

Effects of acupuncture and moxa treatment in patients with semen abnormalities

Edson Gurfinkel, Agnaldo P. Cedenho, Ysao Yamamura, Miguel Srougi

Human Reproduction Division, Discipline of Urology, São Paulo Federal University, Paulista School of Medicine, São Paulo, Brazil

Asian J Androl 2003 Dec; 5: 345-348

Keywords: acupuncture; Chinese traditional medicine; infertility; moxibustion; oligozoospermia; teratozoospermia; semen

Abstract

Aim: To evaluate the effect of Chinese Traditional Medicine, acupuncture and moxa treatment, on the semen quality in patients with semen abnormalities. **Methods:** In a prospective, controlled and blind study, nineteen patients, aged 24 years ~ 42 years and married for 3 years ~ 11 years without children with semen abnormalities in concentration, morphology and/or progressive motility without apparent cause, were randomized into two groups and submitted to acupuncture and moxa treatment at the therapeutic (Study Group) and the indifferent points (Control Group), respectively, for 10 weeks. Semen analyses were performed before and after the treatment course. **Results:** The patients of the Study Group presented a significant increase in the percentage of normal-form sperm compared to the Control Group (calculated $U=16.0$, critical $U=17.0$). **Conclusion:** The Chinese Traditional Medicine acupuncture and moxa techniques significantly increase the percentage of normal-form sperm in infertile patients with oligoastenoteratozoospermia without apparent cause.

1 Introduction

It is known that men are responsible for 47 % of the infertility problems [1, 2]. Despite the scientific medical advances, 40 % of the infertile patients who present abnormal semen analysis remain with no definite etiologic diagnosis, making the clinical treatment limited and frustrating [3]. On the other hand, some authors have successfully treated patients with varicocele or prostatitis and semen abnormalities using techniques of the Chinese Traditional Medicine [4-7]. We have proposed this prospective, controlled and blind study on infertile patients presented semen abnormalities in concentration, morphology and/or progressive motility to evaluate if acupuncture and moxa treatments could improve the semen parameters.

2 Materials and methods

2.1 Patients

2.1.1 Inclusion criteria

Patients sought infertility treatment in the Human Reproductive Division of the Department of Gynecology and Discipline of Urology of the São Paulo Federal University Paulista School of Medicine between January 1999 and September 2000. Nineteen patients without children were included with semen abnormalities in concentration, morphology and/or progressive motility detected in 2 semen analyses at the Human Reproduction Laboratory of São Paulo Federal

University. They were otherwise healthy. The patients were randomized into two groups: the Study Group [$n=9$, aged 24 years ~ 43 years (mean 33.4 years) and married for 5 years ~ 11 years (median 7.6 years)] and the Control Group [$n=10$, aged 26 years ~ 42 years (mean 31.6 years) and married for 3 years ~ 8 years (median 6.1 years)]. The clinical investigation was approved by the Institutional Review Board.

2.1.2 Exclusion criteria

Patients with sperm concentration $<5 \times 10^6$ /mL, leukocytospermia, previous reproductive organ surgery or usage of drugs acting on the genito-urinary tract within 1 year were excluded.

2.2 Treatment

2.2.1 Study Group

Patients of the Study Group were treated with classic acupuncture and moxa (warming acupuncture points) at the therapeutic points (Tables 1 & 2). Stainless steel disposable needles (0.25 mm \times 30 mm, Lautz Company, Brazil) were used. Needle depth and direction at each point were in accordance with the acupuncture treatment fundamentals [9], obtaining needling sensation (Teqi) at each point. Moxa was applied up to the appearance of local erythema. For this, the artemisia wool (Chinese National Medicines and Health Products Imp. Exp. Corp. Human Branch, Beijing, China) were used. Each session of treatment consisted of 25 minutes of acupuncture and 20 minutes of moxibustion, twice a week. The whole treatment course lasted 10 weeks. After the treatment course, an additional semen analysis was performed by a technician not knowing the details of the patient.

Table 1. Acupuncture points. (from: Zhao JS. Chinese Acupuncture and Moxibustion. Shanghai: Shanghai University of TCM Publishing House. 2002; P 40-144).

E30 (Qichong)	R3 (Taixi)
E36 (Zu Sanli)	IG4 (Hegu)
BP6 (Sanyinjiao)	BP4 (Gongsun)
F3 (Taichong)	CS6 (Neiguan)

Table 2. Moxa Points. (from: Zhao JS. Chinese Acupuncture and Moxibustion. Shanghai: Shanghai University of TCM Publishing House. 2002; P 40-144).

