

Effect of Early Acupuncture Intervention On Patient With Acute Hemorrhagic Stroke: A Retrospective Study

Yan-Ru Ko¹, Zi-Yu Chang¹, Yu-fen Fan Chiang^{2,3}, Pin-Yuan Chen⁴,
Wan-Ping Lee¹, Yun-Cong Zheng^{4,5,6,*}

¹ Department of Traditional Chinese Medicine, Chang Gung Memorial Hospital, Keelung City, Taiwan

² Nurse at the Surgical Intensive Care Unit of Keelung Chang Gung Memorial Hospital, Keelung City, Taiwan

³ School of Nursing National Taipei University of Integration Chinese and Western Medicine of Nursing, Taipei, Taiwan

⁴ Departments of Neurosurgery, Chang Gung Memorial Hospital, Keelung & Chang Gung University, Keelung, Taiwan

⁵ Department of Biomedical Engineering, National Taiwan University, Taipei, Taiwan

⁶ College of Medicine, Chang Gung University, Taoyuan, Taiwan

BACKGROUND: This study aims to investigate the effect of early acupuncture treatment in the acute stage of hemorrhagic stroke. **METHODS:** This retrospective study collected the data of patients with acute hemorrhagic stroke from the medical records system of Keelung Chang Gung Memorial Hospital. The patients were divided into two groups according to whether or not they received early acupuncture treatment (within 2 weeks of stroke onset): received early acupuncture treatment (group A); no acupuncture treatment (group B). The associations between functional scales, disability scales, and consciousness with treatment response were analyzed using the Mann-Whitney U test, and a regression model was used to determine which factors were associated with an improvement in patients with moderate to severe stroke to National Institutes of Health Stroke Scale (NIHSS) score lower than 16. **RESULTS:** From September 2020 to August 2022, 63 patients were eligible for this study (group A, N=33; group B, N=30). In the acupuncture group, the mean time to starting acupuncture after stroke onset was 7.12 ± 2.83 days. After treatment, the following factors are statistically significant differences among the two groups: GCS(interquartile range, IQR A:B=(11.5-15):(7.75-14), $p=0.003$)、NIHSS(IQR A:B=(6-20):(9.5-25), $p=0.033$) and muscle power(IQR A:B=(1-4):(1-3), $p=0.029$). In addition, early acupuncture intervention was associated with functional improvement to an NIHSS score lower than 16 in the patients with moderate and severe stroke (OR = 38.521). **CONCLUSIONS:** The acute hemorrhagic

*Correspondence author: Yun-Cong Zheng, Departments of Neurosurgery, Chang Gung Memorial Hospital, Keelung & Chang Gung University, 222, Maijin Road, Keelung, Taiwan, R.O.C. Tel:+886-2-2431-3131 ext.2590, Fax: +886-2-24313161, Email: m7630@cgmh.org.tw

stroke patients who received early acupuncture treatment had better improvements in GCS, NIHSS, and muscle power compared to those who did not receive acupuncture treatment. For moderate to severe and severe stroke patients, receiving early acupuncture was positively associated with an improvement to NIHSS lower than 16.

Keywords: hemorrhagic stroke; intracerebral hemorrhage; acupuncture; early intervention; GCS; NIHSS.

Introduction

Stroke is a major cause of death and disability [1]. According to the Ministry of Health and Welfare in Taiwan, stroke accounted for 6.8% of all deaths and was the 4th leading cause of death in Taiwan in 2020. Stroke can be divided into acute, subacute, and chronic stages [2], and the initial severity of stroke affects recovery from sequelae [3]. Therefore, identifying effective early interventions to improve patients' sequelae and accelerate their recovery is an important issue [4].

Stroke is widely used clinically as an indication for acupuncture, as recommended by the World Health Organization (WHO) [5]. The timing and effectiveness of acupuncture has been studied in many systematic reviews, but further research is still needed to confirm these findings [1, 5, 6]. While some clinical trials have shown potential therapeutic effects of acupuncture on cognitive impairment after stroke, others have reported no significant impact of acupuncture on cognitive function in this population. These results may have been due to the small sample size of the trials and flaws in the study design [7]. Some previous research included both ischemic and hemorrhagic stroke patients, which increased the heterogeneity of the study [8, 9]. While the prevalence of ischemic stroke is greater than hemorrhagic stroke, hemorrhagic stroke

is more severe than ischemic stroke [10]. Past research using traditional medicine has focused on the efficacy of acupuncture in treating ischemic stroke, mostly in the chronic phase. Some systematic reviews have suggested that acupuncture interventions in the acute stage of stroke are effective in recovering neurological function, reducing sequelae, and improving quality of life in stroke patients [1, 6]. However, the target groups were mainly ischemic stroke patients. Wang et al. reported that acupuncture treatment on the head in patients with acute intracerebral hemorrhage was safe and improved the Clinical Neurological Function Deficit Scale (CNFDS), but did not significantly improve the Barthel Index (BI) [11].

The aim of this study is to evaluate the effect of early acupuncture intervention on patients in the acute phase of hemorrhagic stroke. We retrospectively reviewed patients' medical records and imaging findings at our institute, and compared their neurological and functional outcomes after receiving acupuncture.

Materials and Methods

1. Study Design

We collected data from the medical records system of Keelung Chang Gung Memorial Hospital between September 2020 and August 2022. Patient

data were recorded prospectively at the time of their treatment, and for this study, their data were collected retrospectively by reviewing medical records (Figure 1).

