

## Effect of Traditional Chinese Medicine on oligoasthenospermatisms: a narrative review

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### Abstract

**OBJECTIVE:** To summarize the treatment of oligoasthenospermatisms (OAS) with Traditional Chinese Medicine (TCM).

**METHODS:** The literature describing OAS treatment with TCM in the past 4 years was searched. Three studies were reviewed, evaluated, and summarized. The etiology and pathogenesis, pattern differentiation, medicine administration, and combination of TCM with Western Medicine were all examined.

**RESULTS:** TCM had an advantage in treating OAS and had fewer adverse events than conventional treatments.

**CONCLUSION:** Although TCM has an advantage in treating OAS and fewer adverse events, the efficacy of TCM and modern medicine on OAS is unsatisfactory.

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**Key words:** Asthenozoospermia; Infertility; Medicine, Chinese Traditional; Review

### INTRODUCTION

Oligoasthenospermatisms (OAS) accounts for 46% of male infertility worldwide,<sup>1</sup> and its incidence is rising.<sup>2</sup> The common causes of OAS are reproductive tract infections, varicocele, endocrine diseases, and systemic diseases. However, the cause of OAS is not clear in 40%-75% patients.<sup>2</sup> The conventional medical treatment for OAS is administration of nutritional supplements such as vitamins, a variety of hormones, and other supportive treatments. However, the outcomes are not satisfactory.<sup>1</sup> Traditional Chinese Medicine (TCM) has been studied and used for OAS in the past. We searched the literature for TCM studies treating OAS in the past 4 years to analyze and summarize its use.

### ETIOLOGY AND PATHOGENESIS OF OAS

There are no relative records on OAS in the TCM ancient literatures. According to patients clinical display, it belongs to Traditional Chinese Medicine "no child", "cold sperm". Nevertheless, ancient and modern physi-

cians of TCM have different views on the etiology and pathogenesis of OAS. In terms of ancient ones of TCM, the causes of OAS are cold sperm *Qi* deficiency, phlegm, excess Kidney fire, semen scarcity, and *Qi* stagnation. However, many modern TCM researchers have different views on the causes of OAS. Sun *et al*<sup>3</sup> hypothesized that Kidney deficiency and blood stasis are responsible for OAS. Additionally, Wang *et al*<sup>4</sup> maintained that weakness of the Spleen and Kidney are integral to the pathogenesis of OAS, but Tian *et al*<sup>5</sup> argued that Kidney-essence deficiency was the main cause of OAS. Min<sup>6</sup> found that there is a close physical relationship between the Liver, Kidney, and male reproductive function. Finally, Wang<sup>8</sup> believes that Kidney deficiency with toxic dampness is the main pathogenesis of OAS.

## OAS TREATMENT BASED ON TCM PATTERN DIFFERENTIATION

Zhang<sup>9</sup> classified OAS patients as having Kidney-essence deficiency, essence and blood deficiency, excessive labour, Liver-*Qi* stagnation, *Yin* deficiency and *Yang* hyperactivity, and damp heat in the lower energizer. The herbs prescribed for Kidney-essence deficiency are: Lurong (*Cornu Cervi Pantotrichum*), Danggui (*Radix Angelicae Sinensis*), Dangshen (*Radix Codonopsis*), Sangshen (*Fructus Mori*), Nuzhenzi (*Fructus Ligustri Lucidi*), Renshen (*Radix Ginseng*), Huangqi (*Radix Astragali Mongolici*), Tusizi (*Semen Cuscutae*), Ziheche (*Placenta Hominis*), Shanzhuyu (*Fructus Corni*), Xianmao (*Rhizoma Curculiginis*), Gouqizi (*Fructus Lycii*), Yinyanghuo (*Herba Epimedii Brevicornus*). The herbs prescribed for essence deficiency and blood are: Yupiaojiao (*Inglucies Piscis*), Lujiaojiao (*Colla Cornus Cervi*), Ziheche (*Placenta Hominis*), Danggui (*Radix Angelicae Sinensis*), Jixueteng (*Caulis Spatholobi*), Ejiao (*Colla Corii Asini*), Huangjing (*Rhizoma Polygonati Sibirici*), Gouqizi (*Fructus Lycii*), stir-frying with liquid adjuvant Heshouwu (*Radix Polygoni Multiflori*). The herbs prescribed for overstrain are: Ziheche (*Placenta Hominis*), Longyanrou (*Arillus Longan*), Danggui (*Radix Angelicae Sinensis*), Fuling (*Poria*), Wuweizi (*Fructus Schisandrae Chinensis*), Suanzaoren (*Semen Ziziphi Spinosae*), Houpu (*Cortex Magnoliae Officinalis*). The herbs prescribed for Liver-*Qi* stagnation are: Chaihu (*Radix Bupleuri Chinensis*), Baishao (*Radix Paeoniae Alba*), Chuanlianzi (*Fructus Toosendan*), stir-frying with liquid adjuvant Xiangfu (*Rhizoma Cyperi*), Nuzhenzi (*Fructus Ligustri Lucidi*), Huangjing (*Rhizoma Polygonati Sibirici*), Yujin (*Radix Curcumae Wenyujin*), Gouqizi (*Fructus Lycii*), Shanzhuyu (*Fructus Corni*), Lizhihe (*Semen Litchi*). The herbs prescribed for hyperactivity of *Yang* owing to *Yin* deficiency are: Mohanlian (*Herba Ecliptae prostratae*), Sangshen (*Fructus Mori*), Guijia (*Carapax et Plastrum Testudinis*), Mudanpi (*Cortex Moutan Radicis*), Biejia (*Carapax Trionycis*), Nuzhenzi (*Fructus*

