GPVTS TEACHING APRIL 2016

# FERTILITY

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# DEFINITIONS

- What is the definition of infertility?
- Failure to conceive after 12 months despite regular, unprotected SI
- How common is infertility in the UK?
- 1 in 7 couples
- What is the difference between primary and secondary infertility?
- Secondary - previous conception or pregnancy
- When should I refer?
- After 12 months (or earlier if identified cause)

# CHANCES OF SPONTANEOUS CONCEPTION OVER TIME

- After 1 year - 82%
- After 2 years - 92%
- After 3 years - 94%

# WHAT ARE THE CAUSES OF INFERTILITY?

- Male factor 30%
- Ovulatory disorders 25%
- Unexplained 25%
- Tubal 20%
- Uterine or peritoneal disorders 10%
- Both affected 40%

# MALE INFERTILITY

- Lifestyle - tight underwear, trauma, smoking, alcohol, recreational drugs, chronic heat, lead exposure & ionising radiation
- Hypothalamic hypogonadism - medical students, anorexia, athletes
- Drugs - Nitrofurantoin, cimetidine, sulphasalazine, spironolactone, antidepressants, methotrexate, alpha-blockers, amiodarone, phenothiazines, chemotherapy
- Testicular - undescended, torsion, absent vas, hernia repair
- Varicocele

# OVULATION DISORDERS

WHO classification:

- Type 1 - Hypothalamic hypogonadism
- Type 2 - PCOS - Rotterdam criteria (2003):

  Ultrasound evidence

  Clinical/biochemical evidence hyperandrogenism

  Oligo-/anovulation
- Type 3 - Ovarian failure

# OVULATION DISORDERS – WHO CLASSIFICATION 2

- Mid-luteal phase progesterone (D21) >30
- Clomiphene 50 - 150mg OD day 2 - 6 (6 months)
- Add metformin
- Gonadotrophin treatment (twins, OHSS)
- Laparoscopic ovarian drilling (4 holes, 4mm, 4 sec)
- 50% need clomid/gonadotrophins after drilling

# TUBAL

- Chlamydia - 1 infection 25%, 2 = 50%, 3 = 75%
- Pelvic surgery
- Endometriosis
- Salpingitis isthmica nodosa (SIN)

# WHAT INVESTIGATIONS SHOULD I ORGANISE?

- Rubella serology
- Chlamydia status
- day 2-5 FSH (8.9), LH, estradiol
- day 21 progesterone (>30)
- (Thyroid function tests, prolactin, SHBG, testosterone and free androgen index only if oligo-ovulation/anovulation)
- pelvic ultrasound - PCOS, hydrosalpinx, fibroids, polyps, endometriosis, uterine anomalies
- Semen analysis

# SEMEN ANALYSIS

- Volume 2mls
- Sperm concentration 15million/ml
- Motility 32% A+B forms
- Morphology 4% normal
- Abstain 2 - 5 days
- Analyse within 45 minutes
- Repeat 3 months (or 1 month if severe deficits)

# FURTHER MALE INVESTIGATIONS

- chromosomes - Karyotyping, CFTR gene mutation, Y chromosome micro-deletion
- Testicular ultrasound - varicocele
- FSH, LH, testosterone, prolactin

# CAN I OFFER ANY LIFESTYLE ADVICE?

- BMI
- Diet
- Exercise
- Smoking/alcohol/recreational drugs
- Caffeine

# WAYS TO IMPROVE CHANCE OF CONCEPTION

- Improve lifestyle and timed intercourse
- Boost ovulation - Clomiphene, gonadotrophin, aromatase inhibitors, laparoscopic ovarian drilling
- Reproductive surgery - fibroids, endometriosis, tubal surgery, uterine anomalies, varicocele, adhesiolysis
- Superovulation and intrauterine insemination
- IVF
- Surrogacy
- Fostering/adoption