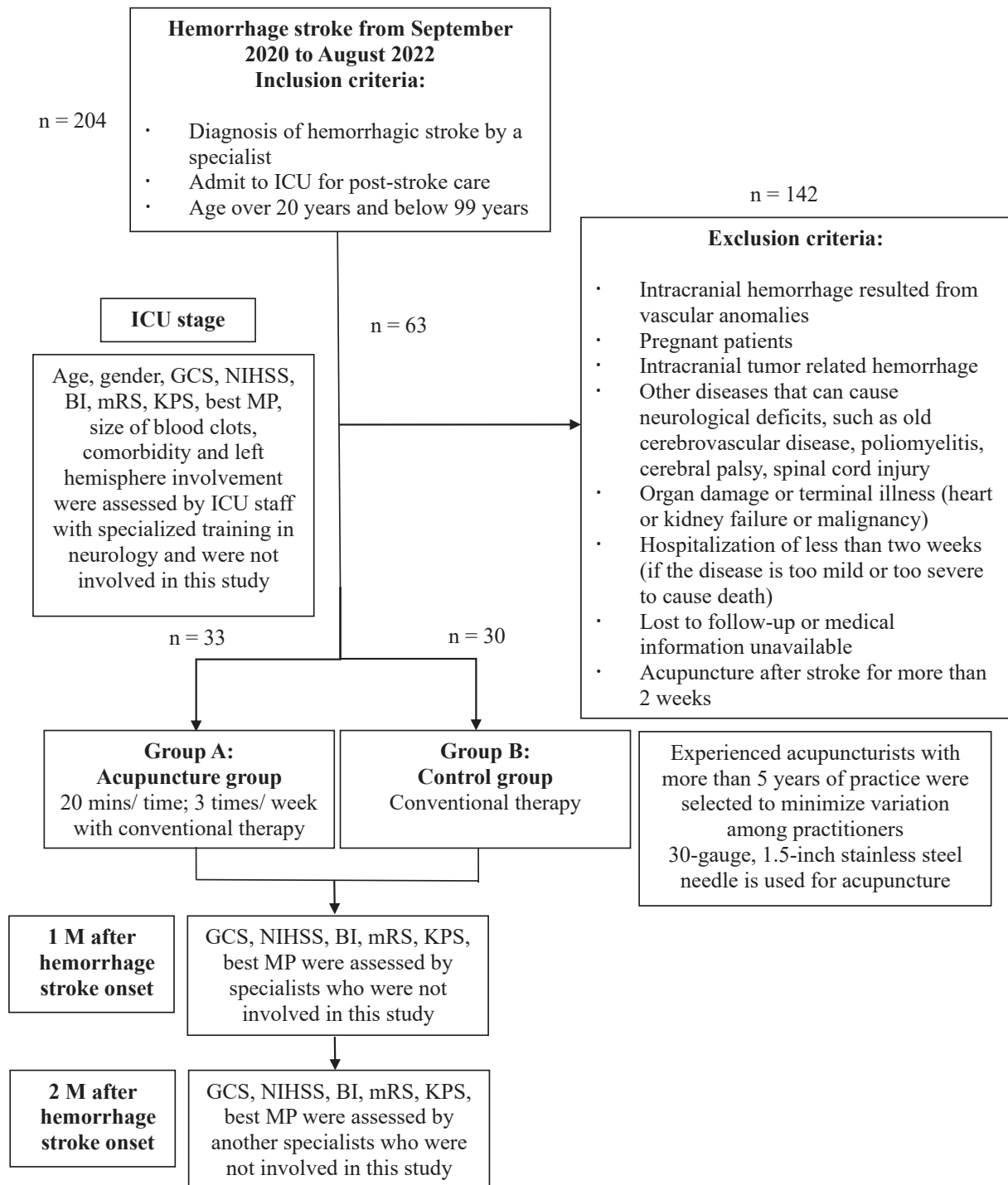


Figure 1. Flow diagram of patient inclusion, exclusion and distribution.

2. Inclusion and exclusion criteria

The inclusion criteria were patients who were: (1) evaluated by a specialist and diagnosed with new onset hemorrhagic stroke and within three months from onset. The diagnosis of hemorrhagic stroke was based on a clinical neurological evaluation and imaging findings (including brain computed tomography or magnetic resonance imaging); (2) admitted to the intensive care unit (ICU) for post-stroke care; and (3) aged over 20 years and below 99 years.

The exclusion criteria were patients who: (1) had an intracranial hemorrhage due to vascular anomalies; (2) were pregnant; (3) had an intracranial tumor-related hemorrhage; (4) had other diseases that could cause neurological deficits, such as old cerebrovascular disease, poliomyelitis, cerebral palsy, and spinal cord injury; (5) had other organ damage or terminal illnesses (heart or kidney failure or malignancy); (6) were hospitalized for < 2 weeks (if the disease was mild or led to death); (7) were lost to follow-up or did not have medical information; (8) received acupuncture after 2 weeks of stroke and (9) received acupuncture less than six times.

Patients who met the above criteria for inclusion and exclusion and received the acupuncture intervention were included as the group A, and others were included as the group B.

3. Data collection

Patient data included age, sex, acupuncture consultation records, BI [12, 13], muscle power (MP) [14], Modified Rankin Scale (mRS)[15], National Institutes of Health Stroke Scale (NIHSS)[15], Glasgow Coma Scale (GCS)[16], Karnofsky Performance Scale (KPS), size of blood clots and comorbidities before treatment, 1 month and 2 months after treatment. We also recorded the first three items of the NIHSS

separately. These three items are used to assess the level of consciousness, ability to answer questions, and ability to obey commands. The evaluators were doctors and nurses with specialized training in neurology and were not involved in this study.

