

Traditional Chinese Medicine Differential Diagnosis of Diabetes Mellitus (from the Yellow Emperor to Modern Day Research)

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Abstract

This paper explores the traditional Chinese medicine (TCM) treatment of diabetes, from its beginnings in the classical ancient texts through to modern day clinical research. It was originally written as part of a clinical trial that tested the effect of acupuncture on patients with type 2 diabetes mellitus, a summary of which is included here. During the development of the research methodology, it became obvious that throughout the long history of TCM there was not a single common thread of aetiology or pathology associated with the Western medical condition called diabetes mellitus. As such, it is erroneous to categorise diabetes simply as a problem of Kidney yin deficiency - as is typical in modern TCM practice - or to try to encapsulate the disease using a single theoretical construct, such as the 'three wastings', qi-blood-yinyang-body fluid-essence theory, or zangfu theory. This paper aims to open practitioners' minds to the possibility that diabetes is a much more complex condition than this, and that only by returning to fundamental TCM theory to provide individually-tailored treatment can successful clinical results be achieved.

Introduction

This paper provides a brief exploration of the development of the differential diagnosis of diabetes mellitus in traditional Chinese medicine (TCM), from its earliest mention in the *Huáng Dì Nèi Jīng* (黄帝内经, Yellow Emperor's Classic of Internal Medicine, 475-221 BCE) through to modern day clinical research. Initially this paper was written as part of a Master's thesis in order to explain and justify the diagnostic method used in a clinical trial conducted by the author, that tested the effect of acupuncture on HbA1c levels in patients with type 2 diabetes mellitus. In that study, a diagnostic method was needed that could categorise subjects into two distinct groups based on TCM diagnosis, so that double-blinding and control of variables could be achieved. This required an amalgamation of existing TCM theories to form a unique diagnostic method that had never been used before. During the development of this methodology it became obvious that throughout the long history of TCM there was not a single common thread of aetiology or pathology associated with the Western medical condition called diabetes mellitus. It also became obvious that diabetes falls into the category of conditions that in TCM parlance is labeled *tóngbìng yìzhèng* (同病异证) - 'one disease, different syndromes.' The results of this research call into question the commonly held belief that diabetes can be categorised as simply a problem of Kidney yin deficiency; indeed, this disease seems to resist

any attempt to simple categorisation at all, whether using the theory of the 'Three Wastings', or 'qi-blood-yinyang-body fluid-essence' theory or zangfu theory diagnosis. In the experience of the author too many students, both in China and the rest of the world, begin their clinical practice with the erroneous belief that diabetes can be comprehensively differentiated according to these theories. This paper aims to open practitioners' minds to the possibility that diabetes is a much more complex condition than this, and that as practitioners we should not be using Western/conventional medical diagnostic nomenclature to diagnose and treat patients. By returning to fundamental TCM theory and by providing individually appropriate treatments for each patient, successful clinical results can be achieved.

Unravelling nomenclature

For many years now it has been commonly accepted that the term *xiāokě* indicates the condition that in modern conventional medicine is called diabetes mellitus. The term *xiāokě* (消渴) is no longer in common usage in the Chinese language. In modern Chinese, diabetes is translated as *tángniào bìng* (糖尿病, literally 'sweet urine disease'), although the ancient medical texts refer only to *xiāokě*. Its meaning was derived from two other commonly used Chinese terms: *xiāoshòu* (消瘦), meaning 'emaciation' or 'to become extremely thin' (which has been translated in TCM textbooks as meaning 'to waste away'), and

kǒukě (口渴), meaning thirst. Thus xiāokě has come to be translated as ‘wasting and thirsting’ disorder.

Conventional medicine recognises various different types of diabetes. The two most commonly seen are type 1 diabetes, sometimes called ‘juvenile onset diabetes’ or ‘insulin dependent diabetes’, and type 2 diabetes, at times referred to as ‘mature age onset diabetes’ or ‘non-insulin dependent diabetes.’ Type 1 diabetes occurs when a combination of environmental and genetic factors trigger an autoimmune attack on the B-cells in the Islets of Langerhans in the pancreas, resulting in a total loss of insulin production.^{[1]2} The patient will present with sudden-onset weight-loss and exhaustion. One, two or three of the following symptoms may also be present: polydipsia (excessive thirst), polyphagia (excessive hunger) and polyuria (excessive urination).^{[1]7}

