Original Article

A Successful Outcome Of An HIV-Positive Patient With Secondary Infertility With Donor Embryo – A Case Study

Shriya Futane[1] , Saurabh Chauhan[2] , Jarul Shrivastava[3] , Aniket Pathade[4]

1. M.Sc. Clinical Embryology, Department of Anatomy, School of Allied Health Science, Datta Meghe Institute of Medical Sciences
2. M.Sc. Clinical Embryology, Department of Anatomy, School of Allied Health Science, Datta Meghe Institute of Medical Sciences
3. M.Sc. Clinical Embryology, Anatomy, School of Allied Health Science, University: Datta Meghe Institute of Medical Sciences
4. Research Scientist, Jawaharlal Nehru Medical College, Datta Meghe Institute of Medical Sciences, Sawangi, Wardha, Maharashtra.

Corresponding author's name and address: Shriya Futane,
M.Sc. Clinical Embryology, Department of Anatomy, School of Allied Health Science, Datta Meghe Institute of Medical Sciences
DOI: 10.47750/pnr.2022.13.S08.31

Abstract

Introduction: This case study is about a 6-year-old married couple who attends ACHARYA VINOBA BHAVE RURAL HOSPITAL because they have been trying to conceive for three years. They began their IVF/ART procedures in December 2021. In Wardha, the couple began infertility treatment in 2020. In this case, a male is HIV-positive and the female has a low AMH level, the AMH value is 0.24ng/dl which is very low. After which couples were advised to take the donor's embryo, in which donor sperm and donor oocytes are used. As infertile lady, their desire to have a child is really great. Secondary infertility is often accompanied by sentiments of sadness, helplessness, perplexity, and frustration. **Symptoms:** HIV-positive, AMH value 0.24ng/dl, previous failure of IVF cycle. **Diagnoses, Therapeutic Interventions, and Outcomes:** Because the male partner is HIV-positive and the female has a low AMH value, the female has been experiencing secondary infertility for the past three years. The couple considered using a donor embryo in IVF/ICSI treatment. The female is then conceived in the second cycle of ART after ICSI and embryo transfer have been completed. After 9 months, the child was successfully born. **Conclusion:** Both the couples were secondary infertility, where a male was HIV-positive and female AMH level was poor. After the failure of the first ICSI cy both were advised to take donor embryos.

Keywords: HIV-positive, donor, infertility.

INTRODUCTION:

Infertility is a medical issue that can affect a patient's mental, physical,spiritual, and medical well-being.(1) This medical condition is unusual in that it affects both the patient and the patient's partner(2). Male infertility is a significant portion of infertility in general. To comprehend infertility, one must first comprehend normal fecundability or the likelihood of attaining conception in one menstrual cycle(3). This fundamental comprehension will aid the healthcare staff in effectively advising the patient on referrals as well as providing basic education and understanding of the medical issue(4).

Infertility is a disrupted life project and a social position that is different from the majority for most men and women(5). Involuntary childlessness is seen as a major life issue that causes psychological distress as well as

long-term implications(6). Women who want to have a child but are unable to conceive see themselves as different from fertile women and believe they are missing out on something vital in their lives(7). Infertility can be a life-changing diagnosis, and most couples must learn to cope with the loss of fertility, whether temporary or permanent and the prospect of having a biological child(8). Men and women experience a sense of loss of control over their life projects after being diagnosed, and they believe they will be unable to meet their life goals(9).

According to WHO's the suggestion, sterile affects millions of humans of generative age worldwide and has an effect on their families and communities According to estimates, infertility 48 million marriages and 168 million people globally. (10). Man sterility is caused by problems with sperm production, the absence or low numbers of sperm, or poor morphology (morphology) and motility (motility) of the sperm in the majority of cases. Infertility in women can be caused by a variety of factors, including problems with the ovaries, uterus, fallopian tubes, and endocrine system. The two types of infertility are first sterility and second sterility. (11) Primary failure occurs when a woman has never been pregnant; secondary infertility develops when a woman has had at least one previous pregnancy. (12).

