

Tourette Syndrome treated with Traditional Chinese Medicine

~ Analysis of heat patterns in 302 cases of Tourette Syndrome treated

with “Huang Lian Jie Du Decoction” ~

Author: Lin, Pao-hua

Advisors: Professor Y. Sieh

Professor J. Y. Li

Asso. Prof. H. K. Jian

Asso. Prof. J. C. Liu

For well over 100 years now since the condition was first documented, Tourette syndrome (TS) remains a difficult problem of modern neurological science. The symptoms of this disease may include involuntary motor and vocal tics, while the patients remain fully conscious of their surroundings.

This clinical research adopts the treatment of releasing heat and resolving toxins. Patients were administered “Huang Lian Jie Du Decoction,” adding other herbs based on the individual’s presenting signs and symptoms.

Five-hundred twenty-four (524) TS patients were treated from August 2004~February 2007. These clinical statistics excluded 11 patients with central nervous system disorders, such as Huntington's disease, Wilson’s disease, epilepsy, and brain tumors; 24 patients with mental disorders, such as obsessive-compulsive disorder, autism, and depression; 180 patients who were non-compliant in taking an adequate 30-day treatment dosage; and 7 patients who were treated with

a Traditional Chinese Medicine (TCM) method other than the Releasing Heat and Resolving Toxins method.

Accounting for the aforementioned exclusions, 302 patients were administered the “Huang Lian Jie Du Decoction,” exhibiting an efficacy ratio of 94.70% with 5.30% lacking treatment efficacy.

We separately analyzed two groups: one that only received TCM treatment and another that received a Chinese-Western integrated medicine approach.

The first group, the TCM group, accounted for 257 patients. Complete recovery occurred in 59 patients (22.96%), significant treatment efficacy in 157 patients (61.09%), some treatment efficacy in 29 patients (11.28%), and no treatment efficacy in 12 patients (4.67%). The total treatment efficacy ratio was 95.33%.

The second group, the Chinese-Western integrated medicine approach, accounted for 45 patients. Complete recovery occurred in 9 people (20.00%), significant treatment efficacy in 21 patients (46.67%), some treatment efficacy in 11 patients (24.44%), and no treatment efficacy in 4 patients (8.89%). The total treatment efficacy ratio was 91.11%.

According to the analysis of the “Chi-Square Test,” there was no significant variation between these two groups ($P>0.05$). It reveals that the treatment efficacy of the TCM group and the Chinese-Western integrated medicine group is the same.

Keywords: Tourette syndrome (TS), motor tic disorders, vocal tic disorders, dopamine.

1. Forward

It is commonly understood that in some children and adolescent TS patients symptoms will

decrease in severity or fully subside as they grow into adulthood. However, many of these children and adolescents are faced with extreme difficulty during their academic pursuits, social interactions, and emotional and personality development, while some even worry about the possibility of passing the disease on to their offspring.

Designing a laboratory experiment and using a small mammal to test the effects of Chinese herbal medicine treatment is unfortunately not realistically feasible. The symptoms of this disease are far too diverse, variable and uniquely manifested in each patient.

A clinical case study that presents the results of treating TS patients with Chinese herbal medicine over a standard three-month treatment regimen would also lack conclusiveness, because based on Western medical treatment experience after the symptoms of this disease subside for one or two months sudden attacks may recur or new symptoms may arise.

Is there proof that TCM can effectively treat TS? My objectives are the following: provide faster-acting and better treatment, treat as many cases as possible, limit adverse effects as much as possible, and actively conduct long-term follow-up studies to assess remission and recovery.

This clinical study on the treatment of TS uses classical TCM pattern identification, treatment determination along with the method of treating the root cause and the secondary symptoms concurrently. The patient's motor and vocal tics are considered "secondary symptoms," while the abnormal body constitution is the "root cause." From observing severe cases with symptoms of "extreme heat aversion with affinity for cold, restlessness, injurious behavior to others, incessant

beating of objects, head bashing against walls, abusive language, hyperactivity” to milder cases of “incessant eye-blinking, obscene language, shoulder shrugging, head nodding, and rolling up of the eyes” it is easy to realize that most TS cases are of a “replete heat” pattern. This is my reasoning for using the Releasing Heat and Resolving Toxins method, which focuses on treating the root cause with Huang Lian Jie Du Decoction while adding other herbs to treat the secondary symptoms⁽¹⁾⁽²⁾⁽⁵⁾.

