Evaluation on Antisperm Antibody in Infertile Women with Chronic Salpingitis

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Objective To evaluate the level of antisperm antibody (ASA) in infertile women with chronic salpingitis.

Methods Forty-eight infertile women with chronic salpingitis were enrolled into this study. Serum samples were screened by the direct immunobead test for ASA type IgG and IgA according to the WHO laboratory manual. About 50% or more of the motile sperm attaching to one or more immunobeads were regarded as clinical positivity according to the WHO criteria. About 20%–50% motile sperm that had adherent particles were deemed to be sub-positive.

Results Of the 48 patients with chronic salpingitis assessed for ASA-IgG, 4 had immunobead bindings ranged from 50% to 60%, and the positive rate was 8.3%. In addition, 5 cases had 20%–40% of immunobead bindings, and the sub-positive rate was 10.4%. For ASA-IgA detecting, 2 cases with ASA-IgG positivity also had ASA-IgA immunobead bindings, and the positive rates were 22%, and 28%, respectively.

Conclusion The incidence of ASA could be found in infertile women with chronic salpingitis, which suggests that an increased risk for the production of ASA would exist in the inflammatory status of fallopian tube.

Key words: antisperm antibody (ASA); salpingitis; infertility
female infertility\[4-6\]. The most prevalent cause of tubal factor infertility is pelvic inflammatory disease and salpingitis\[7-11\], and the latter is related to immune response and the induction of antibodies\[12-14\]. Antisperm antibody (ASA) reduces female fertility potential\[15-20\]. However, infertile women with chronic salpingitis whether is associated with the risk of production of ASA has not been fully understood. The present study was conducted to detect the ASA level in the serum samples of infertile women with chronic salpingitis by means of indirect immunobead test, aiming to elucidate the role of ASA in the pathogenesis of chronic salpingitis associated infertility.

Materials & Methods

Subjects

Forty-eight women (mean: 32.3±3.2 years, range: 23–37 years) diagnosed as chronic salpingitis who came to the infertility clinic were enrolled into this study. Women with history of antiallergic, immunosuppressive treatment in the previous two months were excluded from this study. Detailed history and clinical features were recorded and all relevant investigations were performed. Informed consent was obtained from each subject.

Collection of serum samples

A volume of 3 ml of venous blood without anticoagulant was obtained from each case. After natural coagulation, the blood samples were centrifuged at 2000 × g for 10 min, and the supernatants were taken and stored at −20 °C until used for ASA detection. Before ASA detection, serum samples of the subjects were heated at 56 °C for 30 min to inactivate complement.

Indirect immunobead test (I-IBT)

The serum was screened by the I-IBT for ASA type IgG and IgA according to the WHO laboratory manual\[21\]. Briefly, as previously described\[22,23\], mixed 50 µl of the washed donor sperm suspension containing 10–20 × 10⁶ motile sperm/ml with 50 µl detected serum which had been diluted by 1:5, and the mixture was incubated at 37 °C for 1 h. After washing, a volume of 5 µl of the sperm suspension was mixed thoroughly with 5 µl immunobead (Irvine Scientific, California, USA) suspension on a slide, which was observed with a phase-contrast microscopy. About 50% or more of the motile sperm attached to one or more immunobeads were regarded as clinical positivity according to the WHO criteria. About 20%–50% motile sperm that had adherent particles were deemed to be sub-positive. Sera of both ASA-positive and ASA-negative were set as the positive and negative controls, respectively.

Results

Of the 48 patients with chronic salpingitis assessed for ASA-IgG, 4 cases had
immunobead bindings ranged from 50% to 60%, and the positive rate was 8.3%. In addition, 5 cases had 20%-40% of immunobead bindings, and the sub-positive rate was 10.4%. For ASA-IgA detecting, 2 cases with ASA-IgG positivity also had ASA-IgA immunobead bindings, and the positive rates were 22%, and 28%, respectively.

**Discussion**

The fallopian tube is an important organ in female reproductive system linked between the ovary and the uterus. During reproductive process, several important events such as sperm acrosome reaction, sperm-oocyte interaction, fertilization, and early embryo development occur in the fallopian tube. Cells of fallopian epithelia have an active secretive function, which mediates and regulates the above reproductive events\[^{24-26}\]. Obviously, abnormalities of fallopian tubes including salpingitis would have negative effects on activities of the epithelia, which lead to tubal factor infertility.