HIV is a virus that attacks the human immune system. If HIV isn't treated, AIDS can develop (acquired immunodeficiency syndrome)(13). There is presently no viable therapeutic option. HIV-positive persons will be infected for the rest of their lives. (14).

CASE PRESENTATION:

Patient-specific information:

This case study is about a 6-year-married couple who attends ACHARYA VINOBA BHAVE RURAL HOSPITAL because they have been trying to conceive for three years. They began their IVF/ART procedures in December 2020.

Primary concerns and symptoms of the patient

They have been trying to conceive for three years and have been unsuccessful.

Medical History

The male partner was HIV-positive.

Family History

There is no positive history of the patient.

Psycho-social History

They had never experienced a mental or psychiatric illness before.

Relevant past interventions with outcomes

Both partners have taken the treatment for infertility in Wardha with donor embryo in 2020 which was a success.

Clinical Findings

- **Female examination**:

  The general condition was fair and the temperature was afebrile

  - Pulse: 80 beats/min
  - Blood pressure: 110/70 mm/Hg
  - Weight: 60kg

- Height: 5’2 feet
- Body Mass Index: 22

- **Male examination:**
  - Pulse: 90 beats/min
  - Blood Pressure: 110/80 mm/Hg
  - Weight: 60 kg
  - Height: 5’7 feet
  - Body Mass Index: 20.7

SIGNIFICANT PHYSICAL EXAMINATION AND IMPORTANT CLINICAL FINDINGS

Hysterolaproscopy was done- The uterus and uterine cavity were normal. The Fallopian tube was normal

Timeline

A couple came to the WARDHA TEST TUBE BABY CENTRE with the complaint of being unable to conceive following one abortion during their six years of marriage. Then, in November 2021, donor sperm was collected and ICSI with donor oocytes was conducted. Embryos were transplanted on day three.

DIAGNOSTIC ASSESSMENT

Diagnostic testing (female)

- Hb electrophoresis - Normal
- Hb: 12.2 gm/
- WBC :4190 cells/mm3
- Serum T3 :1.54 mcg/dl
  Serum TSH: 2.16 mcg/dl
- PLATELETS:2.22 lacks
- LFT: NORMAL
- HBsAg: NON- REACTIVE
- HIV: NEGATIVE
- HCV; NEGATIVE
- VDRL: NON -REACTIVE
- ANTI-MULLERIAN HORMONE (AMH) :0.24 ng/dl
- AFC: POOR
- HYSTEROSCOPY – UTERINE ADHESIONS (REMOVED)

DIAGNOSTIC TESTING (MALE)

- Hb : 13.6 mg/dl
- WBC : 8500 cells/mm3
- PLATELETS – 4 lacks
- LFT – Normal
- KFT – Normal
- HIV – positive
- HBsAg – Non-reactive
- HCV – Non-reactive

- VDRL – Non-reactive

SEMEN ANALYSIS REPORT :

- SPERM COUNT: NIL
- SPERM TOTAL MOTILITY: NIL
- SPERM MORPHOLOGY: NIL

Diagnostic challenges: The patient had some major factors contributing to the infertility

- ✓ HIV+ male partner.
- ✓ Women's quantitative analysis of AMH showed low ovarian follicular reserve.

Diagnosis:

Secondary infertility may cause sterility, increase fetal mortality, reduce spermatozoa production, and reduce sexual intercourse frequency, all of which contribute to diminishing fertility.

Prognosis:

A good prognosis was there for their problem is in the form of IVF/ICSI frozen donor sperm sample fertilized with donor-oocytes with Hormone Replacement Therapy (HRT) which had shown positive results many times in WARDHA TEST TUBE BABY CENTER (WTTBC).

Therapeutic Intervention

Types of therapeutic intervention: The pair were advised to undergo ART (IVF/ICSI) treatment, during which the patient began HRT (hormone replacement therapy) and was advised to use donor sperm that had been frozen before and fertilized with donor oocytes using the ICSI technique.