2. Clinical Treatment (Materials and Method)

2.1 TS Features Treated in this Clinical Study

2.1.1 TS nervous system symptoms manifest as a single symptom or concurrent multiple symptoms^{(3) (4)}, such as “incessant eye-blinking, forehead wrinkling, lip biting, teeth display, nose wrinkling, head wagging, head nodding, head swaying, rapid finger jamming in nostrils, shoulder shrugging, repeated coughing, throat clearing, trembling hands, trembling feet, limp feet while walking as if about to fall down, exaggerated abdominal breathing, and contortion of the torso”.

2.1.2 TS emotional and mental symptoms manifest as a single symptom or concurrent multiple symptoms, such as “rolling up the whites of the eyes, grimacing, sticking out the tongue, spitting, rolling about on the ground, banging one’s head against the wall, pounding on tables, self mutilation, injurious behavior to others, beating on objects, tearing clothes with teeth, grabbing objects with hands and smelling, repeating words or phrases, mimicking other’s speech, obscene language, and vocal anomalies (violent shouting, barking, bird calls, duck calls,

monosyllabic utterances).

2.1.3 Severe cases of uncontrollable and unconscious emotional states, such as “irascible temperament, restlessness, defiant rebuttals, and obscene language.”

2.1.4 TS patients may have combined symptoms that further complicate the condition, such as combined obsessive-compulsive disorder, autism and depression⁽¹⁷⁾, Wilson’s disease⁽²⁰⁾, chronic oral mucous membrane sores, hallucinations, sleepwalking, bedwetting, frequent urination, cervical spondylolisthesis, rib separation from contortion of the body, coughing, rhinitis, aggressive behavior, and antisocial behavior.

2.2 Clinical Study Materials

2.2.1 TCM diagnostic interpretation: the Yellow Emperor’s Inner Classic describes a cranial nerve disease presenting with symptoms similar to TS and classifies it as a heat pattern⁽⁷⁾. The Su Wen Zhi Zhen Yao Da Lun 74 describes, “those exhibiting heat dizziness with muscle spasms are classified as fire pattern; those who flail and tremble as if they have lost their minds are classified as fire pattern; those with rebellious qi moving upwards are classified as fire pattern; and those with manic fits are classified as fire pattern.”

2.2.2 TCM treatment methods: administer a Release Heat and Resolve Toxins method⁽⁶⁾, avoiding herbal medicinals that have heat properties^{(8) (9) (10) (14) (16)}.

2.2.3 Main formula: Huang Lian Jie Du Decoction.

Individual case variations: select additional herbs based on each patient's unique symptoms^{(1) (5) (13)}.

2.2.5 Main herbs used: huangqin, huanglian, huangbo, zhizi, raw shigao, gancao, raw longgu, raw muli, raw daizheshi, raw cishi, longyanrou, fuling, zexie, zhimu, raw dihuang, shanzhuyu, jiangcan, xiezi, wugong, tianma, jiangbanxia, cangzhu, huashan, hongzao, jingmi, and chishao.

2.2.6 Pharmacodynamics briefly explained:

2.2.6.1 Replete heat: huangqin, huanglian, huangbo, zhizi, raw shigao, and gancao.

2.2.6.2 Calm the spirit: raw longgu, raw muli, raw daizheshi, raw cishi, longyanrou, fuling, and zexie.

2.2.6.3 Nourish yin: zhimu, shengdihuang, and shanzhuyu.

2.2.6.4 Expel wind: jiangcan, xiezi, wugong, tianma, and jiangbanxia.

2.2.6.5 Strengthen spleen: cangzhu, huashan, hongzao, and jingmi.

2.2.6.6 Dissolve stasis: chishao.

2.2.7 Type of herbal medicine: raw Chinese herbal medicinals—originating from China and Taiwan to ensure the best quality.