*Ligustri Lucidi*), Digupi (*Cortex Lycii Radicis*). The herbs prescribed for damp heat in the lower energizer are: Qumai (*Herba Dianthi Superbi*), Bianxu (*Herba Polygoni Avicularis*), Dongkuiguo (*Fructus Malvae Verticillatae*), Pugongying (*Herba Taraxaci Mongolici*), Yiyiren (*Semen Coicis*), Lianqiao (*Fructus Forsythiae Suspensae*), Wuhuaguo (*Receptaculum Fici Caricae*), Jinyinhua (*Flos Lonicerae*). Zhang<sup>10</sup> hypothesized that Kidney deficiency for OAS may be associated with blood stasis or damp heat. The therapeutic principles for treatment are: nourishing Kidney essence, tonifying *Qi* and warming *Yang*, promoting blood circulation of *Qi*, clearing heat, and removing dampness. Cao<sup>7</sup> proposed that therapy for the pattern differentiation should be based on microcosmic syndrome differentiation of semen. For example, the deficiency of Kidney *Yin* was often correlated with low semen volume, which may have certain clinical significance.

## TCM HERBAL MEDICINES PRESCRIBED FOR OAS

The prescription of traditional medicines for the treatment of oligospermia and asthenospermia in clinic is common in China. Geng<sup>11</sup> randomly divided 80 OAS patients into treatment and control groups. The treatment group was administered modified Tianxiong powder for treating oligospermia and asthenospermia. Tianxiong powder is composed of: Fuzi (*Radix Aconiti Lateralis Preparata*) 6 g, Huangqi (*Radix Astragali Mongolici*) 10 g, Baizhu (*Rhizoma Atractylodis Macrocephalae*) 15 g, Fuling (*Poria*) 15 g, Guizhi (*Ramulus Cinnamomi*) 10 g, Longgu (*Os Draconis*) 10 g, Tusizi (*Semen Cuscutae*) 15 g, Gouqizi (*Fructus Lycii*) 20 g, stir-frying with liquid adjuvant Heshouwu (*Radix Polygoni Multiflori*) 15 g, Roucongrong (*Herba Cistanches Deserticolae*) 10 g, Ciwujia (*Radix et Caulis Acanthopanax Santicosi*) 10 g, Danshen (*Radix Salviae Miltiorrhizae*) 10 g. The control group was administered Wuziyanzong pill. The pregnancy and total effective rates in the treatment group were 8.57% and 91.43%, respectively, and 5.71% and 85.71% in the control group ( $P>0.05$ ). Each group saw a significant increase in sperm density, sperm motility, and percentage of normal sperm morphology. However, the improvements of them in the treatment group were superior to those in the control group ( $P<0.05$ ). Geng<sup>12</sup> randomized 210 patients with OAS into two groups, with 126 in the treatment group and 84 in the control group. The treatment group was administered Shengjingzhongzi decoction, which is composed of: Chaihu (*Radix Bupleuri Chinensis*) 12 g, Zhiqiao (*Fructus Aurantii Submaturus*) 18 g, Yujin (*Radix Curcumae Wenyujin*) 12 g, Gouqizi (*Fructus Lycii*) 18 g, Nuzhenzi (*Fructus Ligustri Lucidi*) 15 g, Baishao (*Radix Paeoniae Alba*) 18 g, Xianmao (*Rhizoma Curculiginis*) 9 g, Yinyanghuo (*Herba Epimedii Brevicornus*) 18 g, Tusizi (*Semen Cuscutae*) 12 g, Danggui (*Radix*

