4.41±0.62 1998±79

** - validity of the discrepancies in the underlying indices (• < 0.05)*
*** - validity of the discrepancies (• < 0.05) prior to and after treatment*
MBV - minute blood volume
SPVR - systemic peripheral vascular resistance

Table 2. *Shift in basic hemodynamic indices in relation to the type of hemocirculation secondary to the Su Jok therapy course*

The hemodynamic profile in the placebo group remained essentially unchanged irrespective of the stage demonstrated by HD. In effect, it ran closely parallel with the marginal variants of hyper- and hypokinetic circulation.

According to the echocardiography (n=56) investigations, the size of the aortic ventricle of heart was found reduced due to the endsystolic and enddiastolic diameters (ESD; EDD) showing a decrease from (5.3±0.11) to (5.0±0.10) cm and from (3.2±0.1) to (3.1±0.10) cm, respectively ($P>0.05$). The fraction of injection and reduction showed a rather little growth - from (67.8±1.1%) to (68±0.9%) and from (36.1±0.9) to (37.5±1.3%). At the same time, it tended to slow down the velocity of the circular shortening of the myocardial fibers. While reviewing the morphofunctional indices with respect to the stage of disease, we may point out an improved myocardial capacity to relax in patients with BAH and HD (1st stage). In the meantime, the patients noted for HD (2nd stage) demonstrated what could be described as an enhanced cardiac function to contract following the SJT course (table 2).

The quantitative thermography revealed a statistically significant rise in the limbs temperature of 70% of the persons under study. From among the patients who underwent the SJT course, 40.5% got rid of the "thermoamputation" phenomenon ($p<0.05$).

The repeated treadmill-test conducted after the SJT proved explicit enough to reflect positive hemodynamic

shifts both at rest and following the exercise.
This became manifest in an increased working capacity of the group as a whole by (150±1) s, a heightened tolerance with regard to the exercise at large, with the restorative processes being intensified by the 3rd and 10th minutes of rest as against the relevant data observed before the therapy. Incidentally, none of the similar changes were observed after conducting placebo therapy.
In point of fact, the therapy under consideration proved to have a positive effect on the state of the vegetative homeostasis irrespective of the HD stage. The present misbalance notable for the predominance of the tonicity of sympathetic or parasympathetic aspect of vegetative nervous system showed a shift in the course of treatment toward eutonia (table 3). In the placebo group there was nothing but lessening of the sympathetic effects among the patients who had BAH, HD (1st stage) and hyperkinetic circulation.
A considerable drop in the activity of the sympathoadrenal system (SAS) was observed in the course of therapy in patients presenting with BAH, characterized by hyper- and eukinetic types of hemodynamics. The level of adrenaline here demonstrated a decrease by 28.3 and 17.4%, respectively ($p<0.05$). Noradrenalineuria was reduced by 5.6 and 3.7%, while the A/NA ratio - by 31.3 and 27.2%. In the placebo group there were virtually no changes at all.
Our study helped reveal a specific susceptibility of the major pressoreceptor and depressive neural-humoral system of relations to the SJT effects. Significant changes in the PRA and PAC were observed in all groups of patients: from (2.98±0.52) to (1.76±0.61) ng/ml/h, and from (0.47±0.07) to (0.32±0.056) pmol/l ($p<0.05$) (table 3).

Indices	Su Jok therapy (n=07)		Placebo (n=30)	
	Before	After	Before	After
Sympathicotonia	32.0	20.0	30.8	26.9
Eutonia	22.0	49.1	23.1	30.8
Parasympathicotonia	46.0	30.9	46.1	42.3

Table 3. *The line of the vegetative shifts in hypertension disease patients following a course of Su Jok therapy (%)*

In the placebo group the PRA was found to be lessened by 4.9%, the PAC - by 2.1%, whereas these same indices proved to be decreased, on the average, by 25.8% and 22.1% secondary to the Su Jok therapy.
The efficacy of the SJT was such that it contributed to a positive transformation in the prostanoids system. Thus, there took place a statistically significant increment of the PG1-6-keto PGF1 metabolite from (0.64 ±0.09) to (0.8±0.11) nmol/l - all against the background of TxB2 adrenaline contents in the blood plasm being reduced from (0.86±0.12) to (0.55±0.13) nmol/l, conceivably along with the correlation value between the eikosanoids under discussion. The effect produced by the SJT on the prostaglandins (PG) appeared less pronounced, except for a tendency towards lowering the PGF2a level from (1.96±0.16) to (1.2±0.15) nmol/l and raising the depressive potential of PGE1 from (1.84±0.25) to (2.6±0.24) ($p>0.05$).
Moreover, the Su Jok therapy proved efficient enough to modulate the opiates system by having the level of b-endorphins increased by 14.1%, while the level of leucine-enkephaline being decreased by 6.1%. The level of the hormones noted for hypertensive properties was found to be diminished, which looked especially pronounced in the cases of HD in its first stage of development: cortisol from (845±67) to (718±61)nmol/l; testosterone from (11.4±1.2) to (6.4±0.6)nmol/l.
After repeated psychological testing it was evident that the phenomena involving the patients' neuroticism

became by far less manifest, and the level of neurotic anxiety proved considerably reduced following the SJT beneficial influence ($p<0.05$), the proportion of the BAH patients concerned amounting to 32% and those having 1st stage HD - to 15.8% (table 1).

The repeated REG findings pointed to a lessened degree of asymmetry of the brain vascular tension and an improved venous drainage in 40.6% of the examined ($p<0.05$). According to the EEG investigation the alpha rhythm was stabilized, and the brain diencephalotruncal structures in the BAH and 1st stage HD patients grew activated. This phenomenon is thought to be associated with the beneficial effects provided by the Su Jok therapy for the microvessels and metabolism of the brain cells.

CONCLUSIONS

1. Su Jok therapy has emerged as the effective therapeutic modality in dealing with hypertension disease. Its application in case of "milder" forms of hypertension proved successful in 82% of patients.
2. The Su Jok technique has the capacity to successfully remedy the hemodynamic disorders occurring in patients with hypertonic disease.
3. Su Jok acupuncture is capable of streamlining the sympathoadrenal system, which becomes manifest in the level of adrenaline and noradrenaline being lowered, and their ratio being normalized.
4. The hypotensive impact of the Su Jok acupuncture would result in the neurohumoral effect as conditioned by the lowering of pressoreceptor influences of the renin-angiotensin-aldosterone system and by the growing of the depressive potentiality of the eikosanoids system.

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