4. Treatment

During hospitalization, the patients received conventional therapy combined with rehabilitation training, including physical therapy, occupational therapy and speech therapy after their vital signs had stabilized. The consultation process during hospitalization was based on the choice of the patient or family members, with the neurosurgeon submitting an order for acupuncture treatment. After receiving the consultation order, the acupuncturist provided regular acupuncture treatment three times a week for 20 minutes each time until the patient's neurological condition was stable, in accordance with the Health Insurance Board's regulations. In terms of acupuncture practice, experienced acupuncturists with > 5 years of practice were selected to minimize variations among the practitioners. A 30-gauge, 1.5-inch stainless steel needle was used for acupuncture (Figure 2). The depth of the needle was 5mm~10mm for the head needle, and 25mm~30mm for the body needle. Electroacupuncture was not used.

5. Statistical methods

The patients were divided into two groups according to whether they did (Group A) or did not (Group B) receive acupuncture treatment. The data were analyzed using SPSS version 26.0 (IBM Corp., Armonk, NY). Categorical variables were compared using the chi-square test and Fisher's exact test, and continuous variables were compared using the independent sample t test. Pre- and post-acupuncture data were compared using the paired sample t test,

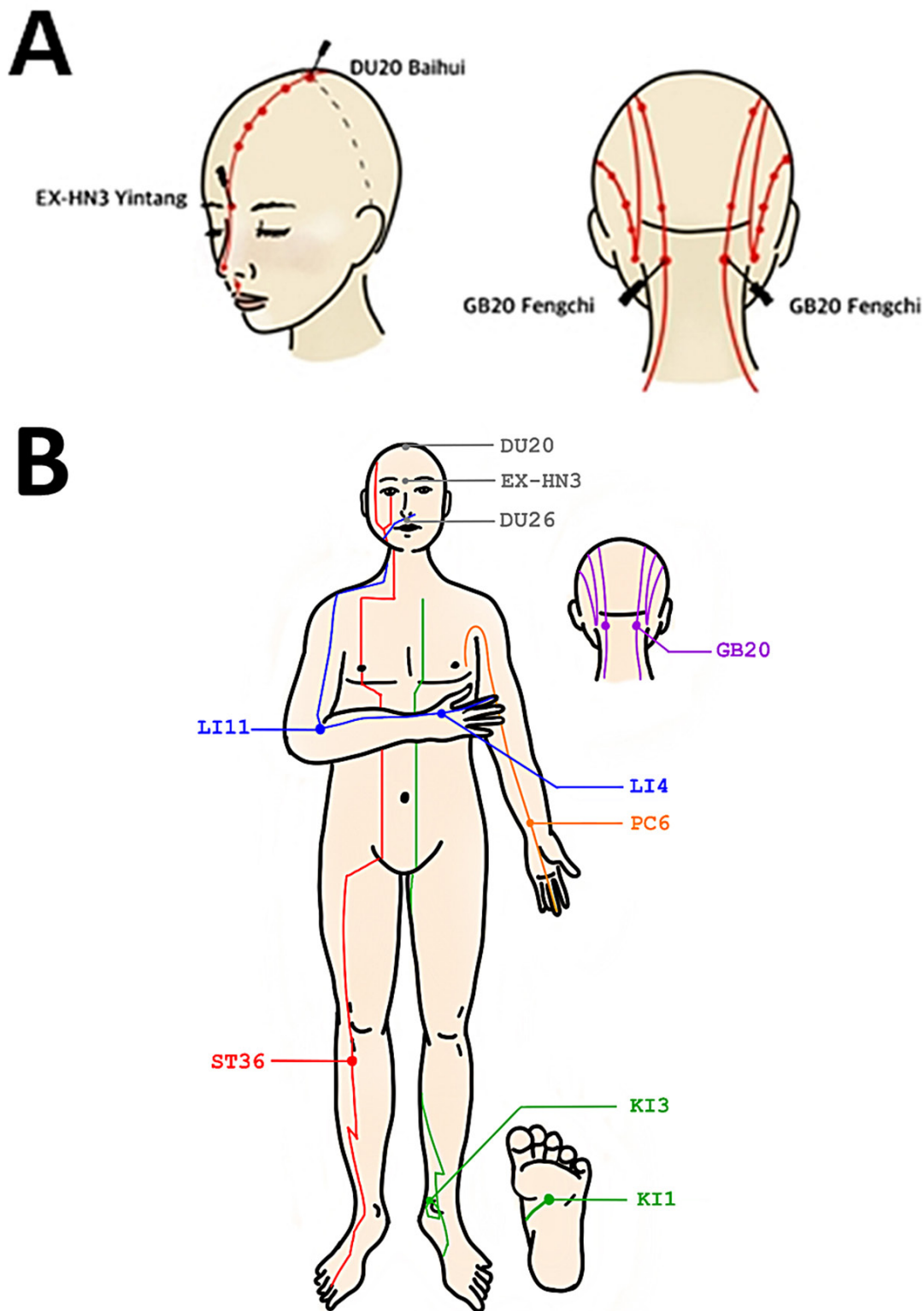


Figure 2. Acupuncture points on the (A) head and (B) body used to treat hemorrhagic stroke.

and variables with a small sample size or which did not conform to normal distribution were analyzed using nonparametric analysis (Mann-Whitney U test or Wilcoxon signed-rank test). For the patients with

moderate to severe and severe stroke (NIHSS scores between 16-42), the results were analyzed using logistic regression analysis to assess which factors were associated with an improvement in NIHSS score to lower than 16. Age, gender, acupuncture intervention, initial NIHSS and GCS score, size of intracerebral hemorrhage (ICH) and underlying disease were involved in the regression model. The significance level for this study was 0.05 (two-tailed).