It is well known that the genital tract infection is a major cause of tubal factor infertility secondary to salpingitis\[^{10-12,27-29}\]. In chronic inflammatory conditions of fallopian tube, the present study showed that 4 cases with ASA-IgG positivity existed in women with chronic salpingitis. Adding those 5 cases with sub-positivity, the number of patients with clinical or sub-clinical positivity of ASA was 9, and the incidence of ASA-IgG was 18.8%. Besides, 2 cases with ASA-IgA positivity were found. These results demonstrated those cases underwent sperm immunity. Although the incidence of ASA was not very high, it means that an increased risk for the production of ASA would exist in women with chronic salpingitis, which indicates that chronic salpingitis would not only contribute to tubal infertility, but also attribute to be a risk factor for inducing immune infertility in some cases.

Salpingitis usually results from the infection of upper genital tract by pathogens ascending from the cervix or the vagina\[^{8-12,27-29}\]. In the inflammatory status of fallopian tube, the mechanism for the production of ASA remains unknown. One of the responsible factors for this phenomenon in the patients is associated with elevated sperm immunity. Female genital tract has both the local and systemic origin of ASA\[^{15,16,30}\]. Generally, the infection and inflammation of the female genital tract is commonly caused by sexually transmitted micro-organisms such as *Chlamydia trachomatis* even human immunodeficiency virus (HIV)\[^{14,27-29}\], and results in defective epithelia of the genital tract. Damage to the epithelia largely impaired the integrity of immune defense system, which would facilitate interaction between sperm antigens and immune cells within the genital tract. Consequently, sperm antigen can evolve to response of the immune system to produce ASA. On the other hand, some of the patients in this study did not show ASA positivity, which might be related to salpingitis of different grade, history of salpingitis, or the content of sperm antigen stimulation,
and needs further investigation.

In conclusion, this study revealed that infertile women with chronic salpingitis exhibited a proportion of ASA, which suggested that an increased risk for the production of ASA would exist in such cases. For the therapy of infertile women with chronic salpingitis, immune factors would be considered in order to enhance the treating efficacy.

References

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Conference Information

Birth Injuries & the Law Clinical Challenges & Medical Malpractice
November 6th to 8th Nevada / Las Vegas Legal/Ethics, Obstetrics / Gynecology
Contact: Registration Department, Contemporary Forums
Phone: 925-828-7100
Fax: 800-329-9923
E-mail: info@cforums.com

2014 American Congress of Obstetricians & Gynecologists (ACOG) Armed Forces District Annual District Meeting
November 9th to 12th Ohio / Cincinnati Obstetrics / Gynecology
Contact: ACOG Armed Forces District
Phone: 202-863-2541
Fax: 202-488-0787
Website: http://www.acog.org/Education-and-Events/Annual-District-Meetings

20th Annual Conference on Women’s Health: Care of Women Over 50
November 12th to 15th Hawaii / Big Island Family Medicine, General Medicine, Internal Medicine, Obstetrics / Gynecology
Contact: Symposia Medicus
Phone: 800-327-3161 or 925-969-1789
Fax: 925-969-1795
Website: http://symposiamedicus.org/Conferences.aspx

30th Annual Fetus & Newborn: Improving Outcomes in Perinatal & Neonatal Care Conference
November 12th to 15th Nevada / Las Vegas Obstetrics / Gynecology, Other Specialties, Pediatrics
Contact: Registration Department, Contemporary Forums
Phone: 925-828-7100
Fax: 800-329-9923
E-mail: info@cforums.com
Website: http://contemporaryforums.com/continuing-education-conferences/2014/fetus-newborn-november-las-vegas.html

12th Annual Academic Day for Neonatologists
November 13th Connecticut / Orange Obstetrics / Gynecology
Contact: CME Program Office, Children's Hospital of Orange County
Phone: 714-509-8894
Website: http://www.choc.org/events/index.cfmid=P00473&eid=993&keyword=professionals&section