The underlying mechanism of type 2 diabetes (which makes up about 90 per cent of all diabetic patients) is due to either diminished insulin secretion (i.e. a defect with the Islets of Langerhans with a possible decrease in peripheral glucose uptake) or increased hepatic glucose output.^{[1]3} These patients will often present to their physician with fatigue, lethargy and a general feeling of malaise. Often their symptoms are not obvious and therefore diagnosis can be difficult. Sometimes the three main diabetic symptoms of polydipsia, polyphagia and polyuria are not present at all. A confounding factor in type 2 diabetes is body mass. Unlike type 1 diabetes, type 2 patients are often obese. In a paper by Carnethon et al., a pooled analysis of 2,625 type 2 diabetes patients in five longitudinal cohort studies, it was found that the proportion of subjects who were non-obese at the time of onset ranged from 9 to 21 per cent (with an overall average of 12 per cent).^[2] In another study it was found that around 20 per cent of patients with type 2 diabetes in northern European countries were non-obese.^[3]

In conventional medicine, body-weight is an important factor when it comes to treatment. For non-obese type 2 diabetic patients, a sulphonylurea, a type of oral hypoglycaemic medication that stimulates insulin production, is usually prescribed. Despite the use of this medication, non-obese diabetic patients are more likely to require insulin much earlier in the course of treatment than obese diabetic patients.^{[1]4} For obese patients, however, the first priority of treatment is to implement a regime of healthy eating and exercise – with weight-loss being the main aim. When these regimes fail, metformin is the drug of choice. Metformin has the effect of reducing hepatic glucose production and enhancing glucose uptake.^{[1]4} In summary, we can see that in biomedical terms diabetes not only has two different aetiologies, but also manifests as two very different and distinct pathologies.

Going back now to the meaning of xiāokě, it is obvious from the above information that the majority of type 2 diabetes patients are not all ‘wasting’ away. In fact, it

is only a small minority of diabetic patients (i.e. type 1 diabetics and non-obese type 2 diabetics) that might fit into the category of ‘wasting and thirsting.’ It is possible that obese-type diabetic patients were seldom seen in ancient China and therefore never categorised into a single pathology, unlike in the modern world of sedentary lifestyles and over-consumption of processed and sugar-laden foods. Whatever the reason, it is obvious that obese type 2 diabetic patients do not fit into the category of xiāokě. Therefore a new approach to treatment is required for this type of diabetic patients, more likely looking at Spleen deficiency, Spleen deficiency with damp, damp-heat and maybe even wood invading earth (i.e. Liver invading Spleen) as possible pathologies.

This disease seems to resist any attempt to simple categorisation at all ...

Historical references

The disease xiāokě (消渴) first appears in the *Huáng Dì Nèi Jīng*, which also mentions several other different but related conditions: xiāodàn (消瘴, pure heat wasting), géxiāo (隔消, diaphragm wasting), fèixiāo (肺消, pulmonary heat wasting), pídan (脾瘴 (Spleen heat wasting) and xiāozhōng (消中, central wasting), all of which might be considered to refer to various manifestations of diabetes mellitus.^{[4]11[5]} There are numerous references to xiāokě in the *Huáng Dì Nèi Jīng*, one of which is found in the *Sù Wèn* (素问, Plain Questions) chapter ‘On Extraordinary Diseases’, in which the Yellow Emperor asks:

“Some people have a sweet taste in their mouths. What is this disease, and how does it come about?” Qibo answers: “This is caused by the upward flow of the Earth element, and the condition is called Pidan (excess heat in the Spleen). The five flavours enter through the mouth and are stored in the stomach. They are then converted by the Spleen into vital essence (fluids) and transported to the other organs. The build up of body fluids in the Spleen is what causes sweetness in the mouth. This condition is caused by eating too many sweet and fatty foods. These sweet and fatty foods cause inner-heat as well as fullness (distension) of the Middle-Warmer. It is this overflowing of the Spleen that transforms into wasting and thirsting.” ^{[4]11 [6]224}

A reference to xiāodàn is found in the *Líng Shū* (灵枢, Miraculous Pivot), in the chapter ‘The Five Changes’:

