

Diagnosis and Management of Severe Oligozoospermia Caused by Incomplete Obstruction of Seminal Tract

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Abstract — Objective: To explore the diagnosis methods and treatment principle of severe oligozoospermia caused by incomplete obstruction of seminal tract. **Method:** Collect and analyze the clinical data of 76 patients who visited Reproductive Center of the Second Hospital of Jilin University from August 2007 to April 2013 with the clinical outcome of severe oligozoospermia indicated by 3 consecutive semen analysis and normal spermatogenic function verified by testicular or epididymal biopsy. **Results:** In 70 cases(92.1%), the sperm density is less than 2×10^7 /ml. 23 patients(30.26%) have suffered from inflammation of urogenital tract or reproductive gland, 36 patient(47.36%) show positive anti-sperm antibody (AsAb) detection. After different spermatogenic drug therapy and anti-inflammatory treatment, all 76 patients show no significant increase of semen volume and sperm density in semen analysis. In 47 cases(61.84%), the wife achieved successful pregnancy after intracytoplasmic sperm injection (ICSI). **Conclusion:** Severe oligozoospermia should be treated with confirmed etiology, which needs many relevant examinations. If all the examinations are normal and the medicine treatments are noneffective, it is probably that severe oligozoospermia which is caused by incomplete obstruction of seminal tract should turn to ICSI method in time.

Keywords - oligozoospermia, incomplete obstruction, diagnosis, management

I. INTRODUCTION

Infertility is defined as the inability of a couple to conceive after 1 year of unprotected sexual intercourse[1]. It affects approximately 10%–15% of couples[2], and male factors are responsible for about 20%–50% of these cases[3]. Oligozoospermia is an important component of male infertility, in which the semen density is less than 2×10^8 /ml in semen analysis. When the semen density is less than 5×10^7 /ml, it is named as severe oligozoospermia[4]. In the andrological clinic of our reproductive center, we often see some patients are accompanied with a special kind of severe oligozoospermia caused by incomplete obstruction of seminal tract, on which, to our best knowledge, few researchers have focused. In such cases, the semen density is less than 2×10^7 /ml or a small amount of semen can be found even after semen centrifugation, but the spermatogenic function is normal after testicular or epididymal biopsy and there is no obvious abnormality of spermatic duct, ejaculatory duct or seminal vesicle after transrectal ultrasonography (TRUS). After different spermatogenic drug therapies and anti-inflammatory treatments, there is no obvious increase of semen volume and sperm density in semen analysis. Here we describe and analyze the severe oligozoospermia caused by incomplete obstruction of

seminal tract in infertile males to explore the diagnostic criteria and clinical treatment of this disease.

II. MATERIALS AND METHODS

Seventy six patients who visited Reproductive Center of the Second Hospital of Jilin University from August 2007 to April 2013 with the clinical outcome of severe oligozoospermia indicated by 3 consecutive semen analysis and normal spermatogenic function verified by testicular or epididymal biopsy were selected. Their mean age is 35 ± 5 years old with an infertile duration of 4-8 years. The partners of all the seventy six patients were diagnosed with no obvious infertile factors and their sexual life were normal.

All the patients completed the following examinations: ① complete general and andrological history, including genital trauma, genital inflammation or drug usage which is harmful to the spermatogenesis of testis; ② hormone determinations: include follicle-stimulating hormone (FSH), luteinizing hormone (LH), prolactin, estrogen and testosterone serum concentrations using radioimmunoassay; ③ detection of serum antisperm antibodies (AsAb) with enzyme linked immune-sorbent assay; ④ semen analysis: at least three were done, parameters measured were: seminal volume, sperm concentration and motility (according to the WHO manual for the standardized investigation, diagnosis

and management of the infertile male, the fourth edition[World 1999]); ⑤ TRUS, which can exclude the obstruction of spermatic duct or ejaculatory duct. ⑥ complete physical examination with special attention to external genitalia, observing whether there was varicocele, recording the size of testis and whether there was tenderness or nodule; ⑦ testicular or epididymal biopsy: the specimen would also be sent for pathological examination; ⑧ chromosome examination, to determine the karyotype and exclude the absence of azoospermia factor (AZF).

III. RESULTS

All the patients deny history of surgery, trauma or radiation exposure; the testis development is normal and there is no varicocele case; hormone determinations and chromosome examination were normal; there was no obvious abnormality of spermatic duct, ejaculatory duct or seminal vesicle after TRUS. The positive findings are: ① In 70 cases(92.1%), the sperm density is less than $2 \times 10^7/\text{ml}$, the other 6 patients' sperm density is less than $5 \times 10^7/\text{ml}$; ② 23 patients(30.26%) have suffered from inflammation of urogenital tract or reproductive gland; ③ 11 patients(14.47%) had palpable epididymis nodules; ④ 36 patients(47.36%) show positive AsAb detection.

All the 76 patients were treated with different spermatogenic drug therapies and anti-inflammatory treatments for 3 (51 cases) or 6 (25 cases) months, but there was no obvious increase of semen volume and sperm density in semen analysis. In the end, 47 cases(61.84%) achieved successful pregnancy after intracytoplasmic sperm injection (ICSI).

IV. DISCUSSION

Oligozoospermia is an important cause for male infertility and can be classified as obstructive azoospermia, non-obstructive azoospermia and idiopathic azoospermia[5]. In this research, we mainly focus on the obstructive azoospermia(OA), which is accompanied with normal exocrine and endocrine function, and normal spermatogenesis in the testis[6]. OA is the consequence of physical blockage to the male excurrent ductal system and may occur in any region between the rete testis and the ejaculatory ducts[7]. OA can be caused by congenital factors or acquired factors[5]. Congenital factors of OA include congenital unilateral or bilateral absence of the vas deferens, ejaculatory duct or seminal vesicle; absent vasa as well as partial or complete absence of the epididymis; congenital Müllerian duct cysts which may squeeze the semen tract. Acquired causes of OA include severe inflammation, trauma or tumour of the urogenital system which finally obstruct the semen tract.

Nevertheless, it is less well known that incomplete obstruction of semen tract may also cause

oligozoospermia[8]. It is possible that such patients may present with long period of oligozoospermia which will finally become azoospermia when the obstruction is complete. In andrological clinic, these severe oligozoospermic men have normal spermatogenesis, normal endocrinological determination and other normal testes [6].

The management of oligozoospermia includes spermatogenic drug therapy, anti-inflammatory treatment, immunological therapy and surgery. The 76 severe oligozoospermia cases in our research have no abnormalities of endocrine, chromosome, or testicular or epididymal biopsy, so we firstly try the spermatogenic drug and anti-inflammatory treatment. After 3 or 6 months' medicine treatment, there was no obvious increase of semen volume and sperm density in semen analysis. Since the sperm density is of small amount and 47.36% accompanied with positive AsAb, so we turned to ICSI instead of routine in-vitro fertilization. Ou [9] reported that the fertility rate and pregnancy rate of ICSI is not affected by positive AsAb. In the follow-up, 61.84% of patients achieved successful pregnancy by ICSI.

Considering a gradually developing incomplete obstruction may result in a long period of oligozoospermia, and the patient can be clinically and endocrineologically normal, considerable diagnostic difficulties will arise. So for severe oligozoospermia caused by incomplete obstruction of seminal tract, the diagnostic methods in our research is practical and ICSI is a preferred management.

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