

Successful Pregnancy and Live Birth After Intracytoplasmic Sperm Injection in Male Partner with Primary Ciliary Dyskinesia (Kartagener's Syndrome): Case Report

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Abstract— Primary ciliary dyskinesia (PCD) is a rare genetically inherited disorder. It is an autosomal recessive disease. It is characterized by abnormal structure of the cilia in epithelial lining of the uterine tube, respiratory tract and tail of the sperm. Clinically it involves chronic sinusitis, bronchitis and situs inversus. The infertility is due to totally immotile sperms. This is a case of male with KS attended the infertility center in Al-Kafeel Super-specialty hospital with one-year history of primary infertility. The seminal fluid analysis revealed totally immotile sperms with 65% viability after using hypo-osmotic swelling test (HOST).

Index Terms— Kartagener's syndrome, primary ciliary dyskinesia, HOST.

I. INTRODUCTION

Primary ciliary dyskinesia (PCD) is an autosomal recessive disorder. It is caused by genetic mutation resulting in abnormality in the structure of the cilia in epithelial lining of respiratory tract, uterine tube and the flagellum of the sperms collectively. It is called Kartagener's Syndrome (KS) [1]. The clinical manifestations involve 'sinusitis-bronchiectasis-situs inversus' [2]. The impaired ciliary motility in KS presented as recurrent ear, nose, throat, chest, sinus infection and infertility [3]. In male with KS, pregnancy cannot be achieved naturally due to 100% asthenozoospermia (total immotile sperms). So the intracytoplasmic sperm injection (ICSI) is the treatment of choice to have a baby [4]. Cases of successful pregnancy and live birth of healthy babies after ICSI by using totally immotile sperms have been reported [5]. This is a case of pregnancy and giving a live birth male baby for patient with KS after treatment with ICSI.

II. CASE REPORT

A 27-year-old male attended the fertility clinic in Al-Kafeel Super Specialist Hospital, Karbala Governorate, Iraq. He suffered from a one-year history of primary infertility. He was a confirmed case of KS with a history of recurrent respiratory tract infection, bronchitis and sinusitis. The seminal fluid analysis (SFA) always showed totally immotile spermatozoa. The wife was 23 years old, completely healthy and had no problem regarding fertility issues. She was enrolled in a short agonist ovarian stimulation protocol. Ten follicles reached the desired size (>17 mm in diameter). Seven metaphase II (MII) oocytes were picked up under ultrasound guidance. The semen sample was collected at the day of oocytes collection by masturbation into a sterile cup. The initial semen examination revealed: a volume of 2.2 ml, concentration: 8×10^6 million/ml, motility%: (Active: 0 Sluggish: 0 Immotile: 100), normal morphology %: ~5, agglutination: nil, round Cells: 3-4. Semen preparation was achieved by simple wash. The selection of viable sperms for oocyte injection depended on the hypo-osmotic swelling test (HOST). The sperms tested by HOST. In HOST (figure 1, A), the viable sperm will show carving in its tail. Also eosin-nigrosin stain was used to test the sperms' viability, the nonviable sperms take the stain (figure 1, B).

