

Case study: Improving sperm parameters with acupuncture and Chinese herbal medicine

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ABSTRACT

Traditional Chinese medicine for male infertility was first recorded as a treatment in 610CE in the Chao Yuan-fang's Zhu Bing Yuan Hou Lun.⁽¹⁾

Despite the long history of empirical knowledge, male fertility treatments with acupuncture and Chinese herbal medicine have been poorly researched. Western medicine has little to offer men in the treatment of most male fertility disorders, particularly where substandard sperm is the issue.

This case study demonstrates a male who presented with a semen analysis in the low-normal range and improved his sperm parameters by between 34% and 50% following three months of weekly acupuncture and Chinese herbal medicine. The patient and his wife reported their first pregnancy three months after the treatment period.

KEYWORDS male, fertility, sperm parameters, semen analysis, acupuncture, Chinese herbal medicine, spermatogenesis, teratozoospermia.

Introduction

Primary infertility is defined as a pregnancy not achieved after twelve months of unprotected sexual intercourse and is estimated to be prevalent in eight to fifteen percent of couples worldwide.⁽¹⁾

In males, infertility is estimated to be present at a rate of around seven percent⁽²⁾ and may be a factor in up to fifty percent of infertile couples.⁽¹⁾

Male infertility includes a variety of disorders including semen irregularities (sperm count, concentration, vitality, motility, morphology, antibody and DNA fragmentation disorders),⁽²⁾ varicocele, urogenital infections, cryptorchidism and obstruction within the male reproductive tract.⁽³⁾ The condition can be idiopathic in up to fifty percent of patients.⁽⁴⁾

Spermatogenesis, the process by which spermatozoa are formed, requires almost three months⁽⁵⁾ and may be hampered by a variety of factors including: exposure to environmental toxins,⁽⁶⁾ overheating the scrotum (>34°C),⁽⁷⁾ increasing age,⁽⁸⁾ under or over weight, infections, diabetes, smoking cigarettes or cannabis, antidepressant use, intensive exercise, and prolonged cycling.⁽³⁾

Male fertility investigations may include physical examination, semen analysis, anti-sperm antibody test, sperm function tests and reproductive hormone serology (e.g. follicle stimulating hormone, luteinising hormone, prolactin and testosterone).⁽⁹⁾

Currently, the western medicine treatment for male infertility is extremely limited.⁽¹⁰⁾

Structural and infectious conditions may be treated with surgery (e.g. varicocele, although the benefit to fertility is controversial)⁽¹¹⁾ or antibiotics (e.g. urogenital infections).⁽¹²⁾

In cases of oligospermia (low sperm count), asthenospermia (low motility) and teratozoospermia (poor morphology) there is no standard medical treatment so instead intracytoplasmic sperm injection (ICSI) is employed.

In the case of azoospermia (the absence of spermatozoa in the ejaculate) immature sperm can be surgically extracted. ICSI requires that the female partner has her oocytes extracted for fertilisation.⁽³⁾

Male infertility treatment is a growing area for traditional Chinese medicine (TCM) research.

Since 1997 acupuncture trials have been contributing to the small but growing body of evidence.⁽¹³⁾

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The following case study highlights an example of a male patient with low-normal semen analysis results who responded favourably to acupuncture and Chinese herbal medicine (CHM) treatment.

Description of the patient

A man who is a 35 year old warehouse manager was referred by his wife for male fertility enhancement. They had attempted four in-vitro fertilisation cycles (IVF) without a positive pregnancy test. The fertilisation rate was 60 percent. The couple were diagnosed with unexplained infertility. The wife had already undergone two months of acupuncture and herbal medicine to support her last IVF cycle.

The couple decided to take a three month break from IVF and concentrate on a regime of preconception care including acupuncture, herbal medicine, a healthy diet, no alcohol, reducing stress and increasing their exercise.

The man is average height, slim with a healthy complexion. He does not smoke, use recreational drugs or take any medications. He has no other children.

Presentation, history of presenting condition

The man's sperm analysis showed low-normal results for count, motility and morphology (Table3).