Administrative of therapeutic intervention: After embryo transfer 3 days 6 embryos medication prescribed for 23 days (OC pills 2mg, T. Ecospin 150 g & vitamin supplements) .

Follow-up and Outcomes:

Clinical and patient assessed outcomes: This case was related to an HIV+ve male patient. They were suggested to take a donor sperm sample which was fertilized with donor oocytes. ICSI was done on 20/01/2021, 3 days 6 embryos were formed and frozen. On 13/11/2021, 03 days 6 embryos were thawed and transferred to the patient. After 14 days β HCG test was done which came positive.

DISCUSSION:

Infertility is a medical issue that causes a couple to go through a difficult and unexpected experience that has a social component. When couples are considering using donor gametes or donor embryos, the loss or diminution of natural fertility is much more agonizing(15). Infertility affects between 8% and 12% of couples globally. According to the WHO, India's total prevalence of primary infertility ranges from 3.9 percent to 16.8 percent(16). When most couples seeking therapy for infertility are informed they have a significant male or female component problem, they are taken aback. They have low self-esteem, are stigmatized, and are depressed(17).

In cases of non obstructive azoospermia, hereditary abnormalities, and HIV-positive people, donor sperm is used. Donor eggs are used when AMH levels are low, oocyte quality is poor, and oocyte reserve is limited due to advanced age, ovarian surgery, chemotherapy, and radiotherapy, as well as genetic abnormalities(18-25). Similarly, donor embryos are used in cases of incurable infertility involving both partners, as well as circumstances where both partners have genetic abnormalities.

Men and women alike experience a great deal of loss, worry, and misery as a result of infertility. Couples who are treated with their own gametes may find it easier to agree on in vitro fertilization (IVF) treatment(19), and the time spent waiting for treatment may be significantly reduced. In this case, we used a donor embryo because the

male partner is HIV positive and the female partner has a low AMH level, so we can't use their own sperm and eggs.

No ART technique will be undertaken without the agreement of the spouse, according to the Indian Council of Medical Research's country rules for regulating ART clinics in India; The use of sperm or eggs provided by relation or known friend of either the wife or husband will be restricted, and the ART clinic will be in charge of collecting sperm and eggs from suitable banks and delivering non identifiable information to the pair. (26-33). As a result, donor gametes and embryos should be used by providing information, counseling, gaining informed consent, dealing with exploitation and commercialization, and ensuring monitoring, adequate documentation, and transparency.

Conclusion:

ART can assist single and families in overcoming sterility, As indicated by the increased rates of multiple pregnancies, premature births, and low birth weights linked with ART, it can potentially constitute a public health danger.

A substantial percentage of infertile couples have been helped to conceive by ART. Spontaneous abortions, primary infertility, and secondary infertility are all linked to late marriage and childbearing. Associated health conditions, such as a low AMH level and pregnancy, are frequently discussed at the same time. This is the case because low AMH levels indicate a reduced number of eggs or a very low number of eggs in the ovarian reserve.

Secondary infertility is defined as the absence of live birth in a woman who desires to have a child and has been in a relationship for at least three years after her previous live delivery. The situation in this study is secondary infertility, in which the female patient has a low AMH level and her male spouse is HIV-positive, causing her to use an embryo donor.

CONSENT

To guarantee confidentiality, the patient's information was identified. Informed permission was given for ART procedures such as IVF therapy, how doctors would treat (treatment line), pregnancy risk considerations related to advanced maternal age, and so on. In both his or her native language and English, the patient gave informed consent.

Ethical Approval

The author has gathered and saved written ethical approval by international or university standards.

Conflict of Interest

There are no conflicts of interest claimed by the authors.

References:

1. Rooney KL, Domar AD. The relationship between stress and infertility. Dialogues Clin Neurosci. 2018;20(1):41-47. doi:10.31887/DCNS.2018.20.1/klrooney

2. Fast Facts About Infertility. Available at: http://www.resolve.org/about/fast-facts-about-fertility.html. Resolve: The National Fertility Association. Accessed July 26 2017; Fast Facts About Infertility. Available at: http://www.resolve.org/about/fast-facts-about-fertility.html. Resolve: The National Fertility Association. Accessed July 26, 2017;

3. Holley SR. PLA, BME, GS, KPK, ANEP and predictors of major depressive disorder for fertility treatment patients and their partners. FSteril 2015;103(5):1332–1339.

