

The Diagnostic Correlation Between a Visible Nodule at Shenmen HE-7 and Anxiety

Abstract

Channel palpation is a classical diagnostic technique that is described in the *Huang Di Nei Jing* (The Yellow Emperor's Internal Classic). This diagnostic method, however, was slowly discarded over time due to a growing sense of conservatism in the upper echelons of society. Today channel palpation has been enjoying a revival due to the work of the late Wang Ju-Yi and his students. In channel palpation one skims along the 14 major channels with the inner aspect of the thumb to identify a wide array of possible channel changes (abnormalities) such as: changes in muscle texture, differences in temperature and moisture, and nodules. Based on their nature, these channel changes have been correlated with symptoms and Chinese medicine patterns. Although these findings have been substantiated by clinical experience and results, little formal research has been done to confirm these findings.

While most channel changes must be discovered through palpation, there are some that can be seen with the naked eye. Among these is a large nodule at Shenmen HE-7 that can be seen with the proper manipulation of a patient's wrist. Prior research has not associated this nodule with any specific condition, although the clinical experience of Wang Ju-Yi and his students has suggested that it may be related to heightened levels of anxiety. Anxiety, though a commonly occurring emotion, can become a psychological disorder when it becomes constant. Anxiety disorders are the most prevalent psychological disorders in the world. While anxiety disorders are not always easy to diagnose, psychometrics like the GAD7 questionnaire have been found useful in diagnosing generalised anxiety disorder.

This article presents research that examined the diagnostic relationship between a visible nodule at the acupuncture point Shenmen HE-7 and anxiety. Three cohorts were tested, two of which consisted of university students and one of inpatients at a Chinese medicine hospital cardiology ward. In all three cohorts, the area of Shenmen HE-7 was checked in each individual to see if the visible nodule was present, after which they were given the GAD7 questionnaire to determine the severity of their anxiety. When all of the data was compiled using statistical software, the GAD7 scores of subjects with the visible nodule at Shenmen HE-7 were compared with those of subjects who did not have the nodule using an independent t-test. A statistically significant ($p < 0.05$) relationship between the visible nodule at Shenmen HE-7 and anxiety was found. The effect size of the relationship was found to be large ($D > 0.8$). This research suggests that there is a correlation between the visible nodule at Shenmen HE-7 and anxiety.

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Keywords:
Chinese medicine, acupuncture, channel palpation, Shenmen HE-7, anxiety, channel theory, channel changes, acupuncture channels, meridians.

Introduction

Although not necessarily referred to as such, lines discussing channel palpation, are littered throughout the classic texts of Chinese medicine. The most explicitly detailed description is in Chapter 75 of the *Ling Shu* (Divine Pivot), which states:

Before using needles one must first scrutinize the channels to determine excess or deficiency. One must separate and palpate. One must press and pluck. Observe how the channel responds and moves before continuing.¹

This line is clearly emphasising the importance of physically palpating the channels to determine their state of excess and deficiency before beginning treatment. In chapter 12 of the *Ling Shu*, the five basic techniques of channel palpation are listed:

Examine, separate, follow, feel and press, notice where they [channels] are hot or cold, flourishing or in decline and then adjust them.¹

Thus it is stated that by palpating the channels one is able to discern the condition of the body. The word 'follow' in this line is a translation of the character 循 (xun) which denotes a meaning of moving along a pathway.^{1,2} This is the primary technique used to examine the channels and is done by gliding the inner aspect of the thumb along the channel.

The Heart channel and the nodule at Shenmen HE-7

The hand shao yin Heart channel has seen a lot of changes in the past two thousand years. Originally having no acupuncture points on its pathway (as stated in the *Ling Shu*), the practitioner was compelled

to go through the hand jue yin Pericardium channel to interact with the Heart organ and its functions.² It was not until Huang Fu-Mi's *Zhen Jiu Jia Yi Jing* (Systematic Classic of Acupuncture and Moxibustion) that the Heart channel was given eight acupuncture points.³ Even then it was only in the Northern Song dynasty (960 – 1127 C.E.) that Qingling HE-2 was added, forming the nine acupuncture points with which we are familiar today.⁴ Of the nine acupuncture points on the Heart channel, Shenmen HE-7 has probably been used and researched the most. Yuan-source point of the Heart channel, stimulating Shenmen HE-7 has been shown to have a wide range of physiological effects including: influencing heart rate, improving the mental faculties of patients with Alzheimer's and dementia, benefiting patients with arteriosclerosis, and it has also been used in the treatment of insomnia and anxiety.⁵⁻¹⁰

The nodule can come in all different shapes and sizes, from that of a green pea to that of a U.S. nickel.