The Yellow Emperor asked: “What are the reasons why one is apt to contract diabetes [xiāodàn]?” Shaoyu answered: “When one’s Zang (solid) organs are weak, one is apt to contract diabetes.” The Yellow Emperor asked: “How can

one know if the patient's Zang organs are weak?" Shaoyu answered: "When one's Zang organs are weak, one is usually unyielding and often gets angry and is apt to contract diabetes." The Yellow Emperor asked: "How can we examine the characteristics of weakness and unyieldingness?" Shaoyu answered: "The skin of this kind of people is thin and their sight is firm. They have a firm character and often get angry, causing the reversal of Qi which then accumulates in the chest. This then leads to impeded blood flow and abdominal swelling which in turn causes the syndrome of heat stagnation. When stagnated heat scorches the skin and muscles, diabetes will occur."^{[4]11,6]687}

In the late Han dynasty (approx. 250 CE, Zhāng Zhòng Jīng (张仲景) in his *Jīn Guī Yào Lǜ* (金匱要略, Prescriptions from the Golden Chamber) also wrote about wasting and thirsting:

If yang floats, the pulse will be floating and rapid. Floating refers to qi, while rapidity refers to the dispersion of grains. If the pulse is also large and hard, this is because qi excess has led to much urination, and much urination results in hardness. When hardness and rapidity beat together, this is referred to as wasting and thirsting ... If the fu yang pulse is rapid, the stomach has heat within it. The stools are constipated and hard and urination is numerous ... If a man has wasting and thirsting, his urination is numerous. If he drinks one tou, he will urinate one tou.^{[4]12}

According to Zhāng, the main mechanism of wasting and thirsting is Stomach fire and Kidney deficiency.

Sūn Sī Miǎo (孙思邈, 581-618 AD), in his *Qiān Jīn Yào Fāng* (千金药方, Formulas Worth a Thousand Pieces of Gold) stated that wasting and thirsting can be caused by taking 'powders of the five stones' (i.e. immortality elixirs made from minerals). After taking these powders, he warned, the Kidneys become dry and yin becomes depleted. This is the origin of the theory of dryness and heat or yin deficiency being the primary disease mechanism of *xiāokě*. Sūn also recognised that overconsumption of alcohol, amongst other things, can cause wasting and thirsting. In his own words:

Three things must be renounced: wine, sex and eating salted, starchy cereal foods. If this regimen can be observed, a cure may follow without medicines.^{[4]12}

The Song dynasty was a time of renaissance within Chinese medicine. It was also a time when new ideas on wasting and thirsting were added to the existing knowledge. In the *Tài Píng Huì Mǐn Hé Jì Jū Fāng* (太平惠民和剂局方, Prescriptions From a Peaceful Benevolent Dispensary, 1078-1085 CE) it was first mentioned that wasting and thirsting can be categorised into three separate but related patterns based on the *Sān Jiāo* (三焦, Triple Warmer). It states:

In terms of the Three Wastings, the first is called wasting and thirsting, the second is called central wasting, and the third is called kidney wasting. The first leads to drinking lots of water but urinating less. The second leads to eating lots of food but drinking little water. The third leads to drinking water followed by urinating what has just been drunk. This urine is sweet in flavour, white and frothy. The lower back and lower limbs are wasted and emaciated.^{[4]14}

Liú Wán Sù (刘完素, also called Liú Hé Jiān, 刘河间, 1120-1200 AD), in his text *Huáng Dì Sù Wèn Xuān Míng Lùn Fāng* (黄帝素问宣明论方, Making Clear The Yellow Emperor's Simple Questions), in the chapter *Sān Xiǎo Lùn* (三消论, 'The Three Wastings'), emphasised that heat and dryness are the main pathogens involved in wasting and thirsting: 'Although there are three wastings, all are the result of heat.' He therefore recommended 'supplementing the vacuity of kidney water and yin-cold, draining the repletion of heart fire and yang heat, and eliminating dryness and heat from the intestines and stomach.'^{[4]14}

In the early days of the Ming dynasty, emphasis was placed on tonifying the Spleen and reinforcing qi. In the *Mì Chuán Zhèng Zhì Yào Jué* (秘传证治要诀, Summary of Esoteric Syndrome and Therapeutic Principles), Dài Yuán Lǐ (戴原礼, 1324 – 1405) stated that:

When the three wastings are obtained, qi is replete but blood is vacuous. However, as this endures and is not treated, qi deficiency becomes the priority, leading to inability to produce strength.^{[4]15}

In the Ming dynasty it was also recognised that as wasting and thirsting worsens, it involves the decline of Kidney (*mìngmén*) fire, which then leads to the inability of the Spleen to rot and ripen grains and fluids. Zhāng Jǐng Yuè (张景岳, also known as Zhāng Jiè Bīn, 张介宾, 1563-1640), in his *Jǐng Yuè Quán Shū* (景岳全书, Jing Yue's Complete Works) stated that wasting and thirsting is due to Kidney qi deficiency and loss of original yang, so that qi is unable to contain essence or transform fluids.^{[4]16}

