

## ORIGINAL ARTICLES

## A Comparative Study on the Acupoints of Specialty of Baihui, Shuigou and Shenmen in Treating Vascular Dementia \*

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**ABSTRACT** Objective: To study the relative specialty of the acupoints of Baihui (DU20), Shuigou (DU26) and Shenmen (HT7) in treating vascular dementia (VD). Methods: Fifty patients suffering from VD were divided into 5 groups randomly and treated by conventional acupuncture for hemiplegia, or conventional acupuncture plus needling in DU20, DU26, HT7 respectively or simultaneously. Clinical symptoms were observed, and the scales such as Hasegawa's dementia scale-recension (HDS-R), activities of daily living (ADL) and functional activities questionnaire (FAQ) were used for assessment before and after acupuncture treatment. The scores were processed statistically. Results: DU20 and HT7 could improve the abilities of memory, orientation, reaction and reduce adamancy and trance. Besides, DU 20 was helpful in improving the abilities of understanding, calculating and social adapting. While DU26 is helpful in treating retardation, failure in daily activities, trance and poor memory. The combination of the 3 acupoints could improve the intelligence and social adapting ability of VD patients. Conclusion: DU20, DU26 and HT7 had its own effect in treating VD, but the effect of three points used in combination was the best.

**KEY WORDS** Baihui (DU20), Shuigou (DU26), Shenmen (HT7), vascular dementia

Vascular dementia (VD), one of the commonly encountered types of senile dementia, is a comprehensive dementia syndrome caused by cerebral vascular accidents resulting in brain damages, with the characters of decreasing IQ and manifesting itself as languishment, slow reaction, dull expression, sparse language, amnesia, aphasia, apraxia, alexia, clumsiness, movement disorders, partial or total loss of activities in daily living, etc<sup>(1)</sup>. Acupuncture is one of the effective therapies for its treatment. Based on our long-term clinical practice, we found that Baihui (DU20), Shuigou (DU26) and Shenmen (HT7) are the effective and commonly used acupoints in treating VD<sup>(2-4)</sup>. In order to find out the characteristics of these three points and further promote evidence-based clinical practice, we analyzed the comparative differences among these three points in treating VD, by comparing the principal symptoms and the scores of some clinical scales related to VD assessed before and after treatment.

## METHODS

## Inclusion Criteria

Fifty VD patients were chosen for this

study according to the following criteria: all of them had the history of stroke and the corresponding signs and symptoms. Their diagnoses were proved by CT and/or MRI, and conformed to the diagnostic criteria of DSM-IV-R formulated by American Psychiatry Association<sup>(5)</sup>. Scores of Hachinski Ischemia Scale (HIS) were equal or more than 7<sup>(6)</sup>, while scores of Mini-Mental State Examination (MMSE) equal or less than 24<sup>(7)</sup>.

## Exclusion Criteria

Such patients were excluded as with: (1) Alzheimer's disease or dementiae induced by other reasons (including white matter lesion); (2) symptoms of dementia existing before stroke; (3) impaired cognitive function after brain traumata; (4) history of epilepsy, encephalitis, Parkinson's disease, Huntington's disease and Pick's

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disease, which might result in dementia; (5) depression or other mental disorders; (6) diseases impairing the cognition, such as malignant tumor, thyroid disease, syphilis, severe anemia, or alcohol, drug-dependent or psychotropic drug-abused patients; (7) severe neurological disorders, such as aphasia, impaired vision and hearing, which hinders to cooperate the assessment and treatment; (8) diabetes mellitus; (9) dementia for which the patients had received treatment in traditional Chinese or Western medicine or acupuncture therapy in recent 30 days; (10) severe dementia patients; (11) stroke within six months; (12) some diseases, such as multiple organ failure or bleeding diathesis, which are contraindicated for acupuncture therapy.

### Clinical Data

Fifty VD patients, conforming to the above criteria, were enrolled from the Second Xingguang Elderly Center and Qianxi Aged Center in Guangzhou City. Among them, 23 cases were male, 27 female; the ages ranging from 61-80 years old,  $73.05 \pm 5.83$  years on average. Forty patients suffered from ischemic apoplexy, while 7 from cerebral hemorrhage, and 3 from both disturbances. Forty-four patients had history of single stroke while 6 cases had double stroke; hemiplegia happened on the right side in 23 cases while on the left side in 25 cases; courses of stroke were 1-9 years, averaging  $2.35 \pm 0.92$  years; eight patients could read newspapers without receiving any formal education and 20 graduated from primary school, 12 from middle school, 6 from high school, and 4 from colleges and universities. All of them were right-handed. They all agreed to accept the treatment and clinical assessment.