In regards to channel palpation, the area between Shenmen HE-7 and Lingdao HE-4, although only 1.5 cun in length, can show a variety of channel changes. Wang Ju-Yi suggests that channel changes in this area may be associated with conductivity problems in the heart, insomnia, memory problems, heart blood deficiency, issues with microcirculation in the brain, etc.¹¹ One of these channel changes is a visible nodule at Shenmen HE-7. According to Wang Ju-Yi there are five types of nodules that can be found during channel palpation. Of these five, the visible nodule found at Shenmen HE-7 is the most bubble-like. To examine whether a patient has this nodule at Shenmen HE-7, the practitioner needs to grab and slightly extend the patient's wrist to stretch the skin at Shenmen HE-7. This action will reveal the nodule. In most circumstances the visible nodule at Shenmen HE-7 can be pushed and slightly displaced with palpation and feels as if it is full of fluid; it is not hard, fixed and unmovable. The nodule can come in all different shapes and sizes, from that of a green pea to that of a U.S. nickel. There can be just one nodule, or there can be a cluster of two or three. This nodule may seem similar to that of a ganglion cyst or a rheumatoid nodule (both of which are not considered channel changes in the method taught by Wang Ju-Yi) though these greatly differ in frequency, origin and location.^{1,12,13} This type of nodule is normally found where the skin is thin, for example on the wrist and near the carpal or tarsal bones, for instance at Taibai SP-3, Shugu BL-65, Jinggu BL-64, Yangu SI-5, Shenmen HE-7 and Lieque LU-7.¹¹ What makes this nodule different from other channel changes is that it is visible, while most

other channel changes are felt by palpating the tissue under the skin. Besides its visible nature, the nodule is also convenient to study in the clinic because it does not require the patient to disrobe and can be easily found by those without extensive training.

Anxiety

Anxiety is a common emotion that anyone can encounter, but for some it can become a pervasive condition that affects daily activities. In such cases anxiety can manifest as a psychological disorder.¹⁴ In biomedicine, anxiety disorders are categorised into several diagnoses including generalised anxiety disorder (GAD), panic disorder, obsessive-compulsive disorder (OCD), post-traumatic stress disorder (PTSD) and social anxiety disorder.¹⁵ According to the World Health Organisation (WHO), one in 13 people suffers from anxiety disorders, making it the most prevalent psychological disorder.¹⁶ In the U.S., statistics have shown that about 40 million people live with an anxiety disorder: 18 per cent of the population.¹⁶ Only eight per cent of people with an anxiety disorder are children, although most sufferers will begin to show symptoms before the age of 21.¹⁶

Generalised anxiety disorder is characterised by excessive anxiety and worry that has persisted for over six months and has affected a person's health, work, social interactions and daily activities. The symptoms of generalised anxiety disorder include restlessness, fatigue, poor memory, difficulty concentrating, irritability, rigid musculature, difficulty controlling worry and insomnia.¹⁴ Recent developments in psychometrics have aided practitioners in diagnosing GAD. The self-report questionnaire GAD7 has been shown to be effective in the diagnosis of anxiety disorders, especially GAD. It was found that the GAD7 has an 89 per cent sensitivity and 82 per cent specificity in regard to clinically diagnosing GAD.¹⁷ The seven-item questionnaire asks subjects about their feelings of anxiety over a two-week period. Each of the seven questions has a number, from zero to three, associated with the frequency of the anxiety-related action. The test is scored on a possible scale of zero to 21 points; the higher the score the more anxious the subject. A score of zero to four represents no anxiety, a score of five to nine represents slight anxiety, 10 to 14 mild anxiety, and 15-21 severe anxiety. Subjects who score 10 points or higher are likely to have GAD, although this should be further clarified by a mental health professional.¹⁸

