Complications of Assisted Reproductive Technology in the ED – Grand Rounds Summary

In Canada, 15% of opposite sex Canadian couples struggle with infertility. Many of these Canadians turn to Assisted Reproductive Technologies (ART) for medical help to conceive.

In-vitro fertilization or IVF mimics the natural process. It involves 5 steps: ovarian stimulation, oocyte retrieval, fertilization, embryo culture and finally embryo transfer.

Ovarian Hyperstimulation Syndrome
Ovarian hyperstimulation syndrome (OHSS) is an exaggerated response to ovarian stimulation that happens almost exclusively in ART patients. This syndrome occurs relatively frequently. One third of all IVF cycles have mild to moderate OHSS and 2 – 6% have severe forms.

Mild symptoms might include abdominal distention, nausea/vomiting and ovarian enlargement. In more severe cases, ascites develops, volume loss causes hypovolemia and renal injury and hemoconcentration leads to thrombosis.

Management of OHSS
Patients should be resuscitated with IV crystalloids. ED paracentesis for tense ascites, dyspnea, or oliguria should be performed. Consider culdocentesis as an outpatient in stable patients. Initiate thromboprophylaxis for severe and critical OHSS and speak to REI specialists prior to prescribing in mild and moderate cases. Give patients symptoms to watch for including increasing abdominal girth and weight gain as early markers of disease progression.

Ovarian Torsion in ART
With ART, the risk of ovarian torsion is about 2 in 1000. In OHSS, ovarian torsion occurs in 3 in 100 cases. There is significant overlap in clinical presentation and ultrasound findings between ovarian torsion and OHSS. Recognise these patients are at increased risk with ambiguous presentations, and advocate for a surgical opinion as appropriate.

Oocyte Retrieval
Oocyte retrieval involves needle aspiration under transvaginal ultrasound guidance. The overall complication rate is low (<5%), but the aspiration needle may still injure pelvic organs and structures leading to serious complications. The most frequent complications seen are abdominal pain, bleeding, infection and direct trauma.

ART and Ectopic Pregnancy
The historic ectopic pregnancy rate in ART was 8.6%, but this has significantly decreased to that of the general populations for those undergoing single embryo transfer. There are specific high-risk groups within ART patients: multiple embryo transfers, live birth cycle and tubal infertility.

Bedside ultrasound confirming intrauterine pregnancy does not rule out ectopic in the IVF population, even in single embryo transfer. This is due to the increased risk of heterotopy. A formal ultrasound is indicated for those with suspicion of ectopic pregnancy. In those where a

definitive diagnosis cannot be made repeat pelvic ultrasound, serial βhCGs and close follow up is required. For patients you are concerned about OHSS, you should always consider ruptured ectopic and resuscitate accordingly.

Early pregnancy loss

In IVF, 19% of pregnancies end in miscarriage. In all cases of early pregnancy loss, but in particular with ART, it is important to consider the emotional challenges around ART. Communicating with compassion and exercising empathy may make all the difference in these challenging situations.

Quick Pearls:

1) ART is increasing in Canada and we should expect to see these patients in the ED.
2) A positive βhCG does not necessarily mean pregnancy. The hCG trigger used for triggering oocyte maturation will give a false positive for 7 – 10 days.
3) Consider the timeline of ART treatment to drive your differential.
4) Fertility Clinics have a specialist on call 24/7 and want to be involved if you suspect complications. Patients will have this number.
5) Lastly, consider the patient perspective. Treat patients with compassion and empathy.

References: