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Cerebral Sinus Vein Thrombosis Following Ovarian Hyperstimulation: A Case Report

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ABSTRACT

Thromboembolic phenomena are the serious consequences of assisted reproductive technology. We present a case of cerebral sinus vein thrombosis (CVST) following ovarian hyper stimulation syndrome (OHSS). Ten days after recovering from OHSS, the patient presented in the emergency department with thunderclap headache. Her Magnetic Resonance Venography (MRV) showed occluded left transverse sinus and left sigmoid sinus. The patient was treated with low molecular weight heparin. She made a good recovery and was independent in activities of daily living in follow up after six months. Disturbances of the coagulation system may occur in moderate OHSS and also persist even after the clinical symptoms of OHSS have resolved.

Keywords: Ovarian Hyperstimulation Syndrome; Cerebral Veins; Thrombosis

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Introduction

Ovarian hyperstimulation syndrome (OHSS) occurs in 1% to 10% of IVF cycles among women undergoing ovarian hyperstimulation with exogenous gonadotrophin administration and is known as a potentially life-threatening complication of OHSS (1). Complications are thought to be secondary to hypovolaemia and the hypercoagulability state induced by increased vascular permeability. High levels of estrogen and relative venous stasis in the lower limb secondary to ovarian enlargement are also

contributory (2-4). In this report, we are going to present a case of cerebral sinus thrombosis following OHSS.

Case Presentation

A 22-year-old woman with severe headache was referred by neurologist as an acute admission to the neurology department. She presented with a two-day history of thunderclap headache. Examination showed bilateral papilledema. The patient had a two-year history of infertility secondary to Polycystic Ovary Syndrome (PCOS) and had only recently commenced ovarian stimulation and intracytoplasmic sperm injection (ICSI) treatment for that, with subsequent embryo transfer. Two weeks prior to admission she had been admitted under the care of gynecologists with abdominal pain and nausea. Blood analysis showed a normal hematocrit of 35%, platelets 307000, sodium 140 (normal 135–145 mEq/l), potassium 4.1 (normal 3.5–5.5 mEq/l), creatinine 0.9 (normal <1.2mg/dl) and blood urea nitrogen (BUN) 18 (normal <25 mg/dl). Abdominal ultrasound showed moderate volume ascites, multi-cystic ovaries. Her clinical and laboratory finding were consistent with moderate ovarian hyperstimulation syndrome, and she was started on conservative treatment, including intravenous hydration. She was discharged on the fifth day of conservative treatment. However, ten days later the patient presented to urgent care with the complaint of severe headache. During the second admission laboratory findings were: hematocrit 33.9%; hemoglobin 11.8 g/dl; white blood cell count 10000/ml; platelet count 307000/ml; and both prothrombin time and electrolyte levels within normal limits. At six hours after admission, the patient condition suffered deterioration. Confessional state was noted, in addition to Wernicke aphasia. Brain CT scan and magnetic resonance imaging (MRI) showed hemorrhagic infarction in left temporo-parietal region associated with massive edema and somewhat midline shift and also right thalamic infarction (Figure 1).

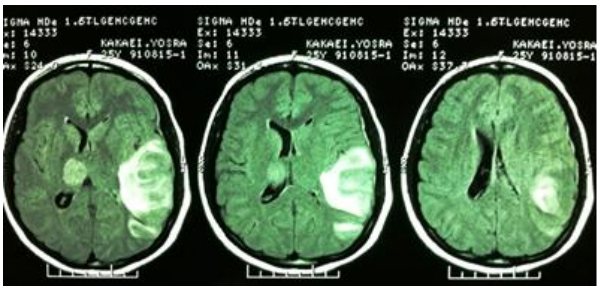

Figure 1: Axial fluid attenuated inversion recovery (FLAIR) images demonstrate two areas of infarction; in left temporo-parietal region and right thalamus. Associated brain CT scan (not represented here) revealed non-homogenous hemorrhage in the temporo-parietal infarcted region.

Brain MRI illustrated thrombosis formation in left transverse sinus (Figure 2).

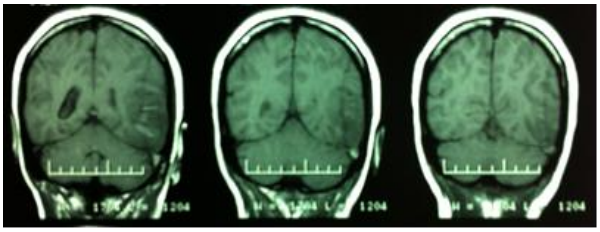

Figure 2: Coronal T1 weighted MRI images show thrombosis formation in left transverse sinus.