In orthodox medicine, anxiety disorders are associated with a lack of balance in emotional centres in the brain. These emotional centres are known as the limbic system, an ancient region of the brain that developed much earlier than the prefrontal cortex, and which includes the insular cortex and cingulate cortex.¹⁹ The limbic system is also responsible for managing the sensory, affective and cognitive aspects of pain and mediates

information regarding the internal bodily state. The interplay of the limbic system and neurotransmitters such as gamma-aminobutyric acid (GABA) form the modern understanding of how emotion is regulated in the body.²⁰

In Chinese medicine, psychological well-being is associated with the state of the seven emotions and the internal organs. The *Yellow Emperor's Internal Classic* (*Huang Di Nei Jing*) listed seven basic emotions that are directly related to a specific internal organ. Emotions are said to affect the qi and blood of the body, with excessive emotions capable of causing illness and in extreme cases physically damaging the internal organs.²¹ While each emotion is associated with an organ, the Heart is the primary mediator of all seven emotions in the body. In the *Lei Jing* (Classified Classic) it is stated that all emotional damage, although associated with one of the five yin organs, originates from the Heart.²²

Method

My original doctoral thesis set out to investigate the relationship between the nodule at Shenmen HE-7 and chronic heart failure. It was found that chronic heart failure patients at the Jiang Su Province Chinese Medicine Hospital cardiology ward often presented with the visible nodule at Shenmen HE-7 (Appendix A). With Shenmen HE-7 being the yuan-source point of the Heart channel and chronic heart failure patients often presenting with signs of Heart yang deficiency, it seemed like a promising hypothesis that there was a relationship between Heart yang deficiency and the nodule. This hypothesis was quickly challenged when it was found that young women who had no signs of chronic heart failure or Heart yang deficiency also frequently presented with this nodule (Appendix B). As mentioned above, despite Wang Ju-Yi being aware of this visible nodule at Shenmen HE-7, he never specifically denoted what it represented in terms of Chinese medicine physiology.¹¹ In *Applied Channel Theory in Chinese Medicine* he states that most emotional problems are reflected as channel changes on the hand jue yin Pericardium channel, with the exception of anxiety which is found on the hand shao yin Heart channel.¹ Due to these factors, my research question changed to explore the relationship between the nodule and anxiety.

To test the relationship between the visible nodule at Shenmen HE-7 and anxiety, three cohorts were analysed. Two of the cohorts consisted of a total of 81 students from the Nanjing University of Chinese Medicine International School. The first cohort (40 students) was tested in March 2018, while the second cohort (41 students) was tested in June 2018. There was no crossover of subjects between the two cohorts. The third cohort was made up of 43 inpatients from the Jiang Su Province Chinese Medicine Hospital cardiology ward, which was also tested in June 2018.

All of the three cohorts were analysed in the same manner. After agreeing to participate in the study the

subjects had their Shenmen HE-7 acupuncture points examined. This was done by taking the subject's wrist with one hand and extending their wrist with the other hand to expose the Shenmen HE-7 area. The experimenter then determined whether or not the visible nodule was present. This determination was based on the following two criteria:

Most emotional problems are reflected as channel changes on the hand jue yin Pericardium channel, with the exception of anxiety which is found on the hand shao yin Heart channel.

The nodule must be visible with the naked eye and located in the area of Shenmen HE-7, defined as: between the flexor carpi ulnaris tendon and the flexor digitorum superficialis tendon, between the ulnar artery and the lateral edge of the pisiform bone, in the joint space between the ulna and the carpal bone.¹¹

The visible nodule must be found bilaterally, though the characteristics of each nodule on either hand may differ.

If the subject presented with a nodule that adhered to both criteria, they were marked as having the visible nodule at Shenmen HE-7. After having their wrists assessed, all of the subjects were given the GAD7 questionnaire to determine the severity of their anxiety. In addition, the cardiology ward subjects also had their primary diagnosis as noted by their attending physician recorded. After the GAD7 questionnaire had been completed the experimenter entered all of the data into the statistical software SPSS 22, after which several statistical tests were conducted. An independent t-test was conducted to compare the groups with and without the nodule in all three cohorts in relation to their GAD7 score. Afterwards a p-test was done to confirm whether or not the result was statistically significant. If the result of the p-test was less than 0.05, and therefore statistically significant, a Cohen's D was calculated to determine the effect size of the relationship.

Results

The results of this research are recorded in Tables 1 to 4.

