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LETTER TO THE EDITOR

Male Infertility

First successful pregnancy outcome after intracytoplasmic sperm injection with short-tailed sperm from an infertile Han Chinese man

Yan-Wei Sha, Qing Zhang, Lu Ding, Ping Li

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Dear Editor,

Short-tailed sperms are rarely encountered in clinical practice, but they make achieving fertilization difficult. We encountered a very rare case of an infertile man having short-tailed sperm. A 32-year-old Chinese farmer and his 27-year-old wife were referred to Xiamen Maternity and Child Care Hospital for a fertility evaluation. They were married in March 2008, and after 3 years, his wife became pregnant. However, spontaneous abortion occurred 40 days later. Afterward, pregnancy was not achieved despite 4 years of unprotected coitus. The man reported that he had been smoking 10 cigarettes per day for the past 10 years. A semen sample was collected by masturbation after 4 days of sexual abstinence. The ejaculate was fully liquefied in 20 min, and a semen analysis was performed in our laboratory according to the standard World Health Organization (WHO) criteria. Through light microscopic evaluation, we found that the sperm concentration was 15.5×10^6 per ml, and the percentages of progressive (PR), nonprogressive (NP), and immotility (IM) were 14.5%, 11.7%, and 73.7%, respectively. Morphology analysis revealed that 99.5% of the spermatozoa showing a short-tail phenotype (**Figure 1a**) compared with normal sperm morphology (**Figure 1b**). Based on the results of the semen analyses, the patient was diagnosed with asthenoteratozoospermia.

Because of the patient's asthenoteratozoospermia, we chose to perform intracytoplasmic sperm injection (ICSI) to fertilize oocytes. Twelve oocytes were obtained from his wife on day 0, and all oocytes were mature (MII). For the ICSI procedure, we prefer ejaculated spermatozoa that were fast-moving and had long tails. Eighteen hours after ICSI, a fertilization check was performed. Eight of the embryos had two pronuclei (2PN) (**Figure 2a**), one had 0 pronuclei (0PN) (**Figure 2b**), and the remaining three each had one pronucleus (1PN) (**Figure 2c**). On the second day after ICSI, cleavage was observed in nine embryos; one was grade 2.5 and the others were grade 3 or 3.5. Two embryos (**Figure 2d** and **2e**) were transferred on day 2. The other embryos were frozen. Pregnancy did not occur, as evidenced by the low levels of βhCG 15 days after transfer. Five months later, we thawed three embryos (**Figure 2f–2h**) (10C3.5; 9C3; 7C3) and transferred them to his wife's uterus. Fortunately, pregnancy was successful and the wife delivered a live baby. To our

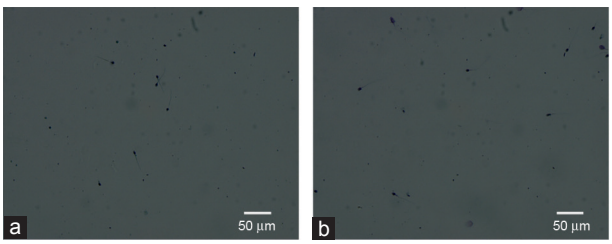

Figure 1: Short tails were observed compared to the long head by light microscope. (**a**) Spermatozoa showing a short tail phenotype. (**b**) Sperms with normal morphology.

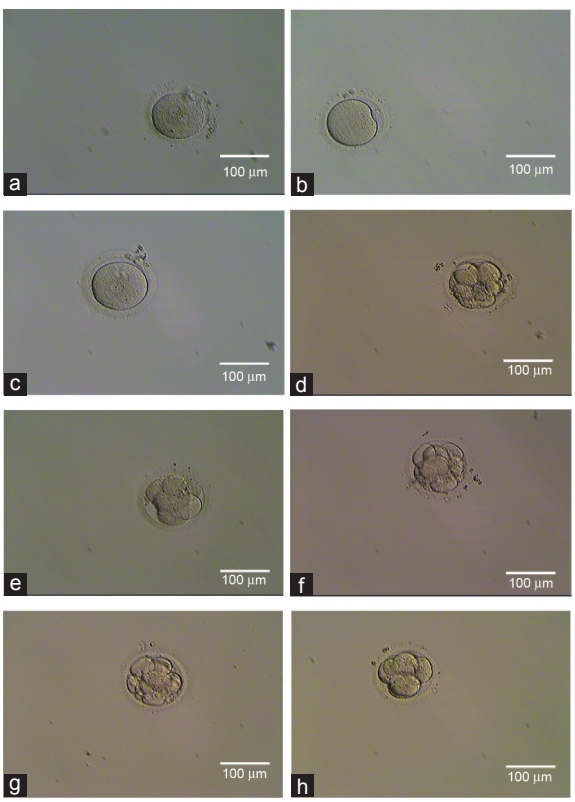

Figure 2: (**a**) Diploid zygote (2PN). (**b**) 0 zygotes (0PN). (**c**) One zygote (1PN). (**d** and **e**) Two day-3 embryos were transferred. Day_3 embryo that was thawed and transferred (**f**: 10C3.5), (**g**: 9C3) and (**h**: 7C3).

The Center for Reproductive Medicine, Xiamen Maternity and Child Care Hospital, Xiamen, Fujian Province, China.
Correspondence: Dr. P Li (saarc2001@sina.com)
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knowledge, this is the first report from the Han Chinese population of a child delivered following conception with ICSI.

In humans, it is estimated that 15% of the couples are infertile, and one-third of these cases can be attributed solely to the male partner.[1] Defects of the sperm tail can affect sperm motility. The relationship between fertility and sperm activity is evident. Although sperm motility is one of the most important predictors of fertilization ability, the mechanisms underlying motility abnormalities are still poorly understood. The internal cytoskeletal structure of cilia, flagella, basal bodies, and centrioles, called the axoneme, has been shown to be essential for flagellar development and movement.[2,3] Because of the highly conserved 250 polypeptides among eukaryotic cells,[4,5] increasingly more molecular proteins which were important for tail defects have been identified, such as AKAP4,[6] KPL2,[7] RAB-like 2,[8] and MNS1.[9] In the present case, due to teratozoospermia, function defects may have lower fertilization, which is an indication for assisted reproductive technology. To our knowledge, this is the first report from the Han Chinese population of a delivery following ICSI.

AUTHOR CONTRIBUTIONS

YWS collected and provided all the clinic information; QZ wrote the paper; LD and PL participated in the collection of the specimens and helped to draft the manuscript and subsequently review the manuscript.

COMPETING INTERESTS

All authors declare no competing interests.

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