B23 (Shen Shu)	VC6 (Qi Hai)	VC 5 (Shimen)	PC46 (Qimen)
B52 (Zhishi)	VC4 (Guanyuan)	P9 (Taiyuan)	PC49 (Zigong)
B22 (San Jiao Shu)	VC3 (Zhongji)	B13 (Feishu)	
VG4 (Mingmen)	B20 (Pishu)	B14 (Jue Yinshu)	
B32 (Ciliao)	B21 (Weishu)	B15 (Xinshu)	

2.2.2 Control Group

The control patients had acupuncture and moxa treatment performed at non-therapeutic indifferent points. Four ventral acupuncture points, two over the anterosuperior iliac spines and two over the acromioclavicular regions and four dorsal moxa points, two over the scapula and two over the posteroinferior spine, bilaterally were selected. The procedure was similar to those of the Study Group. Similarly, a semen analysis was performed at the end of the course

2.3 Semen analysis

Semen samples were obtained by masturbation after 3 days ~ 5 days sexual abstinence. After 30 min of liquefaction at 37 °C, semen analyses were performed according to the laboratory manual of World Health Organization [8], while the sperm morphology was estimated as per Kruger *et al* [9]. Analyses were performed by two experienced technicians.

2.4 Statistical analysis

The Wilcoxon Tests [10] was used to compare the pre- and post-treatment data and the Mann-Whitney test [10] to compare the two groups in relation to the calculated percentage data. Nullity hypothesis rejection level was set in 5 %.

$$D \% = \frac{(Post - Pre)}{Pre} \times 100 \%$$

3 Results

All patients completed the treatment, indicating a good patient tolerance to the procedure. However, statistical analysis was performed with 8 patients in the Study Group. One was excluded on account of incomplete seminal data.

The patients of the Study Group presented a significant increase in the percentage of normal-form sperm compared to the Control Group (Table 3). The comparison of other pre- and post-treatment data (volume, concentration, progressive motility and number of round cells) did not show significant differences between the two groups.

Table 3. Patients with semen abnormalities in Control and Study Groups according to the percentage of normal-form sperm observed in the pre- and post-treatment periods.

	Control			Study		
	Pre	Post	Δ%	Pre	Post	Δ%
	10.00	3.00	-70.00	1.50	7.00	366.67
	1.50	1.00	-33.30	7.50	8.00	6.70
	7.00	7.00	0.00	4.00	6.00	50.00
	4.00	3.00	-25.00	2.00	2.00	0.00
	4.00	5.00	25.00	6.50	8.00	23.08
	4.50	7.00	55.60	6.00	8.00	33.33
	5.00	0.30	-94.00	4.00	4.00	0.00
	1.00	1.00	0.00	6.50	5.00	-23.08
	7.00	0.70	-90.00			
	4.00	3.00	-25.00			
Mean	4.80	4.00	-25.67	4.70	6.00	57.08
Median	4.20	3.00	-25.00	5.00	6.50	14.87
Wilcoxon Test						
(Pre vs Post)						
	Control		Study			
	Calculated T = 9.00		Calculated T = 2.50			
	Critical T = 3.00		Critical T = 1.00			
Mann "C" Whitney Test						
(Δ% Control vs Δ% Study)						
	Calculated U = 16.00		Critical U = 17.00			

4 Discussion

This study showed that the treatment of patients with oligo-, asteno-, terato- and oligoastenoteratozoospermia without apparent cause using acupuncture and moxa techniques can positively influence semen quality, once it improves semen morphology. This result was in accordance with Gerhard *et al* [5]. The possible mechanism by which acupuncture and moxa improve the sperm morphology may include their possible action through the nervous system. Acupuncture points are areas histologically differentiated, capable of generating an action potential which is conducted by the neural fibers A delta and/or C [11-13]. This stimulus at the posterior column medulla level can create a somatovisceral reflex arc or climb to superior centers, such as the reticular formation, thalamus and cerebral cortex [14, 15]. The response can be probable testicle and epididymis vasodilation. This fact is important when we correlate semen quality and the abnormal presence of reactive oxygen species (ROS). Previous studies have demonstrated that there were lower levels of seminal antioxidant agents in infertile patients, especially in those with compromised sperm motility, than in fertile men [16, 17, 18]. Besides, Gerhard *et al* [5], Siterman *et al* [6] and Siterman *et al* [7] indicated that in the treatment of infertile men with acupuncture, the best results were obtained in those with genital tract inflammation and varicocele, two sources of ROS [19, 20]. Thus, the lipidic peroxidation process in sperm plasma membrane and the high toxicity of the generated fatty acid peroxides proposed as being responsible for the functional and morphological alterations [21], would benefit from the vasodilatation caused by acupuncture and moxa treatments. This vasodilatation would supply antioxidant supplementation as vitamins C and E and glutathione to prevent plasma membrane damage by ROS, thus allowing the gamete recovery [16, 22]. Despite the small number of patients in this study, acupuncture and moxa treatments seem to favorably modify normal-form sperm counting.