Nodule	N	Average	SD
GAD7 Score Nodule Present	35	7.4286	5.43023
No Nodule	46	3.7174	3.78102

Table 1: International student cohort - GAD7 score average and nodule chart

Statistical Tests	Result
T-Test	3.624888
Degrees of Freedom	79
P-test	0.000510
Cohen's D	0.81566

Table 2: International student cohort - GAD7 Score and nodule t-test chart

Nodule	N	Average	SD
GAD7 Score Nodule Present	29	5.1724	4.78889
No Nodule	14	2.7143	5.22462

Table 3: Cardiology ward cohort - GAD7 score average and nodule chart

Statistical Tests	Results
T-Test	1.484854
Degrees of Freedom	23.861499
P-Test	0.150675

Table 4: Cardiology ward cohort - GAD7 score and nodule t-test chart

The results of the 81 subjects from the combined international student cohort showed that the average GAD7 scores of the 35 (43 per cent) subjects with a visible nodule at Shenmen HE-7 were about twice as high as the 46 (57 per cent) subjects who did not present with the nodule. The relationship between the visible nodule at Shenmen HE-7 and GAD7 scores in the combined international student cohort was found to be statistically significant ($p < 0.05$). The Cohen's D, calculating the size of effect of the relationship, was found to be large ($D > 0.8$). The difference between the GAD7 scores of subjects with the visible nodule at Shenmen HE-7 and subjects without the nodule in the cardiology ward cohort was also large, although the result was found to be not statistically significant ($p > 0.05$).

With this binding of qi and blood, the spirit, which is said to reside in the blood, stagnates.

The international student cohort's results suggest that there is a relationship between the visible nodule at Shenmen HE-7 and anxiety. People with the visible nodule at Shenmen HE-7 may be more likely to have a higher GAD7 score than those without the nodule. The large effect size suggests that this relationship is strong.²³ In the cardiology ward cohort, although there was a large disparity in GAD7 scores between subjects with the visible nodule at Shenmen HE-7 and subjects without, the result was not statistically significant. This is most likely due to several extraneous variables that impeded the experiment.

First, due to the advanced age and poor eyesight of the cardiology patients, the vast majority of subjects had to have the experimenter read out the questions and aid the subject in choosing the appropriate response. Second, the subjects seemed unfamiliar with psychometrics and did not understand how Likert scales worked. In comparison, the international student cohort subjects had no problem whatsoever with filling out the GAD7 questionnaire. Considering these factors, the results of the independent t-test examining the relationship between the visible nodule at Shenmen HE-7 and GAD7 scores should be deemed invalid.

In the combined international student cohort, it was found that 16 (20 per cent) of the 81 subjects scored 10 points or higher on the GAD7 questionnaire. According to the guidelines of the GAD7 those who score 10 points or higher are suspected to have GAD.¹⁷ This figure is similar to the finding that 18 per cent of the population in the United States suffers from an anxiety disorder.¹⁶ Of the 16 subjects with a GAD7 score over 10, 75 per cent presented with the visible nodule at Shenmen HE-7. In contrast only 35 per cent of the subjects who scored nine points or lower on the GAD7 presented with the nodule. This further supports the theory that there is a relationship between the visible nodule at Shenmen HE-7 and anxiety.

While the relationship between the visible nodule at Shenmen HE-7 and GAD7 scores in the cardiology ward cohort was not found to be statistically significant, there was another interesting finding. Of the 43 subjects in the cohort, six had chronic heart failure. All six subjects with chronic heart failure showed the visible nodule at Shenmen HE-7. The relationship, however, could not be deemed statistically significant due to the lack of subjects. This suggests that with a larger population size the hypothesis that there is a correlation between chronic heart failure and the visible nodule at Shenmen HE-7 may be viable. Further research is needed to assess this correlation and discern how the nodule that denotes anxiety may be different from the nodule associated with chronic heart failure.

Discussion

While there is an apparent relationship between the visible nodule at Shenmen HE-7 and anxiety, it would most likely be incorrect to state that the nodule has a one to one relationship with anxiety. It is more likely that anxiety is a byproduct of what is being reflected on the channel system. Wang Ju-Yi knew of this nodule's existence but never specified what it represents in regard to Chinese medical pathophysiology.¹¹ Anxiety from a Chinese medical standpoint falls into the realm of the seven emotions. These seven emotions affect the qi mechanism of the entire body, and if extreme can cause disease and even damage the internal organs.