Results

1. Basic information

A total of 63 patients were analyzed, 33 (52%) of whom received acupuncture within 2 weeks of

stroke onset (Group A), and 30 (48%) of whom did not receive acupuncture treatment (Group B). In Group A, the mean time for receiving the first acupuncture after stroke onset was 7.12 ± 2.83 days; the duration of acupuncture intervention was 38.96 ± 5.02 days, and median (IQR) of the times of acupuncture treatment was 13(12-14).

There were no statistically significant differences in age, sex, GCS, NIHSS, BI, mRS, KPS, MP, size of blood clots, comorbidities or left hemisphere involvement prior to the treatment between Group A and Group B (Table 1)

2. Functional scale (NIHSS)

After treatment and follow-up, Group A had a significantly greater improvement in NIHSS score than

Table 1. Comparison of basic characteristics between the two groups before acupuncture intervention

	Total (n = 63)	Group A (n = 33)	Group B (n = 30)	p-value
Age, median (IQR), yr	68.0 (51-76)	68.0 (50.5-76)	66.5 (51.0-77.25)	0.856 ^a
Gender, n (%)				
female	28(44%)	17 (51.5%)	11 (36.7%)	0.236 ^b
male	35(56%)	16 (48.5%)	19 (63.3%)	
The duration from onset to acupuncture intervention, mean \pm SD, days		7.12 \pm 2.83		
The duration of acupuncture intervention, mean \pm SD, days		38.96 \pm 5.02		
The times of acupuncture treatment, median (IQR)		13(12-14)		
Coma scale, median (IQR)	10 (7-13)	10 (8-13)	10 (7-12.25)	0.876 ^a
GCS \leq 8, n (%)	22 (35%)	9(27%)	13(43.3%)	0.182 ^b
GCS \geq 9, n (%)	41 (65%)	24(73%)	17(53.6%)	
Size of blood clots (IQR), ml	17.79 (8.63-39.52)	15.3 (7.05-31.71)	25.03 (9.83-44.15)	0.167 ^a

Table 1. Comparison of basic characteristics between the two groups before acupuncture intervention
Continued

	Total (n = 63)	Group A (n = 33)	Group B (n = 30)	p-value
Location of hemorrhagic stroke, n (%)				
supratentorial	57 (90%)	31 (93.9%)	26 (86.7%)	0.405 ^c
infratentorial	6 (10%)	2 (6.1%)	4 (13.3%)	
Left hemisphere involvement, n (%)	29 (46%)	13 (39%)	16 (53%)	0.268 ^b
Neurosurgical intervention, n (%)	40 (63%)	20 (60.6%)	20 (66.7%)	0.618 ^b
BI, n (%)	0 (0-10)	0 (0-10)	0 (0-12.5)	0.835 ^a
NIHSS, total	20 (12-15)	16 (11-25.5)	22.5 (12-26)	0.710 ^a
level of consciousness (LOC)	1 (0-2)	1 (0-1)	1 (0-2)	0.061 ^a
LOC questions	1 (1-2)	1 (1-2)	1.5 (1-2)	0.727 ^a
LOC commands	1 (0-2)	1 (0-2)	1 (0-2)	0.856 ^a
KPS (IQR)	30 (30-40)	30 (30-40)	30 (30-40)	0.813 ^a
MRS (IQR)	5 (4-5)	5 (5-5)	5 (4-5)	1.000 ^a
MP (IQR)	1 (1-3)	1 (0.5-3)	1.5 (1-3)	0.554 ^a
Comorbidity, n (%)				
HTN	53 (84%)	29 (87.9%)	24 (80%)	0.498 ^c
hyperlipidemia	15 (24%)	7 (21.2%)	8 (26.7%)	0.612 ^b
DM	22(35%)	15 (45.5%)	7 (23.3%)	0.660 ^b
heart disease	9 (14%)	3 (9.1%)	6 (20.0%)	0.289 ^c
coagulopathy	7 (11%)	3 (9.1%)	4 (13.3%)	0.700 ^c

IQR: interquartile range, GCS: Glasgow Coma Scale, BI: Barthel Index, NIHSS: National Institute of Health Stroke Scale, KPS: Karnofsky Performance Scale, Modified Rankin Scale, MP: muscle power, HTN: Hypertension, DM: diabetes mellitus