# WHEN IS NHS IVF AVAILABLE?

- After 3 years
- Age 23 - 42 (male <55), (1 funded cycle if 40-42)
- BMI 19 - 30 (male <35)
- Non-smokers
- Previous sterilisation excluded
- No children either partner
- More than 2 self-funded IVF attempts
- Child welfare concerns
- Same sex couples - more than 6 documented IUI attempts
- Exceptional funding cases

# TAKE HOME MESSAGES

- Just a matter of time
- Worsening problem
- Lifestyle just as important
- Male factor most common cause
- Female blood tests should  be taken at right time of cycle
- IVF sometimes not the solution

# CASE

- Miss TH is a 28 year old with a 15 month history of secondary sub fertility. She had a normal vaginal delivery 4 years ago. She has a BMI of 41.9 and irregular periods ranging between 26 - 48 days. There are clinical signs of hyperandrogenism. The female hormonal profile shows an early follicular phase FSH of 6.3, LH 15.6, E2 6000, prolactin 562, P21 of 4. A recent semen analysis showed 1.6mls, concentration 11million/ml, A+B motility 31%, morphology 2%
- Would you organise any other tests?
- Discuss your management?
- She drops her BMI to 29. Now what?

# CASE

- A couple present with is a 4 year history of primary sub fertility. The female partner has regular 28 cycles, normal mid-luteal phase progesterone and ovarian reserve. A recent HyCoSy showed bilateral fill and spill. Mr DA is a 39 year old diagnosed with type 1 diabetes at the age of 15 and is a poor complier. He is a smoker of 20/day. A recent SA shows a volume of 3mls,concentration 0.1million/ml, motility and morphology were indeterminant.
- What is the possible diagnosis?
- Discuss your management?

# RETROGRADE EJACULATION – BACKGROUND

- 2% male infertility
- Suspect if azoospermia/very low concentration
- diabetes
- multiple sclerosis
- testicular cancer lymph node dissection
- spinal trauma
- congenital abnormalities

# RETROGRADE EJACULATION – TREATMENT

- Neutralisation of urine
- Sympathomimetics - pseudoehedrine (28% success)
- IVF +/- surgical sperm recovery

# NEUTRALISATION OF URINE

- **Night before:**1 tablet sodium bicarbonate in half glass water
- avoid acidic foods
- 2 tablets sodium bicarbonate with water after meal
- **Morning:** 2 tablets sodium bicarbonate with water
- urinate 30 minutes prior to collection
- Collect first urine after ejaculation
- 2 tablets pseudoephedrine

# CASE

- Mrs JW is a 27 year old with a BMI of 29 who has a 5 year history of primary sub fertility. She has PCOS and evidence of oligo-ovulation. There are no features of hyperandrogenism. A recent AMH was 54. Her husband has an unremarkable medical background. His semen analysis is normal. She has failed to conceive despite 12 cycles of clomiphene citrate and laparoscopic ovarian drilling and so was eligible for NHS funded IVF.
- Following down regulation with Buserelin, she was commenced on 300u Gonal F. A scan on day 9 showed enlarged ovaries, each containing 20 follicles greater than 14mm and free fluid  in the PoD. 35 eggs were harvested following HCG trigger 36 hours later.
- She subsequently presented to accident and emergency  complaining of abdominal pain, vomiting and dyspnoea. An ultrasound scan showed gross ascites and ovarian size > 12cm3.

# OVARIAN HYPERSTIMULATION SYNDROME

- 33% mild, 3-8% severe/critical
- Vasoactive substances released from ovaries
- Venous thromboembolism
- Intravascular dehydration
- Hepato-renal failure
- Fluid shift into 3rd space
- ARDS
- Rare - pericarditis, ovarian torsion

# MANAGEMENT OHSS

- Conservative
- Drink to thirst 2-3L/24 hours
- Avoid NSAIDS
- Daily weight, abdominal circumference, bloods, in/output
- VTE prophylaxis
- Urine output - human albumin, paracentesis, diuretics
- Surgery - chest drain, paracentesis, ovarian torsion