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### **OVARIAN HYPERSTIMULATION SYNDROME. (OHSS)**

**This is a serious and potentially life threatening complication of ovulation induction ( i.e. the use of fertility drugs to stimulate the ovaries for IVF)**

**High levels of estrogen ( estrogen is produced by the follicles) somehow interfere with the way that the fluid in your body is balanced between intra cellular and extracellular spaces. This can lead to fluid collections in the abdomen ( called ascites) and in the chest ( called pleural effusions) It is also results in lowered kidney perfusion ( low urine output) weight gain and alterations in the salt levels in your body ( hyponatremia – low sodium levels and hyperkalemia – high potassium levels.) As a result of the blood in your blood vessels becoming more concentrated it may lead to a hyper coagulable state – making you more prone to blood clots ( increasing the risk for deep vein thrombosis and/or stroke)**

**Mild OHSS is fairly common and may develop in up to 5 – 10 % of all IVF cycles. However severe OHSS – perhaps requiring hospitalization – may occur in 1 % of IVF cycles.**

**Women at highest risk for OHSS can often be identified before starting an IVF cycle – and their “protocol” can be tailored to help reduce the risk. However – despite cautious preventive tactics – OHSS still may develop.**

**Risk factors for OHSS include:**

- 1. Age. Younger women are at more risk**
- 2. PCO – women with identified polycystic ovaries and women with a high antral follicle count ( AFC refers to the number of small follicles identified by ultrasound )**
- 3. Women who have had OHSS develop in a previous IVF cycle**
- 4. High estrogen levels and high numbers of follicles developing in response to the fertility drugs used during the IVF cycles**

In summary the medical risks of this syndrome include.....

**Deep vein thrombosis**

**Stroke**

**Pleural effusions**

**Ascites**

**Kidney failure**

**Heart failure**

**Death !**

### **When does it develop ?**

It usually starts about a week after the HCG shot ( so about 5 days after the egg retrieval) Symptoms may include excessive bloating, weight gain, cough or shortness of breath, reduced urine output, upper abdominal discomfort, nausea and vomiting. If you develop any of these symptoms you should contact us at VFC right away. It does get worse if you are pregnant – and may need to be treated.

### **Ways to prevent it include:**

1. Identifying persons at risk – and modifying the IVF protocol, which may include: Using lower doses of fertility drugs and using an antagonist based protocol
2. Careful monitoring of estrogen levels
3. “Coasting” – if the estrogen levels start getting too high – it is an option to stop the fertility drugs but continue the lupron ( or suprefact) and allow the estrogen levels to come down before giving HCG to trigger the maturation process of the eggs before a retrieval.
4. Switching from Suprefact/Lupron to an antagonist ( Cetrotide, Orgalutron) This helps bring the estrogen levels down prior to using the trigger shot ( HCG)
5. Using lower doses of HCG to trigger ( The traditional standard dose of HCG to trigger ovulation is 10,000 units. Using a lower dose can reduce the risk)
6. If an antagonist based protocol is used – then it allows us to use Suprefact or Lupron to trigger ovulation ( rather than using the traditional HCG to trigger ovulation)
7. Using a medication called Dostinex. Dostinex ( cabergoline) - a drug which is most used to treat a condition called Parkinsons disease, may help prevent OHSS or at least reduce its severity. It is usually started a day or so before egg retrieval, and is given once a day – every evening – for 8 days ( sometimes longer). It may cause some dizziness – so should be taken just before you go to bed.
8. Cancelling the cycle completely if the estrogen levels get too high

9. **Not following through with an embryo transfer – i.e. freezing the embryos. It should be noted that women who get pregnant are at highest risk for developing OHSS. The pregnancy hormone HCG tends to exacerbate OHSS – So if we take measures to avoid a pregnancy – we reduce the risk.**