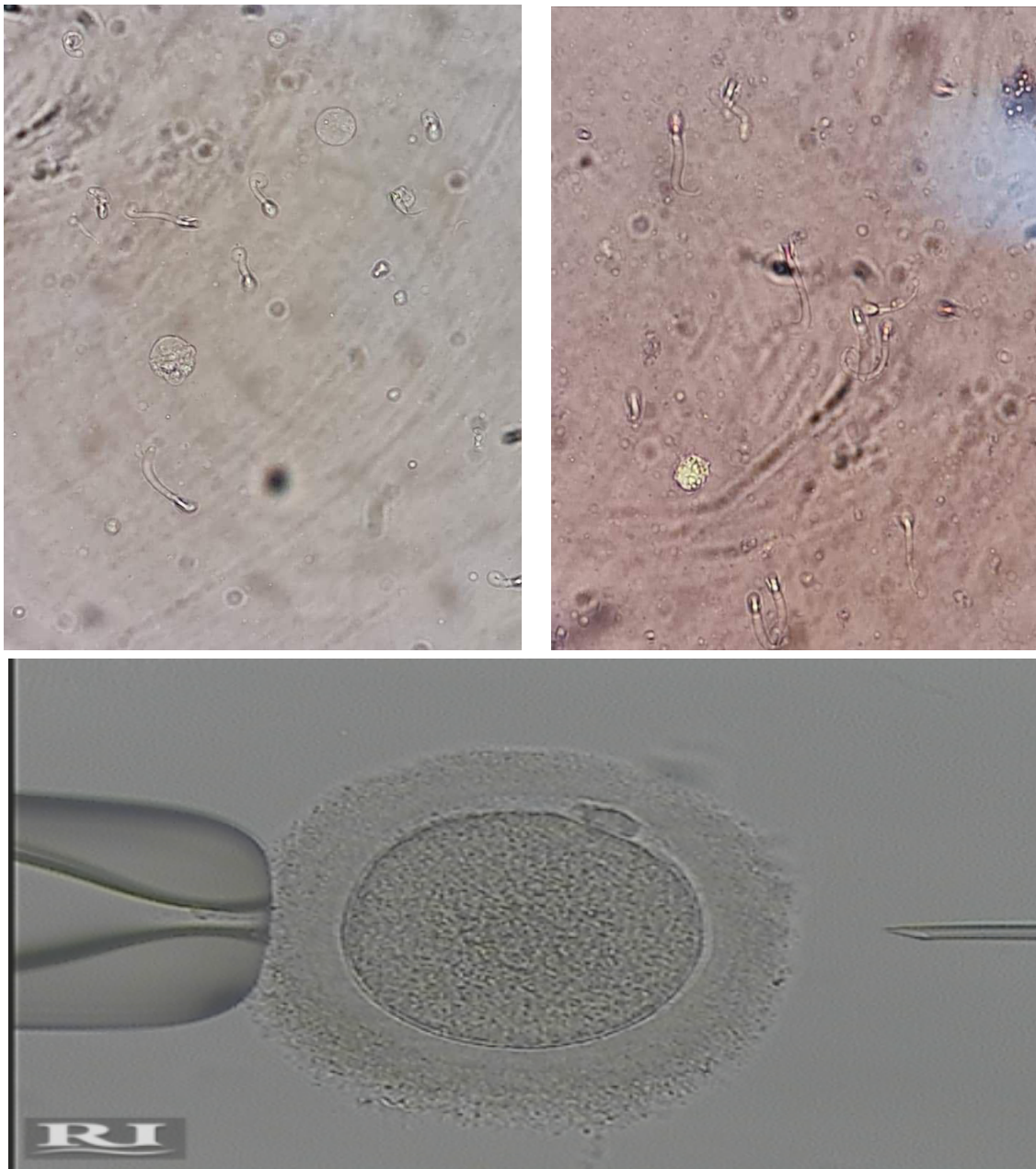


Fig. 2: Intracytoplasmic sperm injection.

All the mature MII oocytes were injected with viable sperm by ICSI procedure (figure 2) and six of them were fertilized. Assessment of the fertilized oocytes on the second day revealed 6 embryos. The embryological grading was: 6 cells embryos grade A (2), 4 cells embryos grade A (2) and 6 cells embryos grade B (2) as in figure 3. Three top quality, grade A, day two embryos were transferred to the female partner. Luteal phase support was carried out by giving the female the following program: Duphaston tab 10 mg (1*2), Estrofen tab 2 mg (1*) and cyclogest suppositories 400 mg (1*2) for twenty days.

Two weeks after embryos transfer pregnancy test was done by assessing the beta human chorionic gonadotropin (β -HCG) in blood and it was fortunately positive. Clinical pregnancy was ensured by ultrasound examination. Single viable fetus was shown after four weeks of embryos transfer. After a nine month the pregnancy happily ended by giving birth to a healthy boy.

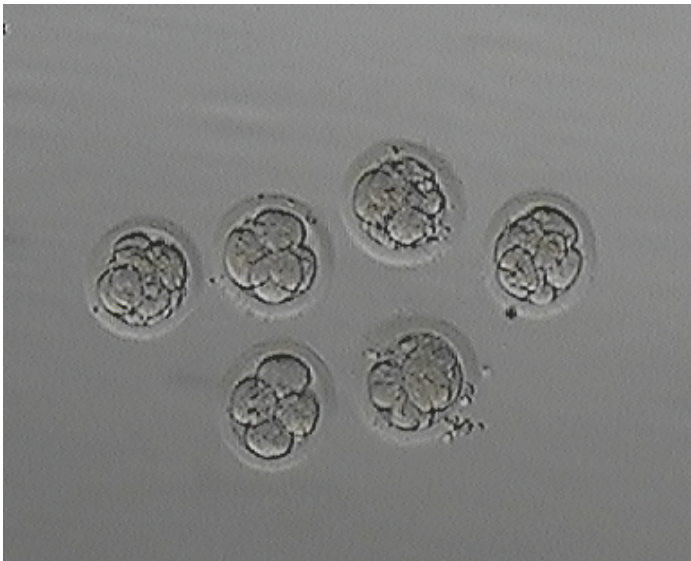


Fig. 3: the embryos of the case.

III. DISCUSSION

KS which is a subgroup of PCD. It is due to abnormality in the structure and function of the cilia result from loss or dysfunction of dynein arms, radial spokes, and microtubules of cilia encoded by the mutant genes DNAI1 and DNAH5[6]. Many genetic and non-genetic disorders may cause male infertility, when there is an axonal defect of the sperms it is clearly tested phenotype [7]. For patients with PCD who are attending the respiratory clinic, counseling regarding the genetic and fertility problems should be achieved. Arrangement for fertility testing should be available at the time period from the pediatric to adult care clinic for all males suffering from PCD [1]. About 75% of male partner with PCD suffered infertility still, the prognosis of fertility in such patients hasn't clearly known [8]. Based on the WHO guidelines (WHO 2010), the SFA in fertility clinics leads the initial fertility assessment. Based on SFA we can estimate the sperm parameters including the concentration, motility, and total morphology, all these parameters helped to classify the phenotype of the sperms. In patients with PCD, SFA revealed decreased sperm count, decreased or absent motility, and almost normal morphology [1].

IV. CONCLUSION

In the presence of obvious advance in assistant reproductive techniques especially ICSI, a lot of reports of fertilization and pregnancy in patients with totally immotile sperms were documented. Nowadays, the opportunity to have baby by ICSI from males have viable non-motile sperm is comparable with result of ICSI using mobile sperm [5].

V. REFERENCES

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