In the Qing Dynasty a greater appreciation developed of the role of the Liver in the mechanism of wasting and thirsting. Huáng Yuán Yù (黄元御) in his *Sì Shèng Xīn Yuán* (四圣心源, Four Sages Heart Origin) in the chapter 'Wasting and Thirsting' stated that 'wasting and thirsting is a disease of the foot Jué Yīn.'^{[4]16} Also, in the *Sù Líng Wēi Yùn* (素灵微蕴, A Study of the *Huáng Dì Nèi Jīng*, no known author, compiled around 1800 AD), it stated that 'wasting and thirsting is solely due to the punishment of liver wood, not punishment by lung metal.'^{[4]16} In this period there was also further development of the Ming Dynasty idea of the importance of treating the Kidneys in wasting and thirsting. Lǐ Yòng Cuì (李用粹) in his *Zhèng Zhì Huì Bǔ* (证治汇补, Collected Supplements on Patterns and Treatments) wrote:

In the treatment of wasting and thirsting, initially one should nourish the lungs and clear the heart. If the condition endures, this leads to the necessity of supplementing the kidneys and nourishing the spleen. The root of engendering fluids and humours of the five viscera is located in the kidneys; therefore warming the kidneys and ascending and upbearing of qi leads to the lungs being moistened.^{[4][17]}

In the Qing Dynasty there was also the beginning of a discussion of the role of transforming phlegm and dampness in the treatment of wasting and thirsting. In 1863 Fèi Bó Xióng (费伯雄) stated that for upper wasting clearing heat and moistening can be assisted by transforming phlegm and dampness, and that for middle wasting clearing Yángmíng heat is assisted by moistening dryness and transforming phlegm.^{[4][17]}

In more recent years, the role of blood stasis has become considered as the main cause of many complications of diabetes. For instance, Prof. Hú Jiàn huá (胡建华) (1924 -) of the Shanghai University of Chinese Medicine has written: 'If wasting and thirsting endure for [many] days, yin deficiency reaches yang resulting in deficiency of both yin and yang. Yang deficiency leads to cold stagnation, which can lead to blood stasis.'^{[4][17]}

Modern texts

The textbook *Zhōng Yī Nèi Kē Xué* (中医内科学, TCM Internal Medicine Textbook), which is typically used in modern Chinese TCM education, states that wasting and thirsting can be clearly distinguished into three categories: upper, middle and lower wasting. Polydipsia (excessive thirst) is a symptom of upper wasting and is seen to be a problem of the Lungs; polyphagia (excessive hunger) is a symptom of middle wasting and relates to the Stomach; while polyuria (excessive urination) relates to lower wasting and is due to Kidney pathology. In terms of disease mechanisms it also mentions five other possible patterns that are not related to the theory of the three jiāo (burners): Lung and Stomach dry-heat, qi and yin both deficient, Kidney yin deficiency, yin and yang both deficient, and blood stagnation.^[8]

In 1993, Nicholas Haines wrote that the main TCM diagnosis for diabetes is yin deficiency with empty heat, and that this can be further differentiated into upper, middle and lower wasting syndromes, as follows:^[9]

Upper Wasting	1. Lung heat with injury to body fluids
Middle Wasting	2. Stomach dryness leading to yin deficiency
Lower Wasting	3. Kidney jing and yin deficiency
	4. Kidney yin and yang both deficient

Haines goes on to explain that although the primary factor in diabetes is yin deficiency, there are also secondary factors involved in its development. These secondary

factors are: empty heat, Spleen and Lung qi deficiency, dampness, damp-heat, Liver qi stagnation, Liver fire, and food stagnation leading to Stomach fire.

