

INFERTILITY

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REPRODUCTIVE HEALTH

Outline

- Definitions
- Causes
- Evaluation
- Management
- ART

Definition

- Involuntary reduction in reproductive ability or potential
- Applies to couples who fail to achieve a conception after 12 months of attempting to do so.
- Requires exposure to adequate unprotected coitus within the period
- May be primary or secondary

Normal fertility

- Normal young couples – 20% chance of conception within 1st month of unprotected coitus
- Rises to 60-70% by 6 months, 80% by 1 year and 90% by 2 years
- Probability of achieving a conception in one menstrual cycle = fecundability
- Probability of live birth from one cycle = fecundity

General factors that influence fertility

- Age – more than 35 years in women, present but not marked in men
- Frequency of sexual relations - 3 to 4 times a week optimal
- Duration of infertility – more than 5 years
- Chronic debilitating diseases
- Malnutrition
- Heavy smoking, alcohol consumption

Distribution of infertility

- A couples social problem with probable medical causes
- Male factor – 30-40%
- Female factor – 40-55%
- Both – 10%
- Unexplained – 10%

Male causes – Pre-testicular

- Endocrine disorders
 - Gonadotrophin deficiency
 - Thyroid dysfunction
 - Hyperprolactinaemia
- Psychosexual disorders
 - Erectile dysfunction, Impotence
- Drugs(iatrogenic)
 - Antihypertensives, Antipsychotics
- Genetic disorders
 - Klinefelters syndrome, Y chromosome deletions

Male causes - Testicular

- Cryptorchidism
- Mumps orchitis
- Varicoceles
- Primary testicular failure
- Kartageners syndrome – immotile cilia
- Auto-antibodies to sperm
- Iatrogenic – radiation, cytotoxic drugs, nitrofurantoin, cimetidine, beta blockers, antihypertensives, anticonvulsants

Male factor – Post - testicular

- Obstruction of Vas deferens
 - Congenital -Absence (cystic fibrosis), Young's syndrome (epididymal obstruction with bronchiectasis)
 - Acquired – TB, Gonorrhea
- Others
 - Ejaculatory failure
 - Retrograde ejaculation
 - Hypospadias, bladder neck surgery

Female causes

- Ovulatory disorders (15%)
 - Anovulation
 - Luteal phase deficiency
 - Ovarian failure
- Tubal obstruction/peritoneal factors (30%)
 - Congenital absence/atresia – rare
 - Pelvic Infections – PID, TB, Puerperal infection
 - Peritonitis – ruptured appendix, viscus, abdominal surgery
 - Endometriosis

Female causes contd.

- Uterine and cervical factors (10%)
 - Myomas, polyps, developmental anomalies of endometrial cavity, synechiae
 - Obstructive lesions of cervix, destroyed endocervical glands (surgery, infections growths)
- Vaginal factors (< 5%)
 - Congenital absence, imperforate hymen, atresia, transverse vaginal septum
 - Vaginismus, vaginitis

Female causes - 3

- Immunologic incompatibility (<10%)
 - Spermatozoa immobilizing antibodies
 - Spermatozoa agglutinating antibodies
- Nutritional and Metabolic factors (< 5%)
 - Thyroid disorders
 - Diabetes
 - Hyperprolactinaemia
 - Severe nutritional disorders – under-nutrition, over-nutrition

Evaluation of infertile couple

- History - duration, coital, menstrual, FP, STI's/PID, surgical, medical
- Physical exam – general health status, nutritional, genitalia, surgical incisions
- Investigations – order influenced by findings from history, physical exam
- General approach – tubal, sperm, ovulation and cervical factors assessment (COST)

COST assessment contd.

- COST 1
 - HSG, Semen analysis, basal body temperature, serum mid-luteal progesterone, post-coital test
- COST 2
 - Laparoscopy
 - Hamster egg penetration test
 - Endometrial biopsy
 - Ultrasound
 - Sperm antibodies

Semen analysis – WHO normal values

Volume	2 ml or more
pH	7.2 – 7.8
Sperm concentration	20 million per ml or more
Total sperm count	40 million or more per ejaculate
Motility	50% or more with progressive forward motility
Morphology	15% or more normal forms
Viability/Vitality	75% or more alive
Leucocytes	Less than 1 million per ml
Sperm agglutination	Less than 2 on a scale of 0-3

Treatment

- Dependent on the identified causative factor
- Cervical factor (persistent poor cervical mucus, anti-sperm antibodies)
 - Intrauterine insemination
 - Condoms, use of steroids for antibodies - equivocal
- Ovulatory dysfunction

Treatment – ovulatory dysfunction

- Correction of metabolic and nutritional disorders
 - DM, Thyroid disease, obesity, hyperprolactinaemia, renal disease etc.
- Chronic anovulation and PCOS
 - Clomiphene citrate
 - Low dose gonadotrophin – hMG, FSH
 - GnRH agonists before hMG
 - Ovarian drilling, wedge resection
- Luteal phase deficiency (from BBT, MLP, EB)
 - Clomiphene citrate, luteal phase support with progesterone pessaries 25mg bd or oral 100mg tds

Treatment – tubal and peritoneal disease

- Tubal blockage – surgery – open/ laparoscopic, type dependent on site of blockage
- Adhesions – adhesiolysis
- Endometriosis
 - GnRH agonists
 - Surgery – electrosurgical resection, laser vaporization
 - Combined surgical and medical therapy

Treatment – male factor

- Volume (low or high)
 - Artificial insemination, split collection of sperm for high volume
- Oligospermia and hypomotility
 - Treat specific cause if identified e.g. varicocoele repair
 - Clomiphene, hCG, testosterone been used but results not impressive
 - Artificial insemination for ejaculatory disorders

Treatment – unexplained infertility

- Counseling
 - 50% will conceive in next 5 years without any intervention
 - Adoption
- Empiric ovarian stimulation
- Assisted reproductive technologies
 - IVF-ET, GIFT, ICSI etc
 - 15-25% live birth rates per attempted cycle, rising to 30-50% success in three or more cycles
 - Also applied where other treatments for ovulatory, tubal or male factor infertility failed or not feasible