a Mann-Whitney U test comparison of medians

b Chi-square test

c Fisher's exact test

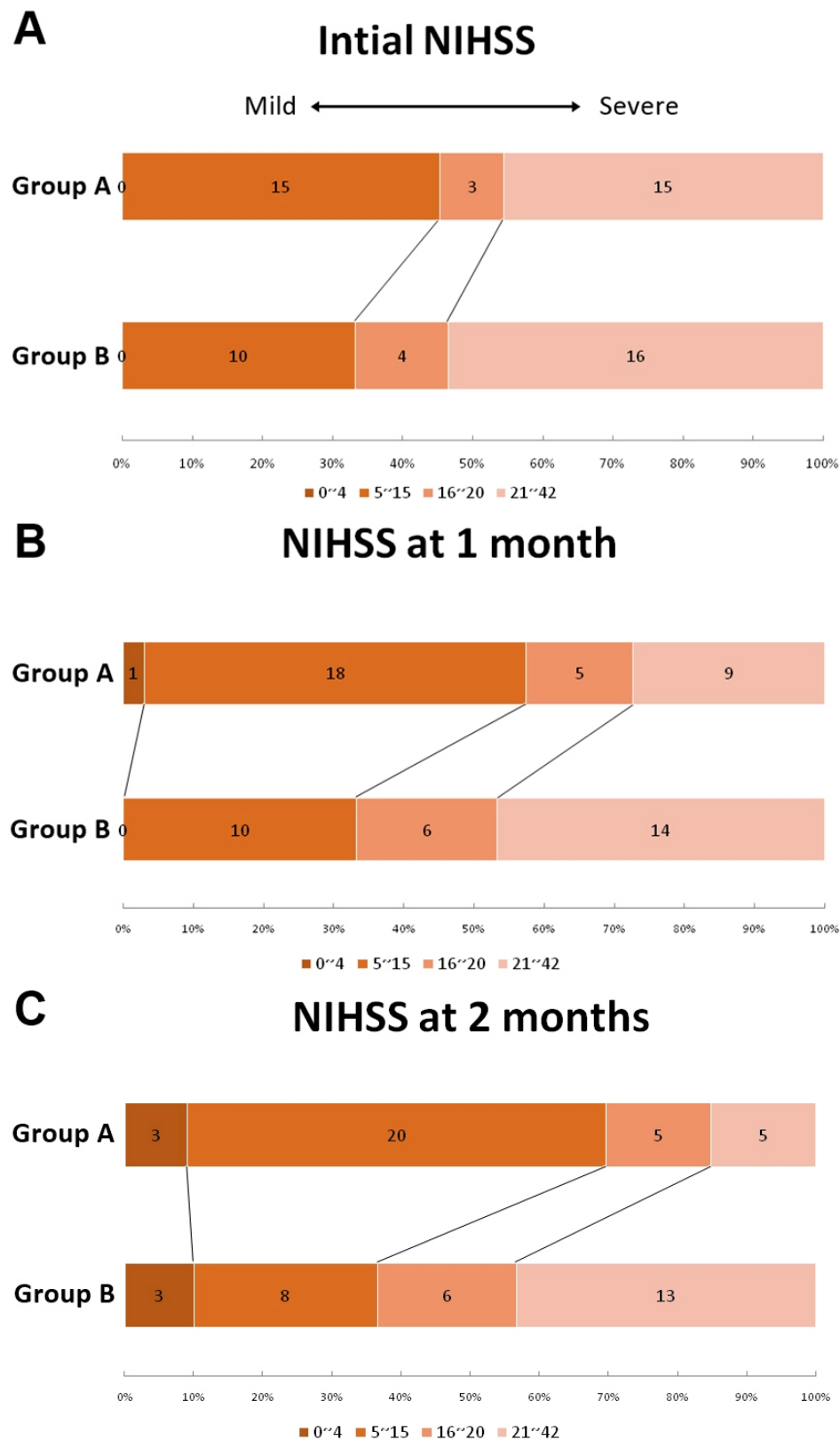


Figure 3. Comparison of NIHSS improvement between Group A and B at (A) acupuncture initiation, (B) 1 month after stroke, and (C) 2 months after stroke.

Table 2. Effect of early acupuncture intervention on neurological function in patients with acute hemorrhagic stroke

	1 month						
	Group A			Group B			
	Median	IQR	Min-Max	Median	IQR	Min-Max	p-value ^a
GCS	14	(11-15)	6-15	11	(7-13.25)	6-15	0.029*
NIHSS	14	(7.5-21.5)	2-42	20	(9.75-26)	5-38	0.167
BI	15	(0-30)	0-60	2.5	(0-20)	0-55	0.367
KPS	30	(30-50)	10-60	30	(30-40)	20-60	0.672
MRS	5	(4-5)	2-5	5	(4-5)	1-5	1
MP	2	(1-4)	0-5	2	(1-3)	0-5	0.199
	2 month						
	Group A			Group B			
	Median	IQR	Min-Max	Median	IQR	Min-Max	p-value ^a
GCS	14	(11.5-15)	6-15	11	(7.75-14)	6-15	0.003*
NIHSS	10	(6-20)	4-42	20	(9.5-25)	2-38	0.033*
BI	20	(2.5-35)	0-60	2.5	(0-30)	0-55	0.254
KPS	40	(30-50)	10-60	30	(30-42.25)	20-60	0.273
MRS	4	(4-5)	2-5	4.5	(4-5)	1-5	0.914
MP	3	(1-4)	0-5	2	(1-3)	0-5	0.029*

IQR: interquartile range, GCS: Glasgow Coma Scale, BI: Barthel Index, NIHSS: National Institute of Health Stroke Scale, KPS: Karnofsky Performance Scale, Modified Rankin Scale, MP: muscle power

a Mann-Whitney U test comparison of medians

Group B (Table 2). The number of patients with severe stroke (NIHSS ≥ 21) decreased from 15 (45%) to 5 (15%) in Group A, and from 16 (53%) to 13 (43%) in Group B after treatment (Figure 3A-C). In addition, Group A also had significantly greater improvements in the items of the NIHSS used to assess the level consciousness than Group B after treatment (Table 3).

3. GCS

Before treatment, the difference in severe coma status (GCS ≤ 8) [17] was not significantly different between Group A and B. However, after treatment, the median (IQR) GCS score in Group A improved from 10 (8-13) to 14 (11.5-15), and was significantly better than the improvement in Group B ($p = 0.003$) at 2 months. The same trend was also seen at 1 month (Figure 4).