### Treatment Method

The 50 patients were randomly divided into 5 groups, 10 cases in each. Patients in group A received the conventional treatment of acupuncture. The points included Jianyu (LI15), Quchi (LI11) Waiguan (SJ5),

Hegu (LI4), Xuehai (SP10), Zusanli (ST36), Sanyinjiao (SP6) and Taichong (LR3). All the points chosen were on the paralyzed side. Patients in group B received treatment on Baihui (DU20), patients in group C on Shuigou (DU26), patients in group D on Shenmen (HT7) and patients in group E on all the three points of Baihui (DU20), Shuigou (DU26) and Shenmen (HT7) in addition to the conventional treatment mentioned above.

The points were stimulated by disposable stainless needles of gauge 30 and 1 to 1.5 cun in length (Global Brand). Baihui (DU20) was inserted backwardly 0.8-1 cun with the tip of the needle arriving at galea aponeurotica. Shuigou (DU26) was inserted obliquely upward 0.2-0.3 cun. Shenmen (HT7) was inserted perpendicularly 0.3-0.5 cun. After getting qi, each point was stimulated by the even manipulation, thrusting and inserting and twirling evenly. All the needles were retained for 20 min, with the even manipulation stimulation given every 5 min during the retaining time. The patients received the treatment once a day except on weekends. Four weeks (20 times acupuncture treatment) were taken as one treatment course and one course as one observation period.

### Observation Method

All the patients received clinical assessments over the signs and symptoms of their disease. The main signs and symptoms were based on the report of LIU Qing-guo, et al<sup>(8)</sup>. The assessment criteria was made by ourselves: 0 for no, 1 for light, 2 for medium and 3 for serious level of each signs and symptoms. Besides, all the patients also received the assessment of Hasegawa's dementia scale-recension (HDS-R)<sup>(9)</sup>, activities of daily living (ADL)<sup>(10)</sup> and functional activities questionnaire (FAQ)<sup>(11)</sup>. Curative effect was assessed according to TIAN Jinzhou's method<sup>(12)</sup>. The formula is as follows: (score of after treatment - score of before treatment)/score of after treatment

$\times 100\%$ . If the result is  $\geq 20\%$  it means remarkably effective,  $\geq 12\%$  means effective,  $< 12\%$  means ineffective and  $< -12\%$  means worsened. Clinical assessments of signs and scales were taken two times, before and after treatment, by a specially assigned physician at 9-11 am.

### Statistic Analysis

All the data were collected by an assigned physician. The parameters of each group before and after acupuncture treatment were compared by *Chi* square test and analysis of variance by SPSS 10.0 for Windows software.

## RESULTS

### Observation Results of HDS-R, ADL and FAQ

The observation showed that the total scores of HDS-R of VD patients increased in different levels after treatment in each group. Statistical processing showed that the increase in group A had no significance, and the increase in the other groups were obvious ( $P < 0.01$ ,  $P < 0.05$ ). The scores of ADL had no remarkable changes in every group after treatment ( $P > 0.05$ ). The scores of FAQ had a decreasing trend after treatment in every group but only those in group B and E had statistical significance ( $P < 0.05$ ). See Table 1 for the results.

Table 1. Comparison of HDS-R, ADL, FAQ Scores among the Five Groups ( $n=10$  in each group,  $\bar{x} \pm s$ )

Group	Time	HDS-R	ADL	FAQ
A	BT	15.30 $\pm$ 3.21	12.36 $\pm$ 4.28	20.53 $\pm$ 5.67
	AT	17.25 $\pm$ 5.64	12.25 $\pm$ 5.35	19.28 $\pm$ 5.26
B	BT	16.28 $\pm$ 5.22	12.14 $\pm$ 3.55	21.27 $\pm$ 4.66
	AT	21.25 $\pm$ 2.58* $\Delta$	12.02 $\pm$ 4.08	16.32 $\pm$ 5.28* $\Delta$
C	BT	15.20 $\pm$ 4.31	13.11 $\pm$ 5.24	20.20 $\pm$ 5.85
	AT	18.14 $\pm$ 3.86*	12.60 $\pm$ 4.22	18.66 $\pm$ 4.81
D	BT	16.05 $\pm$ 3.99	12.75 $\pm$ 3.16	20.38 $\pm$ 4.29
	AT	20.14 $\pm$ 4.20* $\Delta$	12.23 $\pm$ 4.25	18.05 $\pm$ 6.12
E	BT	15.86 $\pm$ 4.50	13.05 $\pm$ 4.73	21.13 $\pm$ 5.62
	AT	22.00 $\pm$ 3.45* $\Delta\Delta\Delta$	12.20 $\pm$ 4.26	16.00 $\pm$ 5.66* $\Delta$