4. de Berardis D. MM, MS, et al. P emotional aspects and psychological counselling in infertility: a review. CTer 2014;165(3):163–169.

5. Crawford NM. HHS, MJEI women who screen positive for depression are less likely to initiate fertility treatments. HReprod 2017;32(3):582–587.

6. Klonoff-Cohen H. CE, NL, SWA prospective study of stress among women undergoing in vitro fertilization or gamete intra fallopian transfer. FSteril 2001;76(4):675–687.

7. Chow KM. CMC, CIKP interventions for infertile couples: a critical review. JCNurs 2016;25(15-16):2101–2113.

8. Bahamondes L, Makuch MY. Infertility care and the introduction of new reproductive technologies in poor resource settings. Reprod Biol Endocrinol. 2014;12:87. Published 2014 Sep 8.

9. Lunenfeld B VSAI in the third millennium: implications for the individual, family and society: condensed meeting report from the BF second global conference. HRU 2004, 10(4):317–326.

10. Cao XW, Lin K, Li CY, Yuan CW. [A review of WHO Laboratory Manual for the Examination and Processing of Human Semen (5th edition)]. Zhonghua Nan Ke Xue. 2011 Dec;17(12):1059-63. Chinese. PMID: 22235670.

11. Widge A: Sociocultural attitudes towards infertility and assisted reproduction in India. In Current Practices and Controversies in Assisted Reproduction. Edited by Vayena E RPGPDGSWHO 2002:60–74.

12. Larsen U: Research on infertility: which definition should we use? Fertil Steril 2005 83(4):846–852.

13. Hulsebosch HJ SELJMAD van de H infecties. NG 1990: 39-41. Hulsebosch HJ, Stolz E, Lange JMA. Dermatovenereologie van de HIV infecties. Nieuwegein: Glaxo, 1990: 39-41.

14. Weiss RA (May 1993). "How does HIV cause AIDS?". Science. 260 (5112): 1273–9. Weiss RA (May 1993). "How does HIV cause AIDS?". Science. 260 (5112): 1273–9.

15. Daniluk J. Helping patients cope with infertility. Clin Obstet Gynecol 1997;40:661–672. Daniluk J. Helping patients cope with infertility. Clin Obstet Gynecol 1997;40:661–672.

16. Banerjee, Kaberi, and Bhavana Singla. "Acceptance of Donor Eggs, Donor Sperms, or Donor Embryos in Indian Infertile Couples." Journal of human reproductive sciences vol. 11,2 (2018): 169-171. doi:10.4103/jhrs.JHRS_63_17

17. Sciarra J. Infertility: An international health problem. Int J Gynaecol Obstet. 1994;46:155–63. Sciarra J. Infertility: An international health problem. Int J Gynaecol Obstet. 1994;46:155–63.

18. World Health Organization. DHS Comparative Reports No 9. Calverton MUOM and the WHOWHO 2004. II and C in DC. World Health Organization; 2004. Infecundity, Infertility, and Childlessness in Developing Countries.

19. Isaksson S, Skoog Svanberg A, Sydsjö G, Thurin-Kjellberg A, Karlström PO, Solensten NG, et al. Two decades after legislation on identifiable donors in Sweden: Are recipient couples ready to be open about using gamete donation? Hum Reprod. 2011;26:853–60.

20. Indian Council for Medical Research and National Academy of Medical Sciences National guidelines for accreditation, supervision and regulation of ART clinics in India, New Delhi. 2005.