**Many of these measures MAY reduce egg quality and quantity, and therefore may reduce the chance for a successful pregnancy – however – this may be absolutely essential to allow the cycle to be completed and keep you safe.**

### **Treatment of clinical OHSS**

**If OHSS is diagnosed – then the following measures may be taken:**

**Fluid balance is very important – and you may be asked to monitor your weight, measure your abdominal girth and measure your urine output daily.**

**You may be asked to modify your fluid intake and diet as follows:**

1. **Restrict your fluid intake to a litre of Gatorade only per day**
2. **Increase your protein intake. It may be suggested you have 6 egg whites per day ( the most palatable way is by making an omlette, or alternatively by making an egg flip – egg whites beaten with a half teaspoon of vanilla essence, a teaspoon of castor sugar and 250 – 300 cc of milk) fish and meat of course should be eaten daily.**

**Correcting your electrolyte imbalance – this may be necessary using intravenous normal saline.**

**Your blood levels of electrolytes and your blood concentration may need to be monitored by doing regular blood tests.**

**To reduce the chance of blood clots – you will be asked to take a low dose aspirin every day – and also use a blood thinner called Heparin. Heparin is given once or twice daily by injection – and you will be taught how to do this.**

**Avoid travel. Travel increases the risk of deep vein thrombosis – and also may put you in an area where medical expertise is not readily available. If the correct management is not immediately implemented you might be at serious risk for complications.**

**Draining the fluid from inside your abdomen.( called paracentesis ) We usually do this in a way similar to having an egg retrieval. We insert a fine needle through the vagina into the space around the ovary – and drain off the fluid. This may need to**

be done every second or third day for a week or so – and helps correct the fluid shifts, keep you more comfortable and help shorten the process.

**Giving intravenous protein ( called albumin) which can increase the oncotic pressure within the blood vessels and help reduce fluid leaking out of the blood vessels in to the tummy and chest.**

**Hospitalization. This is sometimes necessary if you are very uncomfortable and more careful monitoring is necessary.**

**If during your IVF cycle it is clear that you are at risk for developing OHSS – important decisions may need to be made about continuing the cycle. It is imperative that you understand what this is all about.**

**For patients who come to Victoria from out of town or afar – it is extremely important that you keep in contact with VFC so that the appropriate advice can be given to take care of you should you develop any problems. Sometimes it may be necessary to stay in Victoria longer than you planned – to watch for development of this syndrome – so that we at VFC can appropriately manage it.**

**In some circumstances, if you have left Victoria, it may be necessary to come back to Victoria for this to be managed safely – unless there is the appropriate and willing expertise in your area.**

### **Freezing embryos.**

**The newer technology for freezing embryos – called vitrification – is one of the most exciting introductions in to the world of assisted reproduction that has occurred for a long time. The chances for pregnancy using embryos that have been vitrified – compared to embryos that were “slow frozen” ( the older technology) is much better – and is now approaching the chances of success using fresh embryos !!!**

**For this reason – I am much more comfortable recommending to my patients at high risk for OHSS, that we avoid pregnancy ( to reduce the risk of severe OHSS) freeze ( vitrify) their embryos than I used to be. In other words – I do not think that we will compromise the chance of pregnancy if we freeze embryos over doing a fresh transfer and risking more severe OHSS. It is always disappointing to not do a fresh transfer – but may be a necessary tactic for safety purposes.**

**Consent form for patients identified as being at risk for developing OHSS**

**Please sign the consent below to indicate that you understand the risks – and that you have made an informed decision with the MDs at VFC about your treatment.**

**I, \_\_\_\_\_**

**have read the above information and have decided on a course of action with which I feel comfortable. The options have been explained to me, and I fully understand the implications of my decisions.**

**Patient**

**Name:** \_\_\_\_\_

**Date:** \_\_\_\_\_

**Signed:** \_\_\_\_\_

**Partner ( optional)**

**Name:** \_\_\_\_\_

**Signed:** \_\_\_\_\_