Magnetic resonance venography (MRV) revealed non-visualized or occluded left transvers sinus and sigmoid sinus (Figure 3). Deep venous thrombosis which is in charge of right thalamic infarction cannot be proved by conventional MRI and MRV, but it has been logically considered due to deep venous thrombosis based on the patient's history and superficial vein thrombosis.

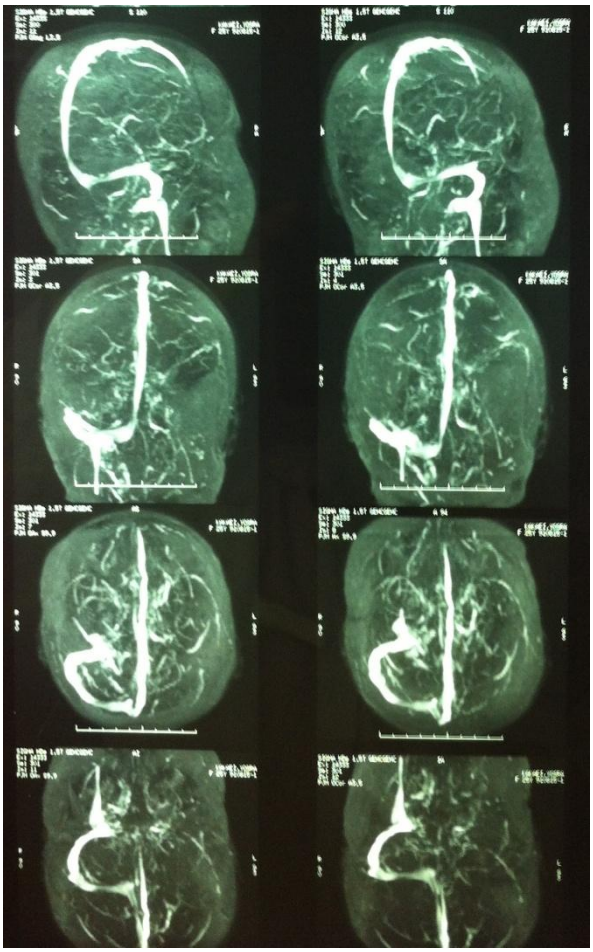

Figure 3: Magnetic resonance venography (MRV) illustrates occluded left transvers sinus and left sigmoid sinus

Neither family history nor coagulation deficiency was noted. A thrombophilia work-up including tests of antiphospholipid antibody, lupus anticoagulant, proteins C and S, antithrombin III, prothrombin G20210A, factor V Leiden and homosysteine was negative. The patient was admitted in the intensive care unit of the hospital and started on low molecular weight heparin (LMWH) 60 mg subcutaneously twice daily. Manitol was prescribed to treat the elevated ICP. The health care team measured and monitored the patient's neurological and vital signs. The patient revealed gradual improvement of level of consciousness and then relief of headache. At fourteen days after admission, she was discharged with a sequel of mild deficit of recent memory and anomic aphasia. Full anticoagulation with daily warfarin was maintained for six months. During follow up the neurologic deficit gradually disappeared and she became independent in daily activities when visited after six months.

Discussion

Thromboembolic events are considered as dangerous and unpredictable manifestations of the ovarian hyper stimulation syndrome with an incidence of 0.04% (5). Thromboembolic events can affect the venous or arterial systems and are potentially lethal (4,6). Rao *et al*. performed a review of cases of thromboembolic disease associated with ovulation induction and reported ninety seven cases. The authors found that thirty percent of thromboembolic results were arterial in origin whereas venous origin made up 67% of their origin. Seventy percent of reported cases with venous origin, the upper limb and neck and head veins have been involved. Seventy-seven percent of cases were associated with pregnancy while 74% were associated with OHSS (7).

Kodama *et al.* (1996) showed that in pregnant patients with OHSS, thrombosis markers remained elevated for more than three weeks after the onset of OHSS with some persisting for more than four weeks. The authors concluded that disturbances of the coagulation system may persist even after the clinical symptoms of OHSS have resolved (8). In the presented case the thrombosis occurred ten days after the symptoms had resolved. This case demonstrates a serious and potentially fatal complication of assisted reproductive treatment.

Conclusion

Ovarian hyper stimulation syndrome can cause significant morbidity; early recognition may help to avoid complications of this syndrome. Obstetricians should be aware that patients may present with symptoms of thrombotic complications even several weeks after OHSS symptoms have resolved.

Conflict of Interest

The authors have no conflict of interