Acute Cerebral Thrombosis Following Ovarian Hyperstimulation Syndrome: A Case Report

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To the Editor: Ovarian hyperstimulation syndrome (OHSS) is an iatrogenic complication of ovulation induction, with ovarian enlargement and acute fluid shift from the intravascular space. The incidence of severe OHSS is approximately 1–2% of treatment cycles and usually following *in vitro* fertilization embryo transfer (IVF-ET) treatment.[1,2]

OHSS is self-limiting, and treatment is primarily supportive with an aim to reduce the incidence of associated complications. The complications of severe OHSS include renal failure, hypovolemic shock, venous thromboembolism, respiratory distress syndrome, and even death. A particularly severe feature of OHSS is thromboembolism, for which a prevalence of 0.78%, has been reported and which accounts for most deaths associated with the syndrome.[2]

We present a case of acute cerebral thrombosis with OHSS following ovarian induction.

The woman, a 30-year-old nulliparous, presented to our emergency department with progressive abdominal distension for more than 20 days, following ovarian induction. She failed to get pregnancy for 2 months and then accepted ovarian induction with letrozole and human menopausal gonadotropin, and human chorionic gonadotropin (hCG) injection about 15 days before. She had no previous medical history and was a nonsmoker. She had no family or personal history of thrombophilia.

The physical examination revealed tachycardia and tachypnea, bilateral absent air entry to the lower pulmonary zones and a severe distended abdomen with shifting dullness to percussion, and edema lower extremities. Blood profile indicated hemoconcentration (hematocrit 0.5). The coagulation profile showed D-Dimer 0.63 μg/ml. Serum biochemical examination was normal. Blood hCG test was 78 mIU/ml. Transvaginal ultrasonography (TVS) confirmed the diagnosis of OHSS with large amount of fluid and markedly enlarged ovaries.

She admitted for supportive treatment and paracentesis. She complained a severe headache and blurred vision after urinating on the 2nd day of hospitalization. Physical examination revealed right homonymous hemianopia, without other neurological positive signs. Magnetic renounce imaging showed an abnormal signal of left occipital lobe, dorsal thalamus, and partial insular [Figure 1]. The coagulation profile showed remarkably elevate of D-Dimer (5.3 μg/ml). The acute cerebral thrombosis was diagnosed and after getting the couple, we arranged emergency thrombolytic therapy and then transfer to Intensive Care Unit for continuous therapy, including supportive and anticoagulation treatments. The neurologist gave low dose aspirin (100 mg/d) combined with low molecular weight heparin (4100 IU Q12h). Considered that pregnant will prolong the course of OHSS and the early stage of pregnancy, we gave mifepristone. However, the patients had an unexpected decrease of blood platelet (36×10^9/L). We changed for

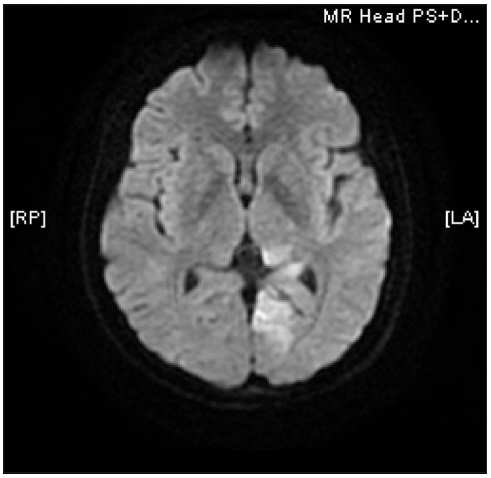

Figure 1: Magnetic resonance imaging showing an abnormal signal of left occipital lobe, dorsal thalamus, and partial insular.

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Access this article online

Quick Response Code:

Website: www.cmj.org

DOI: 10.4103/0366-6999.171467

Received: 03-08-2015 **Edited by:** Li-Shao Guo
How to cite this article: Yang S, Li R, Chen XN, Fu Y, Yi M, Ma CH, Liu P, Qiao J. Acute Cerebral Thrombosis Following Ovarian Hyperstimulation Syndrome: A Case Report. Chin Med J 2015;128:3383-4.

Warfarin, considering the immunological reaction to low molecular weight heparin might be the reason for blood platelet decrease. After supportive treatment and several times of paracentesis and pleurocentesis, the patient's condition was stable. However, the serum hCG raised to 1449 mIU/ml, and the TVS showed intrauterine pregnancy (triplet). Because the pregnancy, especially triplet, will aggravate the condition, we advised curettage with ultrasonographic monitoring, under intravenous anesthesia.

The symptoms and signs of OHSS improved rapidly after the surgery. She was discharged on the day there after surgery with tubular visual field. Neurologist suggested continuation of anticoagulation.

As far as we know, prior to this, there is no relevant report of ovarian induction treatment resulted in OHSS, complicated with acute cerebral thrombosis event. Thrombosis is a very rare, but serious even mortality complication of the hypercoagulate state conferred by OHSS. The factors contribute to the thrombophilia of OHSS, including hemoconcentration, leukocytosis, thrombocytosis, altered coagulation, and reduced fibrinolysis.[2] Most of the reported thromboembolic events with OHSS were following IVF-ET treatment. A review analyzed the assisted reproductive technology and thromboembolic complications (58 articles reported 70 cases). Among these cases, 69% were pregnant and 95% were following OHSS. There were 25 cases with arterial thrombosis and 14 involved cerebrovascular events (2 died), the last 45 cases with venous thrombosis, which usually occurred days to weeks after the resolution of OHSS.[3] It has been reported that the prevalence of thrombophilia or a tendency to thrombosis is significantly increased in women who develop severe OHSS after ovulation induction.[4,5] However, there was another research showed that the prevalence of thrombophilia is not increased in women with severe OHSS, screening for V Leiden and prothrombin G20210A mutation in an IVF general population is not cost-effective.[2] In this patient, the thrombophilia and cerebral magnetic resonance angiography were all negative.

OHSS is an iatrogenic disease with increased risk of thromboembolic events. The most important thing is proper hold of the indications of ovarian induction with suitable dosage, to minimize the risk of OHSS. During the ovarian induction, it is important to recognize the signs of OHSS and cancel the cycle, if necessary. For those high-risk patients, the clinician should avoid using hCG and even suggest contraception. As the most severe complication of OHSS, the rapid recognition and proper anticoagulation treatments are very important for patients with thromboembolism events.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

References

1. Fleming T, Sacks G, Nasser J. Internal jugular vein thrombosis following ovarian hyperstimulation syndrome. Aust N Z J Obstet Gynaecol 2012;52:87-90.
2. Fábregues F, Tàssies D, Reverter JC, Carmona F, Ordinas A, Balasch J. Prevalence of thrombophilia in women with severe ovarian hyperstimulation syndrome and cost-effectiveness of screening. Fertil Steril 2004;81:989-95.
3. Chan WS, Dixon ME. The "ART" of thromboembolism: a review of assisted reproductive technology and thromboembolic complications. Thromb Res 2008;121:713-26.
4. Lane DA, Mannucci PM, Bauer KA, Bertina RM, Bochkov NP, Boulyjenkov V, *et al.* Inherited thrombophilia: Part 1. Thromb Haemost 1996;76:651-62.
5. Dulitzky M, Cohen SB, Inbal A, Seidman DS, Soriano D, Lidor A, *et al.* Increased prevalence of thrombophilia among women with severe ovarian hyperstimulation syndrome. Fertil Steril 2002;77:463-7.