2.2.8 Administration of medicine:

2.2.8.1 Patients take the raw herbal medicinals home and cook them (decoct).

2.2.8.2 For children who can't tolerate bitter herbs, honey or sugar can be added after the raw herbal medicinals have been cooked to enhance the flavor.

2.2.8.3 In cases of mild TS, the prescription dosage should be reduced or the standard daily prescription dosage should be taken over a two or three day period.

2.2.8.4 Contraindicated foods: advise patients to avoid greasy, irritating and stimulating foods, such as alcohol, coffee, tea, cola, black pepper, and chili pepper.

2.2.8.5 Exercise: recommend that patients exercise in sunlight and work up a sweat.

2.3 Clinical Study Method

2.3.1 Study subject: clinical consultations meeting diagnostic criteria.

2.3.2 Diagnostic standard: Japan's Shapiro TS diagnostic criteria.

2.3.3 Key diagnostic criteria:

2.3.3.1 Onset presents before 21 years old;

2.3.3.2 Have at least 2nd degree motor and vocal tics;

2.3.3.3 Symptoms become chronic and last continuously for at least 2 months. Symptoms may fluctuate and new symptoms may arise either replacing or adding to previous symptoms.

2.3.4 Exclusion Criteria

2.3.4.1 Excluded those with choreas, Wilson's disease, epileptic muscle spasms, brain tumors and other extrapyramidal central nervous system disorders.

2.3.4.2 Excluded those with accompanying mental disorders, such as obsessive-compulsive disorders, autism, and depression.

2.3.4.3 Excluded those with symptoms arising from certain drugs (such as stimulants) or internal diseases (such as Huntington's disease, post-infectious encephalitis).

2.3.4.4 Excluded those who were non-compliant in taking an adequate 30-day treatment dosage due to the difficulty in determining the efficacy of TCM treatment.

2.3.5 Treatment Efficacy Evaluation:

2.3.5.1 Treatment efficacy evaluation calculation method:

Evaluation of efficacy was based on ratios determined by the difference in symptoms prior to treatment and after treatment. Statistical “pre-treatment” quantifiers consisted of tic quantity, frequency, intensity, complexity, and degree of interference with daily life. Attending Physicians assigned each of these quantifiers a baseline of 1 (100%) representing the degree of intensity of the symptoms prior to treatment. Post-treatment quantifiers included the same (tic quantity, frequency, intensity, complexity, and degree of interference with daily life) and were reduced as a percentage (%) from the original pre-treatment baseline of 100%.

2.3.5.2 Duration of treatment regimen statistics for each patient:

TS often has both recurring symptoms and newly arising symptoms that may either go into remission or resolve in complete recovery and an extended period of time must be allowed for follow-up studies and confirmation. Thus, this clinical study has adopted a policy of “having the patient personally determine the state of one’s own condition and decide upon the duration of one’s own treatment regimen”. Patients are not forced to partake in treatment. The doctor begins recording data on the patient’s first consultation and ends on the individual’s final consultation. For those patients whose treatment has continued to the end of the study, statistical data are provided up until February 28, 2007.

2.3.5.3 Treatment efficacy evaluation divided into four levels:

2.3.5.3.1 Complete recovery: symptoms resolve, reduction rate 75%;

2.3.5.3.2 Significant efficacy: most symptoms resolve, reduction rate 50%;

2.3.5.3.3 Some efficacy: symptoms reduced, reduction rate 30%;

2.3.5.3.4 No efficacy: no change in symptoms, reduction rate < 30%.

2.3.5.3.5 Total efficacy: (complete recovery + significant efficacy + some efficacy) *100%.

3. Results and Analysis

3.1 Results

3.1.1 Data Excluded and Included in this Clinical Study:

3.1.1.1 Duration of TS clinical study: from August 2004~February 2007

3.1.1.2 Total amount of TS consultations: 524 people (100%). (Attachment A)

3.1.1.3 Excluded patients with choreas, Wilson's disease, epileptic muscle spasms, brain tumors and other extrapyramidal central nervous system disorders: 11 people (2%).