Table 3. Effect of early acupuncture intervention on NIHSS score in patients with acute hemorrhagic stroke

	1 month						
	Group A			Group B			
	Median	IQR	Min-Max	Median	IQR	Min-Max	p-value ^a
Level of consciousness (0~3)	0	(0-1)	0-3	1	(0-2)	0-3	0.01*
LOC questions (0~2)	1	(0-2)	0-2	1.5	(1-2)	0-2	0.11
LOC commands(0~2)	0	(0-1)	0-2	1	(0-2)	0-2	0.033*
	2 month						
	Group A			Group B			
	Median	IQR	Min-Max	Median	IQR	Min-Max	p-value ^a
Level of consciousness (0~3)	0	(0-1)	0-3	1	(0-2)	0-3	0.002*
LOC questions (0~2)	0	(0-1)	0-2	1.5	(1-2)	0-2	0.033*
LOC commands(0~2)	0	(0-0.5)	0-2	1	(0-2)	0-2	0.002*

LOC : level of consciousness, IQR: interquartile range

a Mann-Whitney U test comparison of medians

Table 4. Univariate and multivariate analyses in acupuncture intervention for the treatment of acute hemorrhagic stroke patients with NIHSS ≥ 16 and NIHSS score < 16

Variables for NIHSS Improvement	Univariate Analysis		Multivariate Logistic Regression	
	OR (95% CI)	p-value	OR (95% CI)	p-value
Age	0.939 (0.888-0.992)	0.025*	0.936 (0.875, 1.002)	0.057
Gender	0.985 (0.219-4.434)	0.984	-	-
Acupuncture intervention	15.2 (1.658-139.308)	0.016*	38.521 (1.714, 865.721)	0.021*
Initial NIHSS score	0.854 (0.791-1.015)	0.074	0.749 (0.541, 1.038)	0.082
Initial GCS	1.46 (0.998-2.134)	0.051		
Size of ICH	1.009 (0.982-1.038)	0.518		
Hypertension	0.923 (0.084-10.154)	0.948		
DM	1.571 (0.309-7.989)	0.586		
Hyperlipidemia	0.6 (0.061-5.933)	0.662		
Heart disease	1.786 (0.269, -11.856)	0.548		

GCS: Glasgow Coma Scale, NIHSS: National Institute of Health Stroke Scale, ntracerebral hemorrhage, DM: diabetes mellitus

Factors were included in the multivariate model by forward stepwise technique

* Multivariate logistic regression reaches significance

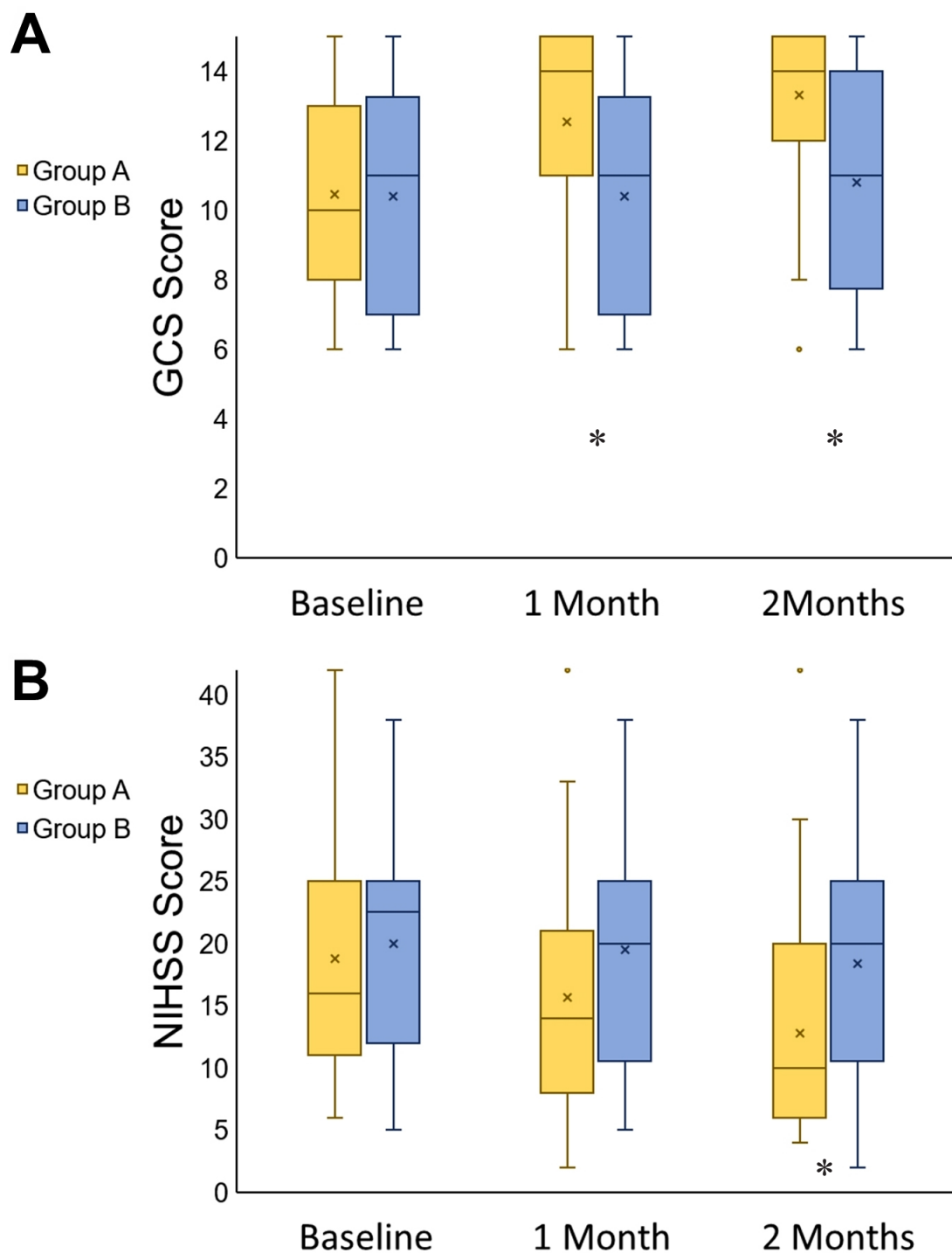


Figure 4. Changes in (A) GCS score and (B) NIHSS score between the two groups.

4. MRS, BI, MP, and KPS

After 2 months of stroke onset, the improvement in MP was significantly better in Group A (from median (IQR) of 1 (0.5-3) to 3 (1-4)) compared

to Group B ($p = 0.029$). However, there were no significant differences in MRS, BI and KPS between Group A and Group B.

5. Logistic regression analysis

Logistic regression analysis of the patients with an NIHSS score ≥ 16 showed that an improvement to lower than 16 was influenced by whether they received acupuncture treatment within 14 days of onset (OR = 38.521) (Table 4).

Discussion

The results of this study showed that early acupuncture treatment for acute cerebral hemorrhage significantly improved their GCS (IQR A:B=(11.5-15):(7.75-14), $p=0.003$), NIHSS (IQR A:B=(6-20):(9.5-25), $p=0.033$) and MP (IQR A:B=(1-4):(1-3), $p=0.029$). In logistic regression analysis, for the patients with moderate to severe and severe stroke, achieving an improvement in NIHSS to lower than 16 was positively associated with early acupuncture intervention (OR = 38.521). According to the findings, early acupuncture had practical effects on functional scales and improved consciousness in acute cerebral hemorrhage.

Acupuncture and transcranial magnetic stimulation may help to improve consciousness and motor function in stroke patients through bringing the EEG spectrum towards the normal range [18]. Several studies [19, 20] have shown that transcranial magnetic stimulation effectively modulates cortical excitability and motor activity in stroke patients. In addition, a clinical study [21] found that low-frequency repetitive transcranial magnetic stimulation improved motor function of the upper limbs and the functions of daily life, but that it had no positive effect when used in conjunction with scalp acupuncture. However, a basic study [22] showed that scalp acupuncture combined with transcranial magnetic stimulation could inhibit local apoptosis and enhance learning in mice with ischemic stroke.

The acupuncture points most commonly used to treat stroke patients include Baihui (DU20), Fengchi (GB20), Renzhong (DU26), Yintang (EX-HN3), Hegu (LI4), Neiguan (PC6), Quchi (LI11), Yongquan (KI1), Taixi (KI3), and Zusanli (ST36) (Figure 2, Table 5). Basic studies [23] have shown that these acupoints can promote neurogenesis and cell proliferation in the central nervous system, and regulate cerebral blood flow in the ischemic area. In addition, they have been shown to have anti-apoptotic effects in the ischemic area and to regulate neurochemicals including neurotransmitters and receptors, antioxidant enzymes, inflammatory mediators, neurotrophic factors, and anaerobic metabolism.

In patients with acute cerebral hemorrhage, secondary injuries [24] such as free radical production, lipid peroxidation, and the release of neutrophils and cytokines can cause severe cerebral edema and cerebral ischemia, and therefore delayed hemorrhage needs to be managed to reduce damage to the nervous system. Because acupuncture treatment does not damage the function of the heart, liver or kidneys, it can be applied in patients who cannot use intracranial pressure reduction drugs such as mannitol [25] to reduce secondary injuries.

Impaired consciousness and disability are common sequelae of stroke patients, and their inability to care for themselves is a burden to society [4]. It has been suggested that acupuncture can significantly reduce the incidence of post-stroke complications and disabilities [26]. Patients with stroke regain consciousness earlier, they can return to independent life earlier without deconditioning. Moreover, critical care resources and social costs can be saved more.

In our study, the improvement in GCS was significantly greater in Group A than in Group B after

Table 5. Acupoints for the treatment of stroke patients and its physiological functions

Acupoints (location)	Acupuncture points commonly used to treat stroke patients	Possible mechanism for treat secondary injury [23]
Baihui (DU20), Fengchi (GB20), Renzhong (DU26) and Yintang (EX-HN3) (head)	Accordance with TCM theory, Baihui (DU20), Fengchi (GB20), Renzhong (DU26) and Yintang (EX-HN3) are often used in combination to treat consciousness disorders. DU26 is an important point for emergency treatment, which can improve the motor cortical excitability[31]. DU20 is commonly used in neurology; stimulation at DU20 will increase cerebral perfusion in the cerebral cortex and stabilize emotions[32]. Stimulation at GB20 will increase blood velocity of vertebral artery and the basilar artery[33].	Vasoactive Modulation: increases perfusion on the affected side by releasing acetylcholine, leading to the release of nitric oxide, depends on endothelial nitric oxide synthase (eNOS). Anti-apoptosis: increase levels of anti-apoptotic factors; suppresses pro-apoptotic factors. Neurogenesis: upregulating the expression of GSK 3 β and PP2A. Antioxidant Enzymes: suppressed overproduction of O ₂ via inhibition of NADPH oxidase in the hippocampus; increase superoxide dismutase (SOD) 、 glutathione peroxidase (GSH-Px) in the hippocampus.
Hegu (LI4), Neiguan (PC6), Quchi (LI11) (upper hand)	Acupuncture points which are frequently used to treat upper extremity hemiplegia of stroke patients are Hegu (LI4), Neiguan (PC6), Quchi (LI11). These points correspond to the muscle groups that control the movement of the upper extremity.	Inflammatory Factors: inhibiting the local release of cytokines including TNF- α and inhibiting alarmin heat shock protein (HSP70); inhibited Reperfusion-induced secretion of TNF- α , IL-1 β , IL-6.
Yongquan (KI1), Taixi (KI3), and Zusanli (ST36) (lower leg)	According to TCM theory, stroke is caused by Zang-Fu organ imbalance of kidney, heart, and liver. KI3, KI1 (kidney meridian) are commonly used to adjust Yin-Yang balance in stroke. ST36 is commonly used in stroke patients, stimulation at ST36 increased motor cortical excitation[34].	Anaerobic Metabolism: increase the expression of MCT1 in astrocytes.