He reported no other symptoms of reproductive disorders including erectile dysfunction, anorgasmia or poor libido. He ejaculated in accordance with their IVF specialist's recommendations, every other day and the volume of seminal fluid was adequate. He did not experience any scrotal pain and there were no problems with urination other than waking to urinate at least once during the night.

He reported his general health as usually very good.

Major findings from the consultation were:

- Sleep: Sound and only interrupted by urge to urinate
- Energy: Good energy generally, but tires early in the evening. He works very long hours and shift work
- Digestion: Good appetite, passing regular well-formed stools once daily
- Ear, nose and throat: He suffers from occasional hayfever triggered by pollens and sinusitis made worse by spicy food and dairy products
- Head: Suffers from dull headaches occasionally at the temples when tired (from working long hours).
- Musculoskeletal: Low back ache when working long hours, knee pain from rugby injuries during teens and twenties. Tight neck and shoulders when frustrated at work

- Emotional health: Work can be stressful in managing a large team but he feels he copes well. He and his wife are also frustrated and fearful about the future of their IVF treatment
- Exercise: Gym (cardio and weights one hour) two to three times per week. Incidental exercise walking to the bus most days. He handles stress best when he is exercising
- Tongue: wet with teeth marks with slightly red sides and a small amount of thin yellow coat
- Pulse: The right guan pulse (Liver/Gallbladder) was wiry and the right chi pulse (Kidney Yang) was weak.

Physical examination

A physical examination showed that the patient's lower back was colder than his abdomen. His skin was clammy and he reported that he sweated easily, especially around the groin region which would also become itchy. His IVF specialist had not found any other reproductive abnormality through physical examination.

Investigations

The man attended his first appointment with his last semen analysis that was six months old. The andrology report indicated that his semen was above the lower reference ranges for sperm count, morphology and motility however he wished to improve these results.

Diagnosis

The patient was diagnosed with Liver Qi stagnation, Damp Heat in the Liver and Gallbladder and a mild Kidney Yang deficiency. The signs and symptoms to support these diagnoses are as follows:⁽¹⁴⁾

- Liver Qi stagnation: frustration, mood is better after exercise, neck and shoulder tension, sighing frequently and wiry pulse in the right guan position.
- Damp heat in the Liver and Gallbladder: dull headaches at temples when frustrated, sweating and itchiness in the groin, and red sides on tongue with thin yellow coating.
- Kidney Yang deficiency: low-normal sperm parameters, low back ache worse when tired and cold to touch, low energy at the end of day, sweating easily, nocturnal urination, history of excessive exercise resulting in knee pain and weak right chi pulse.

The treatment principle for the first treatment focused on reducing the excess patterns: move liver qi, drain damp heat from the Liver and Gallbladder and calm Shen.

Treatment

The acupuncture treatment is detailed according to the STRICTA Guidelines.⁽¹⁵⁾ Acupuncture points were chosen and needled⁽¹⁶⁾ and described in Table 1.

The patient attended a course of five months of weekly treatment (missing an appointment occasionally).

The acupuncture points were needled bilaterally (except for DU20) with de qi manually obtained on each point. Acupuncture needles were retained for approximately twenty minutes per session.

The type of needles used were Carbo surgical stainless steel acupuncture needles (0.25 x 25mm and 0.25 x 40mm).

The acupuncture was performed in a private clinic in West End (Queensland) by a diploma qualified practitioner who had at the time thirteen years of clinical experience. (See Table 1 for initial points).

Long dan xie gan wan, a CHM formula, (KPC herbs) was prescribed at the initial consultation to resolve the damp heat from the Liver and Gallbladder, at a dosage of 5g taken bi-daily for a period of two weeks in which time the Liver and Gallbladder damp heat signs had resolved however his other signs and symptoms remained the same (Appendix 1). At this time, his diagnosis was revised to Liver Qi stagnation and Kidney Yang deficiency.

The treatment principles were to disperse Liver Qi and tonify Kidney Yang. A new acupuncture and CHM protocol were developed and delivered over a three month period.

Acupuncture treatments continued on a weekly basis in a similar manner to the initial treatment, with an adjusted point prescription as detailed in (Table 2.).

The man was then prescribed China Med Men's formula (Nan Bao) to invigorate the Kidney, enrich the Kidney Essence, tonify the Qi and calm the Spirit,⁽¹⁷⁾ at a dosage of three capsules taken bi-daily (Appendix 2).