3.1.1.4 Excluded patients with accompanying mental disorders, such as obsessive-compulsive disorders, autism, and depression: 24 people (5%).

3.1.1.5 Excluded patients who were non-compliant in taking a complete 30-day treatment dosage because of the difficulty in determining the efficacy of the TCM treatment for these patients: 180 people (34%).

3.1.1.6 Excluded patients that were treated with the Releasing Heat and Resolving Toxins method, but were administered Chinese herbal medicine prescriptions other than Huang Lian Jie Du Decoction (with supplemented herbs): 7 people (1%).

3.1.1.7 Patients who matched two or more of the four exclusion categories above were only counted under one item. Priority was given in the order of the four exclusion categories listed above.

3.1.1.8 This clinical study used the Releasing Heat and Resolving Toxins method to treat patients: 302 people (58%). (Attachment B)

3.1.1.9 Gender analysis of this clinical study using the Releasing Heat and Resolving Toxins method: males 264 people (87%) and females 38 people (13%).

3.1.2 Releasing Heat and Resolving Toxins Method: TCM Group and Chinese-Western Integrated Medicine Group Statistical Analysis

3.1.2.1 Efficacy Statistics and Analysis of 302 Cases

Of the 302 patients who were administered with either TCM treatment or Chinese-Western integrated medicine treatment, statistical analysis showed a total efficacy ratio of 94.70%., while 5.30% lacked treatment efficacy. Of these, 68 patients experienced complete recovery, constituting 22.52%; 178 showed significant efficacy, constituting 58.94%; and 40 with some efficacy, constituting 13.25%. (Table 1)

Table 1.302 Efficacy Statistics

| | Complete recovery | Significant treatment efficacy | Some treatment efficacy | No treatment efficacy | Total |
|----------------------------------|------------------------------|---|--|----------------------------------|--------------|
| Patients | 68 | 178 | 40 | 16 | 302 |
| Treatment percentages | 22.52% | 58.94% | 13.25% | 5.30% | |

The 257 cases that constituted the TCM treatment group showed a total efficacy of 95.33%, while 4.67% lacked treatment efficacy (Table 2). The 45 cases that constituted the Chinese-Western integrated medicine treatment group, where the administration of Western medicine was discontinued as soon as possible, total efficacy was 91.11%, while 8.89% lacked treatment efficacy (Table 3). The Chi-Square Test showed no significant variation between these two groups ($P>0.05$). It reveals that the treatment efficacy of the TCM group and the Chinese-Western integrated medicine treatment group is the same.

Table 2.257 TCM Treatment Group Efficacy Statistics

| | Complete recovery | Significant treatment efficacy | Some treatment efficacy | No treatment efficacy | Total |
|--|------------------------------|---|--|----------------------------------|--------------|
|--|------------------------------|---|--|----------------------------------|--------------|

| | | efficacy | efficacy | | |
|-----------------------------|---------------|---------------|---------------|--------------|----------------|
| Patients | 59 | 157 | 29 | 12 | 257 |
| Treatment percentage | 22.96% | 61.09% | 11.28% | 4.67% | 100.00% |

Table 3.45 Chinese-Western Integrated Medicine Treatment Group Efficacy Statistics

| | Complete recovery | Significant treatment efficacy | Some treatment efficacy | No treatment efficacy | Total |
|-----------------------------|-------------------|--------------------------------|-------------------------|-----------------------|----------------|
| Patients | 9 | 21 | 11 | 4 | 45 |
| Treatment percentage | 20.00% | 46.67% | 24.44% | 8.89% | 100.00% |

Table 4 TCM Treatment Group and Chinese-Western Integrated Medicine Treatment Group X²

Evaluation

| Category | Complete recovery | Significant treatment efficacy | Some treatment efficacy | No treatment efficacy | Total | X ² | P |
|--|-------------------|--------------------------------|-------------------------|-----------------------|------------|-----------------|-----------------|
| TCM group | 59(22.96%) | 157(61.09%) | 29(11.28%) | 12(4.67%) | 257 | 6.737023 | >0.05 |
| Chinese-Western integrated medicine group | 9(20.00%) | 21(46.67%) | 11(24.4%) | 4(8.89%) | 45 | | |
| Total | 68(22.52%) | 178(58.94%) | 40(13.25%) | 16(5.29%) | 302 | | |

3.1.2.2 Course of Disease Treatment Efficacy Analysis

We divided the course of disease into 4 periods (under 1 year, 1~5 years, 5~10 years and over 10 years) and then conducted analysis (Table 5). Results showed that the “under 1 year” period had the highest complete recovery ratio, reaching 31.71%, but the Chi-Square Test showed no

significant variation ($P>0.05$), which could be attributed to the small quantity of samples. In the future, I intend to conduct further analysis on a larger sample group.

Table 5 Course of Disease Treatment Efficacy Analysis

| Treatment duration | Complete recovery | Significant | Some | No treatment efficacy | Total | X ² | P |
|--------------------|-------------------|--------------------|--------------------|-----------------------|------------|----------------|-------|
| | | treatment efficacy | treatment efficacy | | | | |
| 1 year and < | 26 (31.71%) | 46(56.09%) | 7(8.54%) | 3(3.65%) | 82 | 15.13498 | >0.05 |
| <5 years | 25(18.66%) | 88(65.67%) | 14(10.45%) | 7(5.22%) | 134 | | |
| <10 years | 8(18.18%) | 22(50.00%) | 11(25.00%) | 3(6.82%) | 44 | | |
| >10 years | 8(19.05%) | 23(54.76%) | 8(19.05%) | 3(7.14%) | 42 | | |
| Total | 69(22.18%) | 177(59.27%) | 40(13.25%) | 16(5.30%) | 302 | | |

3.1.2.2 Course of Treatment Efficacy Analysis

Within this group, the shortest treatment course resulting in treatment effectiveness was 9 days and the longest was 850 days (2 years 4 months). We divided the treatment course into 3 periods (under 1 year, 1~2 years, and over 2 years) and then conducted analysis (Table 6). Various treatment courses showed significant variation in efficacy ratios ($P<0.05$). The “over 2 year” period showed the best results (significant treatment efficacy or higher constituting 100.00%), while the next best results were in the “1~2 year” period showing significant treatment efficacy (significant treatment efficacy or higher constituting 92.26%). These results indicate that the longer the treatment period the better the efficacy. For complete recovery, the “1~2 year” treatment period showed the best results, indicating that in the clinical treatment process 2 years is a comparatively more appropriate period. There was no significant divergence between gender and total treatment efficacy.

Table 6 Course of Treatment Efficacy Statistics

| Treatment duration | Complete recovery | Significant treatment efficacy | Some treatment efficacy | No treatment efficacy | Total | X2 | P |
|--------------------|-------------------|--------------------------------|-------------------------|-----------------------|------------|----------|-------|
| 1 year and under | 48 (19.59%) | 146(59.59%) | 36(14.69%) | 15(6.12%) | 245 | 15.18771 | <0.05 |
| 1-2 years | 20(42.55%) | 22(46.81%) | 4(8.51%) | 1(2.13%) | 47 | | |
| Over 2 years | 2(20.00%) | 8(80.00%) | 0(0.00%) | 0(0.00%) | 10 | | |
| Total | 70(23.18%) | 176(58.28%) | 40(13.25) | 16(5.29%) | 302 | | |

Table 7 Course of Treatment Total Efficacy Statistical Analysis

| Treatment duration | 1 year and < | 1-2 years | 2-3 years | Total | X2 | P |
|--------------------|--------------|-----------|-----------|------------|----------|-------|
| Efficacy | 230 | 46 | 10 | 286 | 1.958267 | >0.05 |
| No efficacy | 15 | 1 | 0 | 16 | | |
| Total | 245 | 47 | 10 | 302 | | |

3.1.2.3 Age Group Efficacy Analysis

Analysis was conducted on 302 cases based on children (0~7 years of age), adolescents (8~18), and adults (19 and over) (Table 8). There was no significant variation in treatment efficacy for the various age groups ($P>0.05$), showing that TCM treatment is appropriate for treating patients of all ages.

