Fertility Treatments as a Cause of Erectile Dysfunction

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Abstract

The setting of fertility treatments may pose an immense amount of stress on the couple involved. During fertility treatments the male partner is required to perform at specific times, whether as part of sexual intercourse or as part of supplying a semen specimen. The correlation between stress and erectile dysfunction (ED) has been evaluated and shown in past studies, but in the setting of assisted reproduction treatment (ART) the prevalence is unknown, perhaps underestimated at 10% due to the nature and conditions of dysfunction. In this review we aim to evaluate the literature regarding ED in the setting of ART, as scarce as it may be. ED may be in part due to lifestyle issues such as smoking or other substance abuse or health issues such as older age, diabetes, hypertension and cardiovascular disease. Management of ED requires a thorough evaluation of the patient, patient counseling, and patient targeted treatment, either lifestyle changes, creation of a stress free environment for sexual performance or masturbation, pharmacological treatment including sildenafil citrate or testosterone, or as a last resort-surgical treatment. The main conclusion of this review is that there is a vacuum of information regarding ED in the setting of fertility treatments. The issue of ED investigation and treatment during ART is one of grave importance and requires further research due to the impact of the phenomenon on maintaining the healthy marital status of the couple, avoiding invasive procedures and disruption of fertility procedures due to late or no semen specimen supplying.

INTRODUCTION

Couples undergoing fertility treatment experience a certain degree of stress which is enhanced by the necessity to have intercourse or to supply semen specimens at specific times. Anxiety and stress are well-known causes of sexual dysfunction, including erectile dysfunction (ED) [1,2]. The precise incidence of ED associated with assisted reproduction treatment (ART) is unknown, but would appear to be of the order of 10%, even grossly higher since men might feel ashamed to report the problem to their care-taker. Stress during assisted conception treatment may lead to failure in production of a semen sample prior to egg collection, a situation that could conceivably cause cancellation of the procedure. In addition, it appears that stress can also decrease semen quality [3].

Situational anejaculation

Situational anejaculation refers to the failure of ejaculation in men who have previously experienced successful ejaculations. It is usually a temporary condition and occurs in times of anxiety, stress or conflict. With respect to ART, situational anejaculation may occur when the man feels inhibited in the clinic. Unexpected anejaculation occurs in a man who previously did not have this problem, but is currently experiencing the stress of ART. After failure to ejaculate, the situation rapidly spirals out of control, leading to accusations between partners regarding attempts to sabotage the goal of conceiving and in some scenarios, a feeling of criticism by the gynecologist viewing the male partner as uncooperative [4].

Appraisal of the patient

A full medical and drug assessment of the patient should be done, not just to limit his role to that of a sperm donor. Patient history should include habits such as smoking, alcohol and lifestyle, as well as the presence of illnesses such as diabetes, hypertension and cardiovascular disease. A drug history of certain antihypertensive and psychiatric agents is important. Another key parameter is the male age factor. Until recently the attention of the fertility expert was drawn mainly to the age of the female and its effect on fertility, whereas the popular belief was that men can have children at any age. Before initiating ART, physical examination and investigations should be directed to exclude genital tract obstruction, testicular cancer, gonadotropin deficiency, coital disorder, sperm autoimmunity and prolactinoma [5]. The authors state this but many practitioners do treat ED before extensive investigations.

Smoking and alcohol abuse

Evidence is accumulating on the adverse effects of smoking and alcohol excess on erectile function. Smoking has been well
established to impact negatively on erectile function [6,7] and cessation has been accompanied by improved function. The contents of cigarette smoke have a harmful effect on sperm parameters, seminal plasma, as well as other fertility factors. Although not fully understood, the effect appears to be related to an increase in reactive oxygen species, leading to oxidative stress which disturbs sperm morphology and parameters including decreased viability and motility. Either actively smoking or simply passive exposure to cigarette smoke is a direct risk factor for ED. However, smoking cessation significantly improved both physiological and sexual health in male smokers; regardless of their baseline level of ED. Male patients treated with ART should be consulted regarding smoking cessation in order to improve both sexual performance and semen parameters [8].

Moderate consumption of alcohol may exert a protective effect on ED, but alcohol abuse will adversely affect erectile function [9].