As Wang Ju-Yi has documented, the majority of channel changes related to psychological issues predominantly

appear on the hand jue yin Pericardium channel and not the Heart channel.' This is due to the Pericardium's function of managing the excesses of the Heart. If so, why would anxiety appear on the hand shao yin Heart channel? Of the seven emotions anxiety is most closely related to the concept of 思 (si), which can be translated as pensiveness. Although pensiveness is traditionally associated with the Spleen, in *Su Wen* (Basic Questions) chapter 39 it is stated that pensiveness is held in the Heart and is associated with the spirit* (神, shen; '思则心有所存, 神有所归'.)²¹ *Ling Shu* chapter 8 goes on to further remark that those who are excessively pensive damage their spirit.² While pensiveness is a normal emotion, when it becomes excessive it begins to affect internal physiology, causing qi to bind. Qi is said to be the commander of blood, while blood is the mother of qi. When the qi becomes bound, the blood will stagnate. With this binding of qi and blood, the spirit, which is said to reside in the blood, stagnates. Being unable to flow properly through the body via the blood, the spirit is unable to properly gather information about the internal and external environment. This distortion of perception leads to anxiety. Because the Heart is said to control the blood and hold the spirit, it is greatly affected by this type of binding of qi. The visible nodule at Shenmen HE-7 may therefore be the physical manifestation of the excessive binding of qi in the Heart blood.

From a biomedical standpoint, it is much more difficult to determine how and why this nodule can reliably appear when a person has anxiety. Conducting an examination on the fluids found within the nodule may begin to explain its origin. Acupuncture, and even more so the channel system that it mediates, is still very much a mystery to modern science. Further research into channel palpation and its diagnostic findings may provide a path to deepen our understanding of the subject.

The inherent weakness of this study lies in the nature of self-reporting psychometrics. While the GAD7 questionnaire has been shown to be an effective diagnostic tool in predicting GAD,¹⁸ several factors may inhibit the subject from selecting the most accurate response. As seen in the cardiology ward cohort, certain populations may find it difficult to comprehend psychometrics and Likert scales, which may jeopardise the validity of the results. In other cases, certain subjects may be unwilling to divulge their current level of anxiety or even misconstrue their own behaviour. In regard to examining the visible nodule at Shenmen HE-7, as long as the experimenter properly manipulates the wrist and has some experience in identifying the nodule, the process is relatively reliable. Greater cohort sizes could have provided more definitive results.

Channel palpation lies at the heart of classical acupuncture, originating from the *Yellow Emperor's Internal Classic*, and is a diagnostic method used to determine the state of the channels and their associated organs.¹ While there are several resources describing the theoretical and clinical benefits of channel palpation, there has been very little research to verify these claims in a research setting. This study was designed to investigate the relationship of the visible nodule found at Shenmen HE-7 to anxiety. This nodule is unique in that it can be viewed by the naked eye when the subject's wrist is properly manipulated, as opposed to requiring to be palpated. This makes this nodule easy to study. Although somewhat similar in appearance to ganglion cysts and rheumatoid nodules, the visible nodule at Shenmen HE-7 differs in frequency and its bilateral nature.^{12,13} While the modern innovator of channel palpation, the late Wang Ju-Yi, never established what this specific nodule clinically represents, he stated that anxiety is reflected on the hand shao yin Heart channel.¹ The results of this study suggest a relationship between the visible nodule at Shenmen HE-7 and anxiety. The strength of the relationship seems to verify Wang Ju-Yi's statement, and further substantiates his teaching/belief that channel palpation has merit as a clinical diagnostic tool. From a Chinese medical standpoint, the visible nodule at Shenmen HE-7 may be the physical manifestation of the binding of qi in the Heart blood. From a Western medical perspective further research is needed to explain the nodule.

Philip Suger earned his doctorate at the Nanjing University of Chinese Medicine. With a profound interest in the original concepts of Chinese medicine his focus lies in understanding and expounding upon the principles of classical acupuncture and Jing Fang. He currently practices in Houston, Texas.

* It is important to point out that although the word spirit has religious or mystical connotations in English, the Chinese character 神 translated here as spirit denotes the ability to properly perceive the external environment.¹

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Appendix A

Examples of chronic heart failure patients with visible nodules at Shenmen HE-7



A



B



C



D



E



F

Appendix B

Examples of young women with visible nodules at Shenmen HE-7



A



B



C



D



E



F