Notes: BT: before treatment; AT: after treatment

The results showed that the curative effects among the 5 groups were somewhat different ( $\chi^2 = 23.63$ ,  $P < 0.05$ ). While the curative effects among group B, C, D and E

were not different ( $\chi^2 = 6.49$ ,  $P > 0.05$ ). See Table 2.

Table 2. Comparison of Curative Effect among the Five Groups

Group	n	Markably effective	Effective	Ineffective	Worsened	Total effective rate(%)
A	10	0	1	9	0	10.0
B	10	2	7	1	0	90.0
C	10	0	6	4	0	60.0
D	10	1	7	2	0	80.0
E	10	3	6	1	0	90.0

### Changes of Main Signs and Symptoms in Each Group

Observed results showed that the sign scores of slow reaction and slow action decreased obviously in group A ( $P < 0.05$ ); the sign scores of trance, slow reaction, poor short-term memory, poor orientation, poor calculation, poor comprehension, slow action, moodiness, adamancy decreased remarkably in group B ( $P < 0.01$ ,  $P < 0.05$ ); the sign scores of trance, slow reaction, poor short-term memory, loss of ability in daily activities, slow action and moodiness decreased obviously in group C ( $P < 0.01$ ,  $P < 0.05$ ); the sign scores of trance, slow reaction, poor short-term memory, poor orientation, slow action, moodiness and adamancy decreased significantly in group D ( $P < 0.05$ ); while the sign scores of dullness, trance, expressionlessness, slow reaction, poor short-term memory, poor orientation, poor calculating, poor comprehension, loss of ability in daily activities, slow action, moodiness and adamancy in group E all obviously decreased ( $P < 0.01$ ,  $P < 0.05$ ). See Table 3 for results.

## DISCUSSION

Vascular dementia (VD) belongs, in traditional Chinese medicine, to "dementia", which was recorded as "dementia syndrome", "gentle dementia", "amnesia", "mental disorder" in the discussions of ancient medical classics. In TCM it is believed that its lesion is in the brain, and has

**Table 3. Comparison of Main Signs and Symptoms among Five Groups before and after Treatment**  
(n=10 in each group,  $\bar{x} \pm s$ )