In 1999, Clinton Choate wrote an article expressing very similar ideas to Haines, except that instead of talking about the 'three wastings,' he discusses the three burners (三焦) as a method of diagnosing and treating diabetes.^[7]

Chén Jiàn Fēi (谌剑飞), in his extensive review of diabetes mellitus treatment with acupuncture and moxibustion, mentioned that the pathogenesis of this disease is related to the 'three wastings'. In terms of pattern differentiation he identifies three conditions: 1. Heat hyperactivity due to yin deficiency; 2. Qi and yin both deficient; and 3. Yin and yang both deficient. In terms of treatment he recommends: 1. Clearing heat, nourishing yin and replenishing qi; 2. Promoting blood circulation to remove blood stasis and dredging channels; and 3. Strengthening the body's resistance and visceral functions.^[10]

In 2003, Wáng Qí (王琦) published an article stating that the aetiology of diabetes is related to the three wastings, with upper wasting being related to Lung-heat, middle wasting related to Stomach heat and lower wasting related to Kidney deficiency. She also agreed that diabetes can be divided into three groups: qi and yin deficiency (the most commonly seen type), extreme heat leading to yin deficiency, and yin and yang both deficient. In addition, she provided the following information about the different stages of diabetes: preclinical diabetes is related to yin deficiency and clinical stage diabetes involves yin deficiency turning into heat; early stage diabetic complications are related to injury of both qi and yin; middle stage diabetic complications are related to injury of qi, yin and yang; and late stage complications are due to failure of both qi and yin-yang.^[11]

William Chi-Shing Cho et al. differentiated diabetes using zàngfú diagnosis as well as qi/blood/yin/yang diagnosis. In terms of zàngfú diagnosis, they differentiated seven different patterns: 1. Lung dryness, 2. Spleen yin deficiency, 3. Spleen and Stomach yang deficiency, 4. Spleen disturbed by dampness, 5. Kidney yin deficiency, 6. Kidney yin and yang deficiency, and 7. Liver disharmony. Using qi-blood-yin-yang diagnosis they differentiated four patterns: 1. Qi and yin deficiency with blood stasis, 2. Cold due to yang deficiency with blood stasis, 3. Phlegm obstruction with blood stasis, and 4. Liver qi stagnation leading to qi obstruction and blood stasis.^[12]

A new idea in diagnosing and treating diabetes has been developed in China in recent years. Professor Lín Lán (林兰, the lead researcher at the China Academy of Traditional Chinese Medicine in Beijing) and her team have developed a system of pattern differentiation for type 2 diabetes mellitus called 'The Three Type Syndrome Differentiation.'^{[13][14]} Between 1973 and 1980 they investigated 328 diabetic patients using the four examinations, the eight principles, zàngfú differential

diagnosis and qi-blood differentiation. They discovered that diabetic patients can be divided into four major patterns: excess heat, yin deficiency, qi deficiency or yang deficiency. In terms of prevalence, yin deficiency and heat was present in 38 subjects (11.89%), qi and yin deficiency accounted for 251 subjects (76.52%), and the category yin and yang both deficient included 38 subjects (11.59%), with a portion of patients also suffering from blood stasis and damp-phlegm.^[15]

In 2007 another paper was published by Professor Lín Lán's team which shed more light on The Three Type Syndrome Differentiation. This method was based on collecting patients' symptoms and analysing them via a computer program. In this method, if patients had two out of a list of pre-defined symptoms, they were then allocated to that particular pattern category:

1. Qi deficiency: lack of strength, excess sweating, shortness of breath, exhaustion, a pale and swollen tongue with teeth marks, and an empty, thin and weak pulse.
2. Yin deficiency: dry mouth and throat, blurred vision, dizziness, palpitations, insomnia, weakness and pain of the lower back and knees, deafness, tinnitus, dry stools, no desire to eat, five-heart/five-palm (五心) heat, night sweats, dry eyes, a red tongue with little or no coating, and a thin and rapid or thin and tight pulse.
3. Yang deficiency: cold limbs, nocturnal urination, stuffy chest, swelling of face and limbs, exhaustion, loose stools, lack of appetite, urinary incontinence, impotence, a pale and swollen tongue with a white coating, and a deep and slow or deep and thin pulse.
4. Excess heat: polyphagia, polydipsia, insomnia, dry stools, light-headedness, a red tongue with a yellow coating, and a rapid and tight or rapid and slippery pulse.
5. Damp-phlegm: abdominal distension, lack of appetite, nausea and vomiting, heaviness and weariness of head and limbs, loose stools, a thick and greasy tongue coating, and a slow and slippery pulse.
6. Damp-heat: lack of appetite, weariness of body and limbs, polydipsia, constipation with dry stools, abdominal distention, a red tongue with a yellow and greasy coating, and a rapid and slippery or rapid and tight pulse.
7. Blood stasis: numbness of limbs, lumbago, painful trunk and limbs, forgetfulness, chest pain, stuffiness of chest, no desire to move, dry and scaly skin, a purple or dark tongue, and a knotty, tight and wiry pulse.