Outcome

After six weeks of treatment his right Guan pulse (Liver and Gallbladder) had less of a wiry quality and the right Chi pulse (Kidney Yang) pulse had more strength. The Liver and Gallbladder damp heat signs had not returned.

His energy levels had improved but his health was stable otherwise. The man repeated the sperm analysis after three months of treatment.

Unfortunately, the semen analysis reports were not homogenous in their reporting style so a comparison could only be made on the common markers of sperm count, motility and morphology.

Each of these parameters showed a marked improvement following the treatment. The comparison of results is shown in Table 3.

The man and his wife undertook another IVF cycle the month after this test was taken. The fertilisation rate was 75 percent and although the fresh embryo transfer was unsuccessful, they reported a positive pregnancy test for a frozen embryo transfer in the next month.

Discussion

TCM considers male infertility to be related to the correct functioning of the Kidney, Liver and Spleen.⁽³⁾

The Kidney is known as the 'root of life' – it stores the Jing (essence), governs birth, development and reproduction, controls the lower orifices and is the gate to Ming Men (warming the lower Jiao, Jing and harmonising sexual function).

The Liver regulates the movement and volume of blood, circulates the Qi to prevent obstructions and controls the sinews (including the penis).

The Spleen is the root of the acquired Qi and through its transforming and transporting function contributes to the development of blood Yin and Yang which are necessary for reproductive processes to occur.⁽¹⁴⁾

Sperm is probably most closely connected with the Kidney Jing. It is the Yang of the Kidney that gives sperm their motility, warms the seminal fluid to prevent it being thin and watery, and provides the spark for libido and orgasm.

The Yin controls substance and is represented by quantity of seminal fluid, sperm count and morphology, and control over ejaculation.

Jing essence manifests in poor sexual development or premature ageing. Liver blood deficiency can lead to a decline in Jing (fertility).

Damp heat can cause obstructions within the genital region in the form of infections and this can reduce male fertility⁽⁷⁾ and sexual function.^(3,14)

Men over the age of 35 have a decline in their sperm parameters.⁽⁸⁾ Traditional Chinese medicine equates this to a Kidney deficiency. Kidney depletion are situations that wear out the body - that is chronic illness, excessive ejaculation and exercise, or overwork.

Dysfunction is created in the Liver by the emotions of anger, frustration and repressed emotion, a greasy and spicy diet, excessive alcohol intake (creating too much heat) and a sedentary lifestyle.

The Spleen is harmed through difficult to digest foods contributing to a lack of nutrients to nourish the Jing and blood, a predominance for worrying or overthinking, and exposure to damp environments.⁽¹⁴⁾

Studies suggest that acupuncture given twice per week for between five and ten weeks can significantly improve sperm count⁽¹⁸⁾, concentration⁽¹⁹⁾, morphology^(18,20) and motility^(13,21) specifically rapid motility (22).

CHM research for the treatment of sperm disorders is extremely limited and poor quality. Additionally, nutritional medicine may be used as an adjunct to TCM treatment. Vitamin C, E, folate and zinc have been shown to reduce DNA damage by up to twenty percent in older men (>44 years).⁽⁸⁾

Conclusion

The body of evidence supporting acupuncture and CHM for improving sperm parameters is small but growing.

Unfortunately, many of the studies are small and the research designs are flawed as is often the case in acupuncture studies, the TCM diagnosis is lacking.

One study⁽⁷⁾ made two general diagnoses: deficiency of the Kidneys and damp-heat syndrome, and found that patients with higher scrotal temperatures (due to inflammation which may be considered damp heat in TCM) who had a course of acupuncture had normal scrotal temperatures at the conclusion of treatment.

In conjunction with the drop in temperature, almost all of those patients demonstrated an increased sperm count.

This suggests that correctly diagnosing based on TCM and western medical investigations may lead to better treatment outcomes.

Male fertility, in particular sperm quality, is greatly affected by lifestyle factors.

Overheating, excessive exercise, weight disorders, excessive alcohol intake, obstruction of the genital region and increased age are aetiological factors in both Western and Chinese medicine.