21. Kaluse, Prathmesh Siddheshwar, Neha Bhatt, and Nandkishor Bankar. "Study of Typhoid Fever: A Review." Journal of Pharmaceutical Research International, July 31, 2021, 286–91. https://doi.org/10.9734/jpri/2021/v33i39A32172.
22. Kamble, Shailesh D., Pawan Patel, Punit Fulzele, Yash Bangde, Hitesh Musale, and Saipratik Gaddamwar. "Disease Diagnosis System Using Machine Learning." Journal of Pharmaceutical Research International, June 29, 2021, 185–94. https://doi.org/10.9734/jpri/2021/v33i33B31810.
23. Kamble, Shweta, Anita Wanjari, Bharat Rathi, and D. Rajput. "Pharmaceutico-Analytical Study of Muktashukti Pishti and Muktashukti Bhasma and Comparative Evaluation of Their Relative Oral Bioavailability." Journal of Pharmaceutical Research International, June 11, 2021, 1–9. https://doi.org/10.9734/jpri/2021/v33i31B31680.
24. Kannao, Vaidehi. "A Case Report on Proximal Humerus Fracture and Physiotherapy Rehabilitation." Bioscience Biotechnology Research Communications 14, no. 6 (June 15, 2021): 120–23. https://doi.org/10.21786/bbrc/14.6.28.
25. Kapgate, Shreya, Ranjana Sharma, Deeplata Mendhe, and Mayur Wanjari. "A Case Report on Tuberculous Meningitis." Journal of Pharmaceutical Research International, December 8, 2021, 274–78. https://doi.org/10.9734/jpri/2021/v33i53B33707.
26. Karadbhajne, Priti. "A Case Report on Ancylostoma Duodenale Infection in Pregnant Woman." Bioscience Biotechnology Research Communications 14, no. 6 (June 15, 2021): 100–103. https://doi.org/10.21786/bbrc/14.6.23.
27. Kariya, Sakshi K., Waqar M. Naqvi, Om Wadhokar, and Pratik Phansopkar. "Sub Occipital Muscle Inhibition Technique Verses Cranial Cervical Flexion Exercise for Increasing Hamstring Flexibility in Physiotherapy Students." Journal of Pharmaceutical Research International, November 11, 2021, 8–13. https://doi.org/10.9734/jpri/2021/v33i49A33295.
28. Kashyap, Pratheek R., Rakesh Kumar Jha, and Praful Patil. "Depression Due to Polycystic Ovary Syndrome in Adolescents." Journal of Pharmaceutical Research International, July 28, 2021, 224–27. https://doi.org/10.9734/jpri/2021/v33i38B32117.
29. Kasturkar, Pooja, Jaya Pranoykumar Gawai, Tessy Sebastian, Trupti Uke, Dharti Meshram, Shabnam Sayyad, and Samual Vanlalpeka. "Case Report on Paranoid Schizophrenia with Capgras Syndrome." Journal of Pharmaceutical Research International, October 25, 2021, 72–77. https://doi.org/10.9734/jpri/2021/v33i47A32991.
30. Katkar, Anjali. "How COVID-19 Pandemic Impacted General Population, Diagnostic Facilities and Frontline Warriors." Bioscience Biotechnology Research Communications 14, no. 6 (June 15, 2021): 225–30. https://doi.org/10.21786/bbrc/14.6.47.

31. Kawale, A., and V. Taksande. “Prevalence and Risk Factors of Anaemia among Adolescent Girls in Selected Schools.” Journal of Pharmaceutical Research International, September 11, 2021, 210–20. https://doi.org/10.9734/jpri/2021/v33i43B32547.
32. Kawale, Aparna M., and Manoj Patil. “Management of Hypertension in Elderly Pregnant Women with IVF Conception: A Case Report.” Journal of Pharmaceutical Research International, July 22, 2021, 113–18. https://doi.org/10.9734/jpri/2021/v33i38A32065.
33. Kediya, Anup Shivom, Anil Kalyandas Agrawal, Arvind Shridharrao Bhake, and Obaid Noman. “Malignant Phyllode Tumour with Heterologous Sarcomatous Differentiation – A Rare Case Report.” Journal of Evolution of Medical and Dental Sciences 10, no. 4 (January 25, 2021): 240–42. https://doi.org/10.14260/jemds/2021/52.