In this study, 509 subjects with type 2 diabetes were diagnosed and the authors identified the following pattern distribution: qi deficiency 14.7%; qi and yin both deficient 13.8%; yin deficiency 12.6%; yin deficiency with excess heat 8.4%; yang deficiency 13.2%; yin and yang

both deficient 21.4%; excess heat 2.8%; damp-heat 0.4%; phlegm stasis 4.3%; phlegm and blood stasis 8.4%. In total 54 different combinations of the patterns were identified; although not printed here for reasons of brevity, the list of 54 patterns is illustrative of a particularly heterogeneous disease presentation.^[16]

Discussion

At this point the reader may well be wringing their hands in despair. With over two thousand years of recorded history, how could it be that there is still no consensus on the diagnosis or pathomechanism involved in either diabetes mellitus or *xiāokě*? It seems that in all the references to *xiāokě* up to the end of the Qing Dynasty, each new author simply wrote about their own personal clinical experience, without necessarily referring back to what had been written before. In more recent times (i.e. after the formation of the People's Republic of China), an attempt has been made to categorise diabetes (or *tángniào bing*, 糖尿病) into an easily treatable set of patterns. This has led to the confusing situation discovered by the author when beginning to research this topic.

So how should diabetes be treated in terms of TCM differential diagnosis? How many different categories of diagnosis are needed to cover all the possible symptoms and complications of diabetes? As has been stated in the introduction, diabetes is a complex and multi-faceted condition in which the patient's health degenerates further over time, so it can never fit into one or even a series of TCM differential diagnosis categories. Practitioners should therefore not fall into the trap of treating a Western medical diagnosis. Treating the patient as an individual is the key to achieving clinical success in treating patients with diabetes. That said, based on the author's research, the following points should be noted:

- Stomach fire appears to be the most likely cause of polydipsia and polyphagia in early stage diabetes, with polyuria being the natural result of ingesting so much water. The question then follows, why do these patients not suffer from hyperhydrosis (excess sweating) in order to relieve their internal heat? In the author's experience, this is due to early stage diabetes involving not just Stomach fire, but also Kidney yang deficiency.
- Since excess sweating and constant coughing are not typical early symptoms of diabetes, it seems unlikely that the Lungs are the cause of early-stage diabetes, as presupposed by the theory of 'upper wasting'.
- By the time patients come to see a TCM practitioner, the three symptoms of polydipsia, polyphagia and polyuria will usually have been controlled by the use of conventional medicine. If a potentially diabetic patient comes in complaining of these three symptoms, it is a practitioner's duty of care to refer them immediately

to a conventional medical doctor for diagnosis and treatment. However, there may be times when an already-medicated diabetic patient temporarily experiences these symptoms. This constitutes a sign of poor glycaemic control, and can be remedied by exercise, oral hypoglycaemic medication or even a small dose of insulin. When a patient presents with any of the three 'polys', the author recommends not basing diagnosis solely on these symptoms, but rather question the patient comprehensively and make a diagnosis that includes all chronic or persistent signs and symptoms and thus reflects the patient's underlying condition.

- With chronic conditions, always look to the Kidney. With the advancement of conventional medical technology, diabetic patients can now expect to live long and fruitful lives. From a TCM perspective, the more chronic a medical condition is, the more the Kidney is likely to become deficient. When treating diabetes, TCM practitioners should look closely at the Kidney as a source of the patient's underlying disharmony, especially for those patients suffering from diabetic nephropathy and diabetic retinopathy (according to basic TCM theory, the Liver relates to the iris and the Kidneys relate to the pupil;^[17] since the pupil is the opening through which light enters the eye and hits the retina, problems of the retina are usually due to some sort of Kidney disharmony). However, the author warns not to automatically assume Kidney yin deficiency in diabetic patients. Kidney yang deficiency and combined Kidney yin and yang deficiency are more common sources of patients' conditions.
- With the vast majority of type 2 diabetic patients being obese or overweight, the TCM community should look to the Spleen's involvement in this condition.
- Diabetic patients are now living longer and therefore experiencing more diabetic complications such as high blood pressure, heart disease, strokes, blindness, kidney disease leading to kidney failure, painful peripheral neuropathy, amputations of lower limbs, skin problems, gum diseases (gingivitis and periodontitis), gastroparesis and erectile dysfunction. Therefore each patient needs to be looked at individually and more diverse pattern differentiations need to be made than are given in the simplistic examples mentioned above.