*Angelicae Sinensis*) 12 g, Wuweizi (*Fructus Schisandrae Chinensis*) 12 g, stir-frying with liquid adjuvant Heshouwu (*Radix Polygoni Multiflori*) 12 g, Huangqi (*Radix Astragali Mongolici*) 20 g, Cheqianzi (*Semen Plantaginis*) 20 g, Chuanniuxi (*Radix Cyathulae*) 15 g, Fupenzi (*Fructus Rubi Chingii*) 15 g, Chuanxuduan (*Radix Dipsaci Asperoidis*) 20 g, Chenpi (*Pericarpium Citri Reticulatae*) 12 g, Gancao (*Radix Glycyrrhizae*) 6 g. The control group was administered WuziYanzong pill. The total effective rates were 89.68% and 71.43% in the treated and the control groups, respectively ( $P < 0.05$ ). Wang *et al*<sup>13</sup> randomized 80 patients with oligozoospermia into a treatment and control group. The treatment group was administered Yijing Decoction, and the control group was given vitamin E. They found that two patients were cured, six patients had marked effects, and 16 patients saw effects in the treatment group. The total effective rate was 63.16% in the treatment group. Zero patients were cured, two patients saw marked effects, and five patients saw effects in the control group. The total effective rate was 19.44% in the control group ( $P < 0.05$ ). Hu<sup>14</sup> randomly divided 246 patients with oligozoospermia into a treatment and control group with 126 and 120 patients, respectively. The treatment group was administered Hushiyulin Pill, which is composed of: Yinyanghuo (*Herba Epimedii Brevicornus*), Shanzhuyu (*Fructus Corni*), Huangqi (*Radix Astragali Mongolici*), Tusizi (*Semen Cuscutae*), Baishao (*Radix Paeoniae Alba*), Chenpi (*Pericarpium Citri Reticulatae*), Lurong (*Cornu Cervi Pantotrichum*), Danggui (*Radix Angelicae Sinensis*), Gouqizi (*Fructus Lycii*), Shudihuang (*Radix Rehmanniae Praeparata*), Chishao (*Radix Paeoniae Rubra*), Huangbai (*Cortex Phellodendri Amurensis*), Niuxi (*Radix Achyranthis Bidentatae*), Lujiao (Colla Cornu Cervi), Sanqi (*Radix Notoginseng*). The control group was administered Shengjing capsule. Patient A + B grade sperm count, sperm density, and sperm motility were improved in both groups, but the treatment group was improved significantly more ( $P < 0.05$ ).

## TREATMENT OF OAS WITH TCM PATENT MEDICINES

Song *et al*<sup>15</sup> randomized 92 OAS patients into a treatment and control group. The treatment group was administered Bushenkangle capsule and the control group was given WuziYanzong pill. They found that 15 patients were cured, 17 patients saw marked effects, and eight patients saw effects in the treatment group, with a total effective rate of 86.96%. In the control group, 12 patients were cured, 13 patients saw marked effects, and six patients saw effects, with a total effective rate of 67.39% ( $P < 0.05$ ). In another study, the treatment group was given compound Xuanju capsule, and the control group was administered vitamin E capsule. Grade A sperm and sperm density improved in