These factors must be addressed in consultations with male infertility patients, particularly during the three month spermatogenesis period.

This case demonstrates that treatment is still beneficial if a semen analysis is low-normal.

Through acupuncture treatment and CHM support, the man improved his sperm count, motility and morphology considerably, contributing to a higher ovum fertilisation rate and his wife's first pregnancy.

Western pathology provides an accurate tool for measuring the extent of sperm disorders and TCM provides treatment to significantly improve sperm parameters where there is currently no comparable Western medical option.

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Table 1.
Initial Acupuncture: Treatment principles, acupuncture point prescription and techniques (Deadman et al., 2006)

TREATMENT PRINCIPLE	POINT SELECTION	DEPTH AND TECHNIQUE
Spread Liver Qi Regulate lower jiao	Liver 3 (LV3)	0.5 cun, towards KD1
Spread Liver Qi Clear damp heat from Liver & Gallbladder	Gallbladder 34 (GB34)	1 cun, perpendicular
Harmonise the Liver Tonify the Kidney Drain damp Benefit the genitals	Spleen 6 (SP6)	1 cun, perpendicular
Spread Liver Qi Clear head and benefit eyes	Gallbladder 41 (GB41)	0.5 cun, perpendicular
Spread Liver Qi Clear damp heat from lower jiao Benefits the genitals Calm Shen	Liver 5 (LV5)	1 cun, perpendicular
Resolve damp Benefit the lower jiao	Spleen 9 (SP9)	1 cun, perpendicular
Calm the shen	Governor vessel 20 (DU20)	0.5 cun, transverse

Table 2.
Secondary Acupuncture: Treatment principles, acupuncture point prescription and techniques (Deadman et al., 2006)

TREATMENT PRINCIPLE	POINT SELECTION	DEPTH AND TECHNIQUE
Spread Liver Qi Regulate lower jiao	Liver 3 (LV3)	0.5 cun, towards KD1
Spread Liver Qi	Gallbladder 34 (GB34)	1 cun, perpendicular
Spread Liver Qi Benefits the genitals Calm Shen	Liver 5 (LV5)	1 cun, perpendicular
Harmonise the Liver Tonify the Kidney Benefit the genitals	Spleen 6 (SP6)	1 cun, perpendicular
Tonifies Kidney Yang	Kidney 3 (KD3)	0.5 cun, perpendicular
Benefits the lower Jiao	Kidney 11 (KD11)	0.5 cun, perpendicular
Fortifies original Qi Benefits Essence Regulates the lower Jiao	Conception vessel 4 (REN4) Unilateral	0.5 cun, oblique insertion with de qi sensation to the penis
Calm the shen	Governor vessel 20 (DU20)	0.5 cun, transverse

Table 3.
A comparison of the mans' initial and post-treatment sperm analyses

ANDROLOGY	SPERM ANALYSIS 1	SPERM ANALYSIS 2	CHANGE (%)
Count	27	63	+ 36 (57.1)
Motility	50	76	+ 26 (34.2)
Morphology	9	14	+ 5 (35.7)

Appendix 1:
KPC Herbs Long dan xie gan wan

DOSAGE: 5G GRANULES, TWICE/DAY TCM ACTIONS: RESOLVE LIVER/GALL BLADDER DAMP HEAT	
Ingredients:	
Sheng di huang 9g	Che qian zi 9g
Long dan cao 6g	Chai hu 6g
Ze xie 12g	Shan zhi zi 9g
Huang qin 9g	Dang gui 3g
Chuan mu tong 9g	Gan cao 6g

Appendix 2:
China Med Men's Formula (nan bao)

DOSAGE: 3 CAPSULES 2 TIMES/DAY TCM ACTIONS: INVIGORATES THE KIDNEY, ENRICHES THE KIDNEY ESSENCE, TONIFIES THE QI AND CALMS THE SPIRIT	
Ingredients:	
Huang qi 278.46mg	Shu di 278.46mg
Yin yang huo 222.66m	Ba ji tian 222.26mg
Suo yang 222.26m	Xiang fu 167.04mg
Shi chang pu 111.42mg	Yuan zhi 92.7mg
Wu wei zi 92.7mg	Ren shen 55.62mg
Rou gui 55.62 mg	