Table 8 Age Group Efficacy Statistics

| Age | Complete recovery | Significant treatment | Some treatment | No treatment efficacy | Total | X2 | P |
|-----|-------------------|-----------------------|----------------|-----------------------|-------|----|---|
|-----|-------------------|-----------------------|----------------|-----------------------|-------|----|---|

| | | efficacy | efficacy | | | | |
|----------------|------------|-------------|------------|-----------|-----|----------|-------|
| 0-7 years | 12(24.00%) | 32(64.00%) | 4(8.00%) | 2(4.00%) | 50 | 2.212105 | >0.05 |
| 8-18 years | 50(22.22%) | 131(58.48%) | 31(13.84%) | 12(5.36%) | 224 | | |
| 19 years and > | 6(21.43%) | 15(53.57%) | 5(17.86%) | 2(7.14%) | 28 | | |
| Total | 68(22.52%) | 178(58.94%) | 40(13.24%) | 16(5.30%) | 302 | | |

3.2. Analysis

3.2.1 TCM Provides Effective Treatment of TS:

The first group (using Chinese herbal medicine with no Western medicine) constituted a clinical efficacy of approximately 83% (251/302), also a very high efficacy ratio, exhibiting that TCM can treat a majority of TS cases on its own.

3.2.2 Treatment of Patients with Comorbidities Comparatively Difficult:

There were 35 patients with comorbidities, constituting 6.7% (35/524), including choreas, Wilson's disease, epileptic muscle spasms, and brain tumors; and mental disorders, such as obsessive-compulsive disorder, autism, and depression. Treatment for these patients is comparatively more complicated.

3.2.3 Patients Intolerable to Bitter Taste of Herbal Decoctions

The bitter taste of herbal decoctions can be difficult to tolerate for some. There were 180 patients, constituting 34% (180/524), whom merely received one consultation or did not take the Chinese herbal medicine for at least 30 days. These patients were categorized as those who gave up on this clinical treatment method.

4. Discussion

4.1 Difficulties in Evaluating TS Diagnostic Criteria ⁽¹¹⁾⁽¹²⁾⁽¹⁵⁾:

TS patients constitute a very small number of the overall population, and the majority of medical professionals do not possess a clear understanding of this disease. There are significant differences between what are recognized as mild and severe TS conditions and the diagnostic criteria (e.g. normal values) are difficult to evaluate; thus evaluation tends to lack objectivity. It is not a simple matter to classify TS into standardized indices like the Glasgow Coma Scale (GCS), for instance.

4.2 Head Shaking and Head Swinging are Dangerous Symptoms:

Patients may develop sore necks due to involuntary thrusting of their heads to the sides or swinging their heads from front to back. This type of violent jerking motion can injure cervical vertebral nerves and cause ventral (abdominal) nerve damage and muscle atrophy.

4.3 TCM Treatment Allows Children to Excel in School:

Western medical treatment of TS may cause adverse effects, such as cognitive dulling which may render the patient unable to succeed academically and may even cause mental disorders, such as delirium, mania, and obstinacy ⁽⁴⁻²⁾. Chinese herbal medicine treatment does not lead to cognitive dullness, but does enable patients to make psychological, emotional, and mental progress that will help provide a sense of well-being, a focused attention, and academic progress.

5. Conclusion

The results of this clinical study conclude the following:

5.1 Using the Releasing Heat and Resolving Toxins method to treat TS resulted in a total efficacy ratio of 94.7%. Using only Chinese herbal medicine treatment resulted in an efficacy ratio of 95.33%. Using Chinese-Western integrated medicine treatment resulted in an efficacy ratio of 91.11%. These results demonstrate that Chinese herbal medicine can effectively treat TS.

