

Comparison of post-embryo transfer albumin and cabergoline for preventing severe ovarian hyperstimulation syndrome (OHSS) in assisted reproductive technology (ART)

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ABSTRACT

Objective: To study the effects of agonist and antagonist along with albumin and cabergoline post-embryo transfer in preventing severe OHSS

Materials and Methods: This retrospective study reviews 414 cases of IVF/ICSI suspected to have OHSS, following embryo transfer. The patients had been given prophylactic albumin infusion (100ml of 20% solution) and cabergoline 0.5mg OD for seven days. The cases were monitored closely with daily abdominal girth and weight charting, hematocrit, total WBC count and ultrasound. Further doses of albumin were given depending on clinical and laboratory findings.

Results: An increase in the dosage of Albumin was seen with increase in severity of OHSS. The main therapeutic dose on an average of 38.6 gm of Albumin was given in severe OHSS cases. The overall incidences of OHSS was higher in the antagonist group (15.83%) than in the agonist group (5.44%). The incidence of severe OHSS was higher in the agonist group (31.25%) than in the antagonist group (5.26%). Embryo transfer had to be cancelled in 10 cases due to early onset of OHSS. All cases were managed conservatively barring one which required therapeutic paracentesis.

Conclusion: The result of the study showed that Albumin transfusion and Dopamine Agonists like Cabergoline prevent severe OHSS. Also most of cases of severe OHSS can be managed conservatively and the role of routine aggressive trans-vaginal paracentesis is questionable.

Key words: ovarian hyperstimulation syndrome (OHSS), assisted reproductive technology (ART), post-embryo transfer

INTRODUCTION

Ovarian Hyperstimulation Syndrome (OHSS) is characterized by enlargement of ovaries, plasma leakage and hemoconcentration¹. It is a potential life-threatening iatrogenic condition and is one of the most serious complications of Assisted Reproductive Techniques (ART). Controlled ovarian Hyperstimulation using antagonist protocol has shown to have a decreased incidence of OHSS². Albumin helps increase the intravascular oncotic pressure and therefore helps prevent osmosis of plasma into third space³. Cabergoline blocks vascular endothelial growth factor (VEGF) receptor-2 and therefore decreases vascular permeability preventing plasma leakage⁴. The use of antagonist protocol with albumin and cabergoline could help reduce the incidence of severe OHSS.

Protein levels in serum, plasma and peritoneal fluids are also elevated in women at risk of developing OHSS⁵. VEGF not only stimulates new blood vessel development but also induces vascular hyperpermeability⁶.

Thus this retrospective study is designed to identify the effect of agonists and antagonists along with albumin and cabergoline post-embryo transfer in preventing severe OHSS.

MATERIALS AND METHODS

The present retrospective study has included all female patients undergoing in vitro fertilization (IVF) at Center of ART, Division of Reproductive Medicine, Kasturba Medical College, Manipal University, Karnataka, India. A data record form was developed and validated. A total

of 414 patient records were reviewed to identify different categories of OHSS and were included for further evaluation.

All patients suspected to have OHSS, post-embryo transfer, were given prophylactic albumin infusion 100 ml of 20% solution and cabergoline 0.5mg OD for seven days. Retrospective review of medical record forms of all female patients who had developed OHSS after agonist and antagonist cycles along with albumin and cabergoline post embryo transfer was done. Patients were classified into three categories of severity of OHSS according to criteria of Navot et al⁷. The Mild OHSS group was characterized by mild symptoms like nausea, vomiting and ovarian size <5cm, whereas Moderate OHSS group had patients with abdominal distention, nausea, ascites, ovarian size >5cm, and the Severe OHSS group included the patients having massive ascites, hemoconcentration, oliguria and enlarged ovaries. The cases which were monitored closely with daily abdominal girth and weight charting, hematocrit, total WBC count and ultrasound were included in the study.

RESULTS

The review of records demonstrated a mean age of 30 years with a mean Body Mass Index of 23 kg/m². Of 414 case record files reviewed, OHSS was seen in 35 cases (8.45%). The overall incidence of OHSS was higher in the antagonist group (15.83%) than in the agonist group (5.44%).(Table 1)

Table 1. Incidence of OHSS in relation to stimulation protocol

Incidence of OHSS in relation to stimulation protocol		
	Agonist No. %	Antagonist No. %
Total cases	294	120
cases with OHSS	16(5.44)	19(15.83)
cases with severe OHSS	5(31.25)	1(5.26)

However, the incidence of severe OHSS was higher in the agonist group (31.25%) than in the antagonist group (5.26%). An increase in the dosage of albumin was

seen with increase in severity of OHSS and almost all cases were managed conservatively barring one which required therapeutic paracentesis. Embryo transfer had to be cancelled in 10 cases due to early onset of OHSS.(Table 2)

Table 2. Mean therapeutic dose of albumin in relation to severity of OHSS

Mean therapeutic dose of albumin in relation to severity of OHSS		
Severity of OHSS	Therapeutic dose of Albumin (g)	
Mild (n=14)	38.6	
Moderate (n=15)	86.6	
Severe (n=6)	123.2	
Overall (n=35)	73.6	

DISCUSSION

The present retrospective study has clearly shown that administration of albumin and cabergoline is effective in preventing OHSS as compared to recent research into the pathophysiology of OHSS which has shed light on the role of Vascular Endothelial Growth Factor (VEGF) and other antigenic factors⁴. Yet, definitive findings on the outcomes and benefits of different strategies for the prevention of OHSS continue to be lacking. Albumin helps increase the intravascular oncotic pressure and therefore helps prevent osmosis of plasma into third space³. Cabergoline blocks VEGF receptor-2 and therefore decreases vascular permeability preventing plasma leakage.⁴ The results of the study showed that there is a role of albumin transfer and dopamine agonists like cabergoline in preventing severe OHSS. Also most cases of severe OHSS can be managed conservatively and the role of routine aggressive transvaginal paracentesis is questionable.

CONCLUSION

The study showed that there is a role for albumin transfer and dopamine agonists like cabergoline in preventing severe OHSS. The current data on prevention and management of OHSS are not definitive and we suggest more RCTs to help form guidelines for the management of OHSS.

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