2 months of stroke onset. In Group A, the median (IQR) GCS score improved from 10 (8-13) to 14 (11.5-15). Nine patients were comatose (GCS \leq 8) initially, of whom seven recovered from the severe coma after

acupuncture treatment. The recovery rate of 78% suggests that early acupuncture may be beneficial in improving consciousness.

We also evaluated consciousness and neurological

function in our patients. In the NIHSS, the degree of consciousness is classified into three dimensions: first, the response to painful stimulation; second, the accuracy of answering two questions; and third, the accuracy of obeying two motor orders. Consciousness disorders include coma, vegetative state and minimally conscious state (MCS) [27, 28]. MCS is a severe consciousness disorder caused by severe damage to brain tissue. In contrast to patients in a vegetative state, patients in a MCS can perform visual tracking (pursuit eye movements). We analyzed the NIHSS total score and the three items in the NIHSS related to level of consciousness, and the results showed all of them were improved. In other words, acupuncture could improve neurological function and help to restore consciousness.

The muscle power of the extremities in Group A improved more than in Group B two months after the stroke. It is reasonable that stroke patients regained their ability to control their limbs after improving their consciousness. Another reason may be a shorter recovery time and less muscular loss in group A. Studies have shown that acupuncture can stimulate motor nerves and muscles, thereby improving muscle power[29].

The limitations of this article include: due to the respective study designs, the analysis of this study was limited by the completeness of medical records; the data evaluation was not performed by the same person, which may affect the accuracy of the results; the efficacy evaluation may be affected by the following factors: (1) The treatment received by the patients was not completely consistent; (2) The data on the complications during the hospitalization of the patients and whether the patients received other treatments during the follow-up period could not be controlled completely.

Conclusion

In addition to conventional therapy for acute hemorrhagic stroke, early acupuncture can be added to shorten the period of unconsciousness and functional recovery time. It can be used in the ICU as a safe method to control secondary injury to the brain. In summary, early acupuncture may be an important adjuvant therapy during the acute stage of hemorrhagic stroke. Future, prospective studies with stringent inclusion and exclusion criteria and a random allocation design to investigate the effects of acupuncture treatment and sham acupuncture are warranted [30].

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針刺治療急性出血性腦中風的療效： 病歷回溯性研究

葛晏如¹、張子瑜¹、范姜玉芬^{2,3}、陳品元⁴、李婉平¹、鄭運聰^{4,5,6,*}

¹ 基隆長庚紀念醫院中醫科，基隆，臺灣

² 基隆長庚紀念醫院外科加護病房，基隆，臺灣

³ 國立臺北護理健康大學，台北，臺灣

⁴ 基隆長庚紀念醫院神經外科，基隆，臺灣

⁵ 國立臺灣大學生物醫學工程系，台北，台灣

⁶ 長庚大學醫學院，桃園，臺灣

目的：探討針灸早期介入對於急性出血性中風的療效。**方法：**採回顧性研究，資料來源為基隆長庚紀念醫院病歷系統，根據是否接受針灸早期介入（於中風發病後2周內接受針灸治療），將患者分為兩組；A組，有接受早期針灸治療者；B組，無接受針灸治療者。以 Mann-Whitney U test 分析有無針灸早期介入，與出血性中風病人的功能量表、殘疾量表和意識狀態的關係，最後以羅吉斯回歸模型來獲知哪些因子與中重度中風患者（NIHSS 介於 16~42）的神經學功能改善相關。**結果：**從 2020 年 9 月到 2022 年 8 月，符合分析條件為 63 人，A 組 33 人，B 組 30 人。在 A 組中，中風發病後開始針灸的平均時間為 7.12±2.83 天。在治療後有統計上顯著差異的項目：GCS(IQR A:B=(11.5-15):(7.75-14), p=0.003)、NIHSS(IQR A:B=(6-20):(9.5-25), p=0.033) 和肌力 (IQR A:B=(1-4):(1-3), p=0.029)。回歸分析顯示，中重度中風病患，影響 NIHSS 總分改善至 16 分以下的狀態的因子，為是否有接受針灸早期介入。**結論：**相較於無針灸治療，接受早期針灸治療的急性出血性中風患者，其 GCS、NIHSS 和肌力數值恢復較佳。而對於中重度的中風患者，有接受早期針灸治療，其 NIHSS 較能改善至 16 分以下的狀態。

關鍵字：出血性中風、顱內出血、針灸、早期介入、GCS、NIHSS

* 通訊作者：鄭運聰，基隆長庚紀念醫院神經外科，地址：204 基隆市安樂區麥金路 222 號，電話：(02) 2431-3131
分機 2590，傳真：(02) 2431-3161，Email: m7630@cgmh.org.tw