In conclusion, the Chinese Traditional Medicine acupuncture and moxa techniques significantly increase the percentage of normal-form sperm in patients with oligoastenoteratozoospermia without apparent cause.

References

- [1] Mar"aa IH, Aguilar RC, Ayala AR. Estudio del hombre est"ril. Ginecol Obstet Mex 1997; 65: 368-72.
- [2] Oldereid NB, Rui H, Purvis K. Male partners in infertile couples. Personal attitudes and contact with the Norwegian Health Service. Scand J Soc Med 1990; 18: 207-11.
- [3] de Kretser DM. Male infertility. Lancet 1997; 349: 787-90.
- [4] Fischl F, Riegler R, Bieglmayer CH, Nasr F, Neumark J. Die beeinflubarkeit der samenqualit"t durch akupunktur bei subfertilen m"nnern. Geburtsh u Frauenheik 1984; 44: 510-2.
- [5] Gerhard I, Jung I, Postneek F. Effects of acupuncture on semen parameters/ hormone profile in infertile men. Mol Androl 1992; 4: 9-25.
- [6] Siterman, S, Eltes F, Wolfson V, Zabludovsky N, Bartoov B. Effect of acupuncture on sperm parameters of males suffering from subfertility related to low sperm quality. Arch Androl 1997; 39: 155-61.
- [7] Siterman S, Eltes F, Wolfson V, Lederman H, Bartoov B. Does acupuncture treatment affect sperm density in males with very low sperm count? A pilot study. Andrologia 2000; 32: 31-9.
- [8] World Health Organization. WHO Laboratory manual for the examination of human semen and sperm-cervical mucus interaction. 4th ed. Cambridge: Cambridge University Press; 1999. p 7-14.
- [9] Kruger TF, Ackerman SB, Simmons KF, Swanson RJ, Brugo SS, Acosta AA. A quick, reliable staining technique for human sperm morphology. Arch Androl 1987; 18: 275-7.
- [10] Siegel S, Castellan Jr NJ. Nonparametric statistics. New York: Mc Graw Hill; 1988.

- [11] Dornette WH. The anatomy of acupuncture. Bull N Y Acad Med 1975; 51: 895-902.
- [12] Lu GW, Xie JQ, Yang J, Wang YN, Wang QL. Afferent nerve fiber composition at point zusanli in relation to acupuncture analgesia. A functional morphologic investigation. Chin Med J (Engl) 1981; 94: 255-63.
- [13] Zonglian H. A study on the histologic structure of acupuncture points and types of fibers conveying needling sensation. Chin Med J (Engl) 1979; 92: 223-32.
- [14] Haber LH, Moore BD, Willis WD. Electrophysiological response properties of spinoreticular neurons in the monkey. J Comp Neurol 1982; 297: 75-84.
- [15] Ammons WS. Characteristics of spinoreticular and spinothalamic neurons with renal input. J Neurophysiol 1987; 58: 480-95.
- [16] Lewis SE, Sterling ES, Young IS, Thompson W. Comparison of individual antioxidants of sperm and seminal plasma in fertile and infertile men. Fert Steril 1997; 67: 142-7.
- [17] Bhardwaj A, Verma A, Majumdar S, Khanduja KL. Status of vitamin E and reduced glutathione in semen of oligozoospermic and azoospermic patients. Asian J Androl 2000; 2: 225-8.
- [18] Fujii J, Iuchi Y, Matsuki S, Ishii T. Cooperative function of antioxidant and redox systems against oxidative stress in male reproductive tissues. Asian J Androl 2003; 5: 231-42.
- [19] Aitken RJ, Buckingham DW, Brindle J, Gomez E, Baker HWG, Irvine DS. Analysis of sperm movement in relation to the oxidative stress created by leukocytes in washed sperm preparations and seminal plasma. Hum Reprod 1995; 10: 2061-71.
- [20] Lenzi A, Picardo M, Gandini L, Lombardo F, Terminali O, Passi S, *et al.* Glutathione treatment of dyspermia: effect on the lipoperoxidation process. Hum Reprod 1994; 9: 2044-50.
- [21] Rao B, Soufir JC, Martin M, David G. Lipid peroxidation in human spermatozoa as related to midpiece abnormalities and motility. Gam Res 1989; 24: 127-34.
- [22] Sharma RK, Agarwal A. Role of reactive oxygen species in male infertility. Urology 1996; 48: 835-50.

Correspondence to: Dr. Edson Gurfinkel, R. Urbanizadora, 118 apt. 101, 01252-040 São Paulo, Brazil.

Tel/Fax: +55-11-3032 8348

E-mail: egurfa@uol.com.br

Received 2003-06-16 Accepted 2003-08-06