

Editorial

UNDERSTANDING MALE FACTOR IN INFERTILITY

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Introduction

Infertility affects approximately 10-15% of couples. Medical profession has long recognised the special need of infertile couples and developed expertise required for their care. In the past decade there has been considerable progress in the evaluation and management of infertility. This may be attributed to -thorough understanding of reproductive physiology, better diagnostic techniques, extensive use of pelvic endoscopy, introduction of new drugs, more sophisticated surgical procedures, and concept of studying and managing both male and female infertility cases simultaneously.

Male infertility is not uncommon compared to female infertility although most males present via their female partner to the Gynaecologist. In 30-50% of infertile couples the cause lies wholly or partly with male partner [1].

It will be prudent to emphasize a few aspect of male factor in infertility which concerns this review. These are immunological factors in male infertility, microbes in male infertility and unexplained male infertility.

Immunological factors in male infertility

Immobilising or agglutinating antisperm antibody (ASA) may exist in association with male infertility [2]. Immunoglobulin class A is bound to sperm membranes. Associated conditions producing ASA are testicular trauma, inflammation and familial autoimmune disease. Also of importance are anti-sperm antibodies in cervical mucus. Negative post coital test in cervical mucus sperm interaction should trigger a search for anti-sperm antibodies as the cause. Genito-urinary infection may lead to orchitis and epididymitis leading to scarring of seminiferous tubules resulting in obstruction of afferent ducts. This will affect sperm count and morphology.

Anti-sperm antibodies present in serum, semen and cervical mucus impair the ability of sperm to penetrate cervical mucus or the oocyte. Study conducted on cer-

vical mucus anti-sperm antibodies in infertile female using IBT (Immuno Bead Binding Test) has demonstrated high level of immunoglobulin bound to sperm surface antigen. They were mainly of IgA class. IgG and IgM were also found in some samples [3]. Attempts to demonstrate ASA in seminal fluid and serum in male have shown positive result in 18% and 16% cases respectively by Arora et al [4].

Microbial infection as male factor in infertility

Infection can sometime cause subnormal semen parameters and it is necessary to examine semen for the presence of wide range of pathogenic organisms. Particular attention is drawn to *Chlamydia trachomatis*, *Mycoplasma hominis* and *ureaplasma urealyticum*. These microbes have been isolated from seminal fluid and known to cause infertility in some cases. Morphological changes due to the spermatozoa infection are coiling of tail and a fuzzy coat around the tail and these have been well demonstrated by Debata et al [5], with specificity rate of 98.2% in culture positive cases. Their identification and treatment has shown positive effect on semen quality [6,7].

Unexplained infertility: Role of male factor

This represents a paradoxical diagnosis in a comprehensive infertility evaluation when the following are found: Normal cycle, normal late luteal P Value, secretory phase endometrial biopsy, positive tubal patency by laparoscopy and normal semen analysis. As the conventional tests fail to reveal any apparent cause of infertility then condition is labelled as unexplained infertility.

To analyse apparently normal semen, sperm-zona free hamster oocyte penetration test was used earlier. IVF has made it possible to determine sperm-oocyte interaction in humans. This has helped in understanding why apparently normal spermatozoa cannot fertilize. The sperm head has a membrane limited vesicle, the acrosome, containing enzymes necessary to cause lysis of cumulus and zona pellucida. By the time

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the sperm reaches the ovum, it is necessary for the enzymes to convert to active form and remove acrosomal membrane as well as matrix. A series of biochemical events involving protein phosphorylation and osmotic changes occur with an aim to liberate acrosomal enzymes in active form at the correct place and time. The entire process is called acrosomal reaction. Inability of the spermatozoa to undergo any of these subtle biochemical reaction can decrease the ability to fertilise, though the conventional semen parameters remain normal. It is now also known that the production of reactive oxygen radicle can damage the cell membrane of the sperm and render them infertile. Tests have been designed to determine the integrity of the cell membrane [8].

Recent advances in male infertility management

Computer Assisted Semen Analysis (CASA)

Computer assisted semen analysis has been developed for speedier and reliable analysis of sperm movement and removal of observation error. Another source of error in sperm count i.e. the dilution factor can be omitted now by use Mackler/Horwell Chamber where count in undiluted semen can be done.

Intra Cytoplasmic Sperm Injection (ICSI)

Intra cytoplasmic sperm injection in severe male factor infertility such as non-obstructive azoospermia, triple sperm defects and severe oligospermia has been found successful (Fertilisation rate 65-70% and ongoing pregnancy rate 20%). It is also effective in repeated IVF failure due to zona thickening and failure of sperm penetration [9].

Recent advances in understanding male infertility have opened new avenues of management. Considering financial constraints as well as to maintain the desirable level of expertise, pooling of resources at few infertility centres may be necessary in the years to come.

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