Summary of the Author's Own Research

A pilot study was conducted as part of a Masters programme at the Guangxi University of Chinese Medicine to evaluate the effect of acupuncture at lowering HbA1c (glycated haemoglobin, a marker of blood sugar control) levels amongst patients with type 2 diabetes mellitus. Twelve subjects initially consented to take part in the clinical trial, with 10

Treating the patient as an individual is the key to achieving clinical success in treating patients with diabetes.

subjects completing it. Subjects were sourced from the The Nanning No.7 People's Hospital (南宁市第七人民医院针灸科) and The Guangxi Armed Forces Hospital (武警广西总队医院内分泌科).

Methodology

One of the early challenges of this study was to design a diagnostic method in which there was no overlapping of symptoms and no subject exclusion based on symptoms (in order to be able to include as many subjects as we could with the short period of time allowed by the programme). The decision was made to use a combination of three of the TCM theories mentioned above: (1) the theory of the three jiāo, (2) qi-blood theory, and (3) zāngfǔ Differential Diagnosis.

A cross-over method was used so that both practitioner and subject were blind to whether the treatment being provided was 'active' based on the subject's diagnosis (performed by the project supervisor). Subjects were randomly assigned to either receive their 'treatment' or their 'control' first. If subjects were assigned to Group 1 based on their diagnosis, then the Group 1 acupuncture points were their 'treatment', and Group 2 points would be their 'control', whereas Group 2 subjects received Group 2 acupuncture points as their 'treatment' and Group 1 points as their 'control'. Using this methodology, the confounding variables associated with acupuncture treatment could be controlled.

The diagnostic criteria for Group 1 was based on a combination of upper and middle jiāo theory and was called the 'upper/middle wasting group,' or 'qi and blood irregularity type diabetes.' The symptoms were those that in TCM are associated with the Lungs, Heart, Stomach and Spleen, and included respiratory, cardiovascular, digestive, gastrointestinal and biliary problems such as cough, constantly catching colds, asthma/shortness of breath, excessive thirst, sneezing, blocked nose/runny nose, dry/sore throat, fear of wind/cold, afternoon fever, excess sweating, palpitations, stuffiness or pain in the chest, feeling vexed/perturbed/upset, mouth ulcers, excessive hunger, lack of appetite, craving sweet foods, abdominal distension/pain, diarrhoea/loose stools, constipation, nausea/vomiting, tiredness/sleepiness, feeling of heaviness, weakness of the limbs and muscles, overthinking/brooding, anger, melancholy, depression,

With this cohort of only 12 subjects, acupuncture achieved a result similar to taking one or two anti-hyperglycaemic drugs.

hypochondriac pain/distension, sighing and hiccups. Group 2 was the 'lower jiāo group' who presented with 'yin-yang deficiency type diabetes.' The symptoms were those experienced by diabetic patients that in TCM are associated with the Kidney and the lower jiāo, such as lower back pain and weakness, excessive urination, dark-scanty urination, difficult urination, enuresis, nocturnal urination, incontinence of urine, deafness, tinnitus, vertigo/dizziness, poor memory, nocturnal/seminal emissions, night sweats, impotence, weakness and pain in the knees, oedema of the legs, infertility, premature greying of hair, fearfulness and anxiety, cold hands and feet, irregular menstruation, painful menstruation, premenstrual tension and insomnia.

Treatment

Acupuncture treatment was provided to Group 1 as follows:

- Supine position: Zusanli ST-36, Sanyinjiao SP-6, Zhongwan REN-12, Juque REN-14, Quze P-3
- Prone position: Jueyinshu BL-14, Pishu BL-20, Weiwanshiashu (M-BW-12), Yinlingquan SP-9

Acupuncture treatment was provided to Group 2 as follows:

- Supine position: Taixi KID-3, Qihai REN-6, Guanyuan REN-4, Shuidao ST-28, Taichong LIV-3
- Prone position: Shenshu BL-23, Guanyuanshu BL-26, Zhishi BL-52, Zhaohai KID-6

Treatments were given three times per week over a period of two months, with supine and prone position treatments given alternatively, for a total of 24 treatments.