both groups ( $P < 0.05$ ), but the improvement in the treatment group was superior ( $P < 0.05$ ). Eighty OAS patients were randomized into two groups;<sup>16</sup> the treatment group took Huangjingzanyu capsule, and the control group was administered vitamin E, B<sub>6</sub>, Clomiphene citrate, testosterone undecanoate, zinc preparations, and human chorionic gonadotropin. In the treatment group 12 patients were cured, nine saw marked effects, 15 cases saw effects, and the total effective rate was 90.00%. In the control group, eight patients were cured, five patients saw marked effects, 14 patients saw effects, and the total effective rate was 67.50% ( $P < 0.05$ ). In another study, 120 OAS patients were randomized into two groups;<sup>17</sup> the treatment group was given Shengjing pills, while the control group was administered vitamin E. The Shengjing prescription significantly improved sperm concentration and motility ( $P < 0.05$ ), decreased serum FSH levels and elevated serum T levels ( $P < 0.05$ ), reduced DFI and seminal plasma elastase, and increased the percentage of hypotonic swelling sperm and the levels of seminal plasma  $\alpha$ -glucosidase, fructose, zinc, and acrosin. Therefore, Shengjing prescription has good clinical efficacy and improves semen parameters in patients with OAS by multiple mechanisms. Sixty male Kidney-Yang deficiency and OAS patients were randomized into two groups;<sup>18</sup> a treatment and control group. The treatment group was given Wang capsule and the control Clomiphene capsules. The total effective rate of the treatment group was 86.67%, while the control group was 70% ( $P < 0.05$ ).

## TREATMENT OF OAS WITH TCM AND WESTERN MEDICINE

Overall, 180 oligozoospermia patients were randomized into three groups, A, B, and C.<sup>19</sup> Group A was administered compound Xuanju capsule combined with L-arginine, group B was given L-arginine only, and group C was given compound Xuanju capsule. After treatment, sperm density, A grade sperm, and (A + B) grade sperm improved in all groups from before treatment ( $P < 0.05$ ). However, the improvement in group A was superior to that in the other two groups ( $P < 0.05$ ). Sixty oligozoospermia patients were randomized into a treatment or control group.<sup>20</sup> The treatment group was given compound Xuanju capsule combined with L-carnitine, and the control group was given only L-carnitine. The total effective rate of the treatment group and control groups were 86.7% and 70%, respectively ( $P < 0.05$ ). Su *et al*<sup>21</sup> randomly divided 86 and 78 oligozoospermia patients into study and control groups, respectively. The study group was administered zinc gluconate combined with Huangjingzanyu capsule, and the control group was treated only with Huangjingzanyu capsule. After treatment, the sperm density, grade A sperm, and (A + B) grade sperm improved in each

groups from before treatment ( $P<0.05$ ). However, the improvement in study group was superior to that in the other group ( $P<0.05$ ). The total effective rate of the treatment and control groups were 93.02% and 70.51%, respectively ( $P<0.05$ ). In another trial, 154 oligozoospermia patients were divided into a treatment and control group.<sup>30</sup> The treatment group was administered Honghuangxianzi *Yin* combined with L-carnitine. The total effective rates were 85.71% and 66.07% in the of treatment and control groups, respectively ( $P<0.05$ ).

## TREATMENT OF OAS WITH ACUPUNCTURE AND TCM MEDICINAL HERBS

Shi<sup>22</sup> randomly divided 97 OAS patients into three groups: a Chinese herb medicine group, an acupuncture group, and an acupuncture combined with herbs group. The effective rate of the Chinese herb group was 72.72% , that of the acupuncture group was 70.97%, and that of the acupuncture combined with herbs group was 84.84%. Therefore, the clinical effect in the acupuncture combined with herbs group was superior to that of the other two groups ( $P<0.05$ ). Sixty OAS patients were randomly divided into a treatment and control group.<sup>23</sup> The control group was given conventional Western medicine plus injection of human chorionic gonadotropin and sodium chloride, while the treatment group was given electroacupuncture combined with the co-xuanju capsule. In the treatment group, 16 patients were cured, seven patients saw marked effects, and five patients saw effects with a total effective rate of 93.3%. In the control group, seven patients were cured, eight patients saw marked effects, and four cases saw effects with a total effective rate of 63.3% ( $P<0.05$ ).

## CONCLUSION

The efficacy of Western Medicine on OAS is unsatisfactory. Modern TCM treatment of male infertility from OAS has better effects. Nevertheless, its use still has some limitations. For example, most prescriptions used are not clearly defined. Moreover, few clinical studies are actually randomized and double-blinded. Finally, the standards of diagnosis and effect evolution are not consistent, and clinical pattern differentiation has not yet reached a consensus. More rigorous studies are warranted to support the findings.

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