Signs and Symptoms	Time	Group A	Group B	Group C	Group D	Group E
Dullness	BT	1.87±0.23	1.90±0.44	1.85±0.36	1.86±0.24	1.88±0.33
	AT	1.75±0.34	1.77±0.25	1.75±0.42	1.73±0.31	1.54±0.34*△▲●
Trance	BT	2.02±0.28	1.97±0.45	2.05±0.38	1.98±0.27	2.00±0.35
	AT	1.86±0.30	1.74±0.38*	1.70±0.46*	1.75±0.32*	1.52±0.44**△▲●
Expressionlessness	BT	1.56±0.24	1.54±0.31	1.53±0.28	1.60±0.42	1.55±0.36
	AT	1.52±0.30	1.48±0.35	1.45±0.35	1.52±0.30	1.38±0.42*△●
Slow Reaction	BT	2.12±0.42	2.08±0.38	2.10±0.40	2.06±0.35	2.10±0.32
	AT	1.85±0.54*	1.83±0.46*	1.82±0.37*	1.80±0.44*	1.75±0.30*
Poor Short-term Memory	BT	2.24±0.40	2.25±0.36	2.20±0.31	2.23±0.25	2.22±0.35
	AT	2.26±0.38	1.86±0.28*△△	1.94±0.42*	1.93±0.35*	1.82±0.41*△△
Poor Long-term Memory	BT	1.52±0.26	1.50±0.29	1.55±0.20	1.58±0.34	1.54±0.41
	AT	1.53±0.32	1.48±0.30	1.50±0.22	1.51±0.27	1.46±0.32
Poor Orientation	BT	1.83±0.46	1.80±0.42	1.84±0.38	1.81±0.25	1.84±0.34
	AT	1.84±0.35	1.52±0.24*△	1.68±0.40	1.55±0.32*△	1.50±0.45*△
Poor Calculation	BT	2.05±0.22	2.10±0.64	2.08±0.52	2.03±0.36	2.06±0.40
	AT	2.03±0.35	1.79±0.32*△	1.95±0.41	1.92±0.27	1.75±0.38*△
Poor Comprehension	BT	1.74±0.34	1.70±0.35	1.72±0.50	1.78±0.42	1.75±0.36
	AT	1.75±0.30	1.38±0.44*△	1.66±0.34▲	1.62±0.38▲	1.38±0.33*△○●
Coinherence in Language	BT	1.13±0.34	1.09±0.28	1.11±0.35	1.12±0.45	1.09±0.36
	AT	1.15±0.25	1.00±0.30	1.05±0.32	1.05±0.24	9.80±0.40
Loss of Daily Activities	BT	2.23±0.42	2.20±0.50	2.19±0.34	2.11±0.56	2.22±0.45
	AT	2.18±0.35	1.95±0.38	1.53±0.21*△△▲	1.96±0.26○	1.60±0.42*△▲●
Slow Action	BT	2.23±0.43	2.20±0.44	2.25±0.35	2.18±0.40	2.21±0.50
	AT	1.86±0.41*	1.85±0.25*	1.80±0.33*	1.84±0.35*	1.80±0.46*
Interestlessness	BT	1.82±0.34	1.80±0.42	1.88±0.40	1.81±0.34	1.86±0.36
	AT	1.84±0.40	1.75±0.36	1.80±0.32	1.76±0.56	1.73±0.41
Loneliness and Little Speaking	BT	1.44±0.21	1.48±0.30	1.43±0.31	1.41±0.36	1.45±0.37
	AT	1.40±0.35	1.38±0.42	1.40±0.25	1.37±0.31	1.38±0.36
Depression	BT	1.25±0.22	1.30±0.30	1.21±0.25	1.18±0.12	1.18±0.32
	AT	1.20±0.18	1.18±0.16	1.15±0.24	1.00±0.22	0.96±0.16△
Uncontrolled Crying and Smirking	BT	1.15±0.20	1.15±0.22	1.12±0.18	1.18±0.22	1.12±0.20
	AT	1.10±0.23	1.08±0.19	1.05±0.20	1.08±0.15	1.06±0.14
Moodiness	BT	1.83±0.31	1.81±0.30	1.86±0.44	1.85±0.30	1.82±0.32
	AT	1.80±0.32	1.68±0.42*	1.66±0.41*	1.66±0.28*	1.62±0.46*△
Muttering	BT	0.56±0.08	0.54±0.09	0.55±0.08	0.51±0.11	0.58±0.06
	AT	0.53±0.10	0.55±0.03	0.50±0.04	0.49±0.06	0.53±0.10
Hallucination	BT	0.41±0.06	0.39±0.05	0.42±0.08	0.41±0.05	0.40±0.06
	AT	0.38±0.09	0.35±0.07	0.38±0.10	0.36±0.08	0.36±0.04
Adamancy	BT	1.23±0.34	1.20±0.28	1.22±0.25	1.19±0.33	1.23±0.25
	AT	1.25±0.42	0.98±0.30*△	1.15±0.27	0.95±0.28*△	0.96±0.30*△
Collection Addiction	BT	0.33±0.05	0.36±0.04	0.32±0.07	0.33±0.06	0.34±0.03
	AT	0.32±0.06	0.35±0.07	0.31±0.06	0.29±0.03	0.32±0.04
Shamelessness	BT	0.35±0.03	0.32±0.04	0.35±0.06	0.33±0.05	0.34±0.07
	AT	0.34±0.04	0.33±0.05	0.30±0.08	0.30±0.07	0.31±0.03
Losing Control of Urine	BT	1.84±0.12	1.85±0.16	1.88±0.24	1.83±0.41	1.86±0.32
	AT	1.80±0.20	1.78±0.21	1.75±0.30	1.79±0.33	1.75±0.25
Losing Control of Stool	BT	0.25±0.01	0.28±0.05	0.29±0.04	0.27±0.03	0.24±0.02
	AT	0.23±0.02	0.28±0.03	0.25±0.02	0.25±0.03	0.21±0.05
Losing Control of Urine and Stool	BT	0.23±0.04	0.23±0.02	0.24±0.03	0.23±0.01	0.20±0.01
	AT	0.21±0.02	0.23±0.03	0.22±0.04	0.20±0.05	0.21±0.02