Results

Of the 12 subjects who commenced the trial, two dropped out after the first period of treatment and one continued to receive a third period of treatment. Therefore a total of 23 treatment periods were completed. Of the 23 total treatment periods, 14 had a positive effect, i.e. HbA1c levels were lower at the end of the treatment period than at the beginning. This is an effectiveness rate of 60.86 per cent, with an average

lowering of HbA1c levels of -0.5 per cent. Of the 14 positive treatment periods, the total positive change was -19.7 per cent (average: -1.36 per cent). Of the nine negative treatment periods, the total negative change was +7.5 per cent (average: +0.83 per cent). For any anti-hyperglycaemic drug to be used in practice, it must achieve a 1 per cent lowering of HbA1c during clinical trials.^{[18][19]} With this cohort of only 12 subjects, acupuncture achieved a result similar to taking one or two anti-hyperglycaemic drugs.

When the subjects received treatment that was in accordance to their TCM diagnosis, the average lowering of HbA1c levels was -1.39 per cent. When the same subjects received the 'control' treatment according to their TCM diagnosis, their HbA1c levels increased by an average of +0.18 per cent. This shows that active treatment based on correct diagnosis was much more effective than the control treatment.

On average the upper/middle wasting group experienced an average lowering of HbA1c levels of -0.84 per cent, whereas the lower wasting treatment group experienced an average lowering HbA1c levels of -0.37 per cent. Therefore acupuncture was much more effective in lowering blood glucose in Group 1 (qi and blood irregularity type diabetes) than in Group 2 (yin-yang deficiency type diabetes).

Of the 10 subjects who completed this pilot study, 50 per cent managed to decrease or totally stop using any conventional medical drugs.

Conclusion

Although this trial did not treat sufficient subjects to show a statistically significant result, the results suggest that a fully-powered trial would be justified. From the raw data it appears that acupuncture may be an effective treatment to help type 2 diabetes mellitus patients control and lower their blood glucose levels and reduce their reliance on conventional medical drugs. For full details of the data involved in this trial, please contact the author.

Conclusion

As can be seen above, there is no single, distinct TCM differential diagnosis for the medical condition known as diabetes mellitus. In fact, throughout the history of TCM there has been continuous development of the theories of how to differentiate and treat diabetes or xiāokě (消渴). It should now be obvious that diabetes mellitus is a classic case of tóngbìng yìzhèng (同病异证, 'same disease, different patterns'). The concept that diabetes is either caused by or expressed as a pattern of Kidney yin deficiency^{[7][9][20][21][22][23][24][25][26][27][28][29][30][31]} needs to be revisited and reassessed. The three main symptoms of early onset diabetes - i.e.

polydipsia, polyphagia and polyuria - are definitely not symptoms of yin deficiency. Thirst with a desire to drink large quantities of cold water is an indication of a full-heat condition, whereas a yin deficient thirst involves the desire to sip liquids slowly. This is not polydipsia. Always being hungry indicates heat in the Stomach. Polyuria is defined as passing excessive or abnormally large quantities of urine. From a TCM perspective this is usually a sign of Kidney yang deficiency, whereas Kidney yin deficiency usually manifests as scanty and yellowish urination.

Based on the research presented above, the author recommends the following:

- Treat the patient not the disease. Diabetes is too complex a disease to fit into a few given categories of TCM diagnosis. Even conventional medicine acknowledges that diabetic patients present with a large number of varied signs and symptoms.
- Whichever method of TCM diagnosis the practitioner favours can be shown to have some basis in historic reference.

- Acupuncture treatment based on differential diagnosis seems to be effective. When using acupuncture, use acupuncture points that have been effectively shown to treat diabetes in the past, as well as points based on the patient's differential diagnosis and individual symptoms.
- Diabetes is a chronic condition that will require long-term, regular treatment to show any effectiveness.

Eduardo (Eddie) Teijeiro was diagnosed with type 1 diabetes over 50 years ago. In his youth he turned to Eastern philosophy (yoga and meditation) to try to find a cure for this insidious disease. Later in life he discovered acupuncture and TCM. He graduated with a Bachelor of Health Science (Acupuncture) from the Brisbane branch of the Australian College of Natural Medicine. During this time he focused most of his attention on how to treat and maintain the health of diabetic patients. In 2015 he graduated with a Master of Medicine (Acupuncture and Tuina) from the Guangxi University of TCM. His thesis was a pilot study of acupuncture to lower type 2 diabetic patients' HbA1c levels. He has returned to Australia to set up a clinic in Geelong and is in negotiation with Barwon Health-Geelong Hospital and Deakin University to do a PhD on acupuncture and diabetes. He can be contacted at eddieteijeiro@hotmail.com.

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