**Management of ED in assisted reproduction treatment**

The accompanying flow chart outlines the various steps in management. Psychogenic ED can be successfully treated with proper counseling with psychosocial treatment meant to address the couple’s concerns. If counseling fails, non-invasive options, including audiovisual aids [10], producing sperm at home [4], and the use of sildenafil citrate [11-13] should be offered initially in men with temporary ED during ART treatment. The obvious advantage of utilizing fresh semen is avoiding puncture injury to the epididymis or testis [13]. Oral sildenafil may assist men with temporary ED to achieve erection and ejaculation without affecting the outcome of assisted reproduction [12].

In cases of predicted ED, cryopreservation of semen collected at an earlier non-stressful period can also be utilized if sperm retrieval fails. The optimal strategy for sperm collection in patients with temporary ED was investigated by comparing fresh semen, cryopreserved sperm, and frozen oocytes on the day of oocyte pick-up in IVF embryo transfer. No statistically significant differences were found among the 3 groups with respect to the rate of fertilization, high-quality embryo and pregnancy [13].

Audiovisual aids have a substantial effect not only on ED but also on semen parameters. This additive effect was investigated by comparing semen samples obtained from the same normozoospermic men with and without videotaped visual images (VIM). The samples acquired via masturbation after exposure to VIM were of larger seminal plasma volume, a higher total sperm count, increased sperm motility, a higher percentage of morphologically normal spermatozoa, an improved outcome of hypo-osmotic swelling test and zona-free hamster oocyte sperm penetration assay as well as larger markers of prostatic secretory function. These results may reflect an enhanced prostatic secretory function and increased loading of the vas deferens at the time of the test [10].

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**Figure 1** Penile vibratory stimulation (PVS) is the next stage in a subject with persistent ED.
A similar effect was documented in non-obstructed cryptozoospermic patients, using an analogous protocol. They concluded that increased sexual stimulation with VIM produced spermatozoa of greater fertilizing potential in both normozoospermic and cryptozoospermic men connected to semen quality and sexual dysfunction. The appearance of spermatozoa after masturbation with VIM in most of the cryptozoospermic men is clinically significant for managing severe male infertility by applying intracytoplasmic sperm injections (ICSI) without requiring testicular biopsy [10].

Whether testosterone replacement therapy (TRT) should be administered is controversial. A recent review deals with aging males suffering from late-onset hypogonadism (LOH), leading to low testosterone levels and associated with decreased libido, diminished spontaneous erections as well as ED. TRT may be acceptable when there is a coexistence of symptoms of LOH and low testosterone levels. TRT may also assist aging men suffering from obesity, metabolic syndrome, type 2 diabetes mellitus, sexual dysfunction and osteoporosis. While under treatment, patients should undergo regular testing for potential adverse events, including cardiovascular disease, prostate cancer and sleep apnea. Aging men are a growing sub-group in the world of ART and require individual evaluation of co-morbidities and careful risk versus benefit assessment, before embarking on hormonal treatment [14] (Figure 1). If this fails, then EEJ (Electro ejaculation) may be employed. This procedure requires general anesthesia and the anesthetist should avoid administering muscle relaxants (Figure 2).

Emergency percutaneous epididymal sperm aspiration (PESA) has been used for temporary ED in 3 couples undergoing in vitro fertilization (IVF) treatment. The procedure yielded motile spermatozoa which were utilized for ICSI and resulted in successful fertilization, embryo transfer, and pregnancy. Surgical procedures, such as PESA, are useful, albeit extreme, treatment options to be used as a last resort to obtain sperm for ART [15] (Figure 3).

CONCLUSION

The demand for providing sperm at a specific time during ART treatments can pose tremendous stress on the male partner. The loss of spontaneity leading to an inability to perform in such a situation may even result in interruption of the procedure. All effort must be made to encourage and reassure him, and to explain that the occurrence of ED is temporary and not unusual. If counseling is unsuccessful, then noninvasive methods should be tried, initially VIM, followed by penile vibratory and if necessary, electro ejaculatory methods. Only after the failure of conservative methods, should PESA or TESA be considered.

This review reveals an immense lack of information and knowledge regarding ED during ART. Though highly uncomfortable for most men to discuss, due to the increasing rate of ART utilization around the world, and subsequently, an unavoidable increase in ED, further research is required regarding the true prevalence of ED and the efficacy of known treatments.

REFERENCES

5. Du Pan M. [Do viagra and fertilization in vitro announce the end of
Burke et al. (2017)

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