Notes: \* P<0.05, \*\* P<0.01, compared with before treatment of the same group; △ P<0.05, △△ P<0.01, compared with group A after treatment; ▲ P<0.05, compared with group B after treatment; ○ P<0.05, compared with group C after treatment; ● P<0.05, compared with group D after treatment; BT means before treatment, AT means after treatment; the followings are same

close relationship with the disorder of Xin, Gan, Pi and Shen. The etiology of VD is the voidness of brain marrow resulting from Shen deficiency, or the disturbance of brain's

function caused by interior fire resulting from qi-stagnancy, phlegm-accumulation and blood stasis. So the treatment principle of VD is tonifying brain marrow, calming

down the mentality and nerve, waking up the brain and opening up the orifices. The focus of treatment should be to regulating of brain and heart.

Our long-term clinical practice proved that DU20, DU26 and HT7 are effective acupoints for the treatment of VD. The organization of the recipe is based on previous analysis. DU20 and HT7 can regulate brain and heart respectively, which can tonify brain marrow, calm down the mental activity and heart and maintain the normal function of orifices. DU26 has a reducing function that can clear the stagnation and disturbance in the orifices in order to wake up the brain. Then, are there any relative specialties in treating VD in the above 3 acupoints?

Therefore, the comparative study on DU20, DU26 and HT7 in treating VD was performed. Principal signs and symptoms were observed and some related scales such as HDS-R, ADL, FAQ were used to assess the difference in effect before and after treatment.

Observation of main signs and symptoms showed that the combination of conventional points for hemiplegia with DU20, DU26 and HT7 can improve the signs of dullness, trance, slow reaction, poor short-term memory, poor orientation, poor calculation, poor comprehension, loss of ability in daily activity, slow action, moodiness and adamancy in VD patients. The combination of conventional points with DU20 is good at improving the abilities of memory, calculation, understanding and at correcting the adamancy of VD patients. The combination of conventional points with DU26 is good at correcting slow reaction, loss of ability in daily activities and trance. The combination of conventional points and HT7 is good at improving poor memory, poor comprehension and adamancy.

HDS-R, reedited by Hasegawa on the

basis of its old version made in 1992<sup>(9)</sup>, is the representative scale for cognitive assessment. It includes orientation, memory, general knowledge, calculation, digital memory and object naming. Some researchers reported that the score of HDS-R increased obviously after acupuncture treatment in VD patients<sup>(13,14)</sup>. Our observation got the same result, that is, the score of HDS-R increased after the treatment of combination of conventional acupoints for hemiplegia with DU20, DU26 and HT7 respectively or with all the three of them. And the comparison of the curative effect showed there is significant difference from the conventional group.

ADL, formulated by Lawton and Brody in 1968<sup>(10)</sup>, is used to assess the daily activity of VD patients. The scale includes 2 parts: self-care in daily living and ability in managing tools and information. Tang SX and Mo FZ separately observed that acupuncture could improve the ADL score of VD patients<sup>(15,16)</sup>. But our result was somewhat different in that the ADL score of VD patients did not change obviously after acupuncture treatment. The disparity may result from different sample quantity, disease course and treatment course arrangement.

FAQ, worked out by Pfefer in 1982<sup>(11)</sup>, can reflect the social adapting ability of VD patients, which is used to assess some social abilities involving complicated cognitive functions. Some report pointed out that FAQ score of VD patients decreased obviously after acupuncture treatment<sup>(3,13)</sup>. Our result was similar in that the score of FAQ obviously decreased after treatment combining conventional acupoints for hemiplegia with DU20 or with all the three acupoints.

It could be concluded that Baihui (DU20), Shuigou (DU26) and Shenmen (HT7) have good effect in treating VD according to the comparative observations on the assessment of principal signs and symptoms, HDS-R, ADL and FAQ. DU20, DU26 and HT7 each have their own effect in

treating VD. DU20 and HT7 could promote the abilities of memory, orientation, and reaction and reduce adamancy and trance. Besides, DU 20 is good at improving the abilities of understanding, calculating and social adapting. At the same time, DU26 is good at treating retardation, loss of ability in daily activities, trance and poor memory. The combination of the 3 acupoints could improve the intelligence and social adapting ability of VD patients.

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