

# 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 1<sup>st</sup> 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, Gonorrhoea
- 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, synechiaie
  - 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. varicocele 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