Presidential Medal for best medical graduate of year 1970-75

Award from DMA Dr. B.C Roy’s birthday: outstanding contribution to medicine 1999

Vikas Ratan Award by Nations economic development & growth society 2002

Chitsa Ratan Award by International Study Circle in 2007

Life time Medical excellence award Obs & Gyne by Hippocrates foundation 2014


Distinguished teacher of excellence award for PG medical education by ANBAI & NBE 2017 and Inspiring Gynecologists of India by Economic Times 2017. Felicitated by highest Merck Serono honor award at times healthcare achievers award 2018

Course director for post doctoral Fellowship in Reproductive Medicine by NBE, since 2007, IFS since 2014, ISAR 2014 and by FOGSI for basic & advanced infertility training since 2008.


Field of interest: Infertility, ART, Reproductive endocrinology, Endoscopic surgery for pelvic resuscitation.
Preventing and Managing Complications of Controlled Ovarian Hyperstimulation

Director
Centre of IVF and Human Reproduction
Sir Ganga Ram Hospital, Rajinder Nagar, New Delhi, 110060
Ph: 011 4225 4000/ 011 4225 1800/ 011 4225 1777/ 8375990881
Website: www.ivfgangaram.com
Of this year's Nobel Prize winners, the work of British physiologist Robert G. Edwards waited longest to be recognized. His award for medicine comes 32 years after he figured out how to create the beginnings of human life outside the uterus through in vitro fertilization.
IVF started to develop fast with the aim of maximizing pregnancy rates per cycle

- Higher number of oocytes and thus more embryos
- Use of unphysiological high doses of gonadotropins
- Time consuming protocols
- Higher costs
- Patient discomfort
- **Higher risk of OHSS**
- Very high risk of multiple gestation
Definition of success in IVF is now shifted from pregnancy rate per cycle towards achieving healthy singleton child per started course of treatment without complications.

Further progression of technology aims to minimize complications yet maintain optimal pregnancy rates.
Ovarian hyper-stimulation syndrome (OHSS)

A purely clinician created *iatrogenic life threatening* condition occurs in absolutely healthy and young women desiring to have a child.

Very risky for patient & clinician
PREDICTION

PREVENTION

TREATMENT

OHSS
Can we reliably predict OHSS

- Young less than 30 years
- Thin built
- Underlying PCOS
- Previous history of OHSS
- High AMH >3.5ng/ml and AFC >22
- Multiple stimulated follicles > 20
- High serum E2 IVF > 2500 pg OI >1200 pg
Who is the culprit?

HCG

Trigger for final oocyte maturation
The Truth is that OHSS MUST BE PREVENTED RATHER than treated
Complication

Morbidity

- Pulmonary edema, pleurisy, complicated pneumonia, hydrothorax, ARD’s
- Thrombo-embolism: cerebral stroke, ICH, CVA, paralysis or amputation of forearm
- Irreversible hepato-renal failure
MATERNAL MORTALITY RATES Due to OHSS

Netherland & UK – 2007

MORTALITY : 3 / 1,00,000 CYCLES

1-5 million IVF cycles / year
500 death (last 10 years)

Grossly Underreported

1 Aboulghar. Fertil Steril. 2012;97:523-6;
2 Confidential Enquiry into Maternal and Child Health, 2007;
Welcome Protocol
to manage ‘Error’ or ‘Terror’ of OHSS

An OHSS-Free Clinic by segmentation of IVF treatment

Paul Devroey*, Nikolaos P. Polyzos, and Christo

Centre for Reproductive Medicine, UZ Brussel, Laarbeeklaan 101, 1090 Brussels, Belgium
OHSS-Free Clinic
by segmentation of IVF Treatment

STEP 1
Antagonist protocol
- Patients friendly
- Fewer injection
- Shorter stimulation
- OHSS much lower
- Same PR

STEP 2
GnRH agonist trigger
- LPD thus lower PR
- Aggressive luteal support if ET
- Cryo-preserve and subsequent transfer

STEP 3
Cryopreserve embryos
- PR higher
- OHSS ZERO
- Ethical issues of CP of embryos
Management

Important strategy is to recognize initiation of OHSS

Prevent progression to severe and critical OHSS

Prevention of full blown OHSS and its consequences even at the cost of failure of ART cycle
Etiopathogenesis

hCG → ↑ VEGF → Angiogenic activity → Fluid extravasation → ↑ Vascular permeability

Hydrothorax, Ascites, Anasarca
Staging of OHSS for management

MILD
- Abdominal distension
- GI symptoms
- Ovary <8cm

MODERATE
- Mod abdominal pain
- Ascites on USG
- Ovary 8-12cm

SEVERE
- Clinical ascites
- Hydrothorax ± oliguria
- PCV >45%
- TLC > 25000
- Ovary > 12 cm

CRITICAL
- Tense ascites
- Hydrothorax
- PCV >55%
- WBC>25000/ml
- Oligo/anuria
- Embolism
- ARDS

RCOG 2016 greentop guidelines
How to stage OHSS?

**Clinical examination**
- Vitals, ascites, hydrothorax, sub-cut edema

**History**
- COS, hCG, Pregnancy Breathlessness, abd discomfort pain, GI symptoms

**Laboratory test**
- Hbg, PCV, TLC
- LFT & KFT
- Electrolytes

**Imaging**
- Ovarian vol
- Ascitis
- Hydrothorax
- Echo cardiography
OPD management

✓ **Analgesia**: paracetamol, codiene derivatives, NSAID’s NO! – may compromise renal function

✓ **Avoid strenuous exercise and sexual contact**
Fear of torsion or injury to enlarged ovaries.

✓ **Light physical activity** but strict bed rest avoided to prevent thrombo-embolic phenomenon.

✓ **Drink to thirst**. Minimize “free water”, intake but encourage “sports drink”.
When to admit

- Severe and critical OHSS
- Moderate OHSS with poor pain control
- Nausea vomiting not allowing oral treatment
- Difficulty in ensuring ongoing monitoring
- Moderate OHSS with worsening staging (increasing distension, shortness of breath)
- Impression of reduced urine output.
Multi disciplinary care requires 3 important areas to be managed
- Hemo-concentration and kidney failure
- Ascitis or hydrothorax or pericardial effusion
- Thrombo-embolism.

Intensive care in patients with critical OHSS with ARDS and assess daily or more if critical OHSS

Level 3 evidence
Resistant hematocrit concentration with oliguria urine <0.5ml/Kg/hr

Fluid challenge
1 litre of DNS fast in 1 hour

Paracentesis if Tense ascites with oliguria

Colloids:
- Albumin 20%
- 100ml, HESS 500 ml/hr
Indications of Paracentesis

USG guided
2000 ml at 1 time
Replace protein

Tense ascites

Hydrothorax with respiratory distress with ascites

Oliguria not responding to fluids
Thrombo-prophylaxis

- Incidence 0.7-10%
  - Upper body sites
  - Arterial

- Unusual neurological symptoms after COS
  - evidence level 3

Thrombo-prophylaxis with LMWH to all admitted with OHSS. Continue till it subsides in early OHSS with no pregnancy or continue through end of first trimester if pregnant.
  - evidence level 3

- Altered coagulation
  - Reduced venous return

- warranted, unless H/O thrombosis.
  - evidence level 2b
Most scary situation for all infertility clinicians

Grave complications for a young healthy women need to be prevented at all cost

The couple has come to make a family, we can’t break it even if we can’t help make it!

Complications can be very morbid and be as severe as death
Ovarian stimulation the right way is not only science but also an art.

Prevention is better than cure.
Thank you