5.2 In this case study group, the shorter the course of disease the better the treatment efficacy; however, there is no statistical significance, thus further analysis will be conducted on a larger sample group in the future.

5.3 Chinese herbal treatment of TS showed that the longer the treatment period the better the treatment efficacy, with a 2 year treatment period showing the best efficacy.

5.4 There is no relationship between the patients' age and the efficacy of Chinese herbal treatment of TS.

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7. Author and Academic Advisor Biographical Notes

7.1. Author: Lin, Pao-hua

- (1) Work: Taiwan, 241, Taipei County, Sanchong City, Lin, Pao-hua Chinese Medical Clinic
- (2) Contact: Taiwan 24162 Taipei County, Sanchong City, Chongcheng North Road, No.218 1st Floor
- (3) Telephone: 886 - 229889212
- (4) Fax: 886 – 229717276
- (5)E-mail : lph218@ms18.hinet.net

7.2 Academic Advisors

- (1)Yan Shi: Vice - president Professor of Liaoning University of Traditional Chinese Medicine.
- (2)Chen-yr Lee: Professor of Liaoning University of Traditional Chinese Medicine.
- (3)Yung-hsiao Chiang : Associate Professor of National Defense University in Taiwan.
- (4)Hahn-guang Jiang: Associate Professor of National Defense University in Taiwan.
- (5)Chi-tsang Liu: Associate Professor of China Medical University in Taiwan.

[Appendix]

8. Author's Academic Background and Research on TS Experience

8.1 Academic Background:

- (1) Born 1955; in Taiwan, R.O.C.; male
- (2) Graduate of Taiwan Provincial Hsinchu Teacher's College
- (3) 1982 passed the Examination Yuan Chinese Medicine Special Examination
- (4) Received a Master's from Liaoning Chinese Medicine University in 2004
- (5) Founded the Lin Pao-hua Chinese Medical Clinic; Attending Physician (1985~present)
- (6) Taipei County Traditional Chinese Medicine Doctor's Association; Honorary President (2003~present)

8.2 Specialization: Traditional Chinese Medicine Neurology—Internal Medicine

8.3 Medical writings: “Angel’s Grimace~Chinese Medicine Treatment of Tourette Syndrome,” Taipei, Shuchuan Publishing, 2006.

8.4 Published papers:

- (1) “Study on the treatment of 251 Tourette syndrome cases of cranial nerve motor dysfunctions and cognitive disabilities using traditional Chinese medicine” (published in the July 2006 Chinese-Western Integrated Medicine Neurological Association Journal Volume 1 Issue 2 and the Liaoning Chinese Medicine University Academic Journal.
- (2) Traditional Chinese medicine treatment of 30 cases involving vocal tics in Tourette syndrome (published in the January 2006 Chinese-Western Integrated Medicine Neurological Association Journal)

8.5 Lectures:

- (1) December 24, 2006 at the Taiwan Clinical Medicine Association sponsored lecture “Chinese Herbal Medicine Decoctions in the Clinical Application of Neuropathies.”
- (2) September 24, 2006 at the Taipei City Traditional Chinese Medical Physician’s Association sponsored lecture “2006 Chinese Herbal Medicine Academic Symposium” on “335 Tourette Syndrome Cases: Clinical Diagnosis and Treatment Experience.”

8.6 Media coverage reports on Dr. Lin Pao-hua’s TS treatment:

- (1) On September 25, 2006, United Daily News, China Daily News, Taiwan News, People’s Daily News, Liberty Times, and Apple Daily News reported on Dr. Lin Pao-hua’s success in the treatment of Tourette syndrome.
- (2) On September 24, 2006, China Television Company, Chinese Television System, and Da-Ai Television stations reported on Dr. Lin Pao-hua’s success at treating Tourette syndrome.
- (3) On January 9, 2006, Taiwan New Life, Apple Daily, and Liberty Times reported on Dr. Lin Pao-hua’s treatment of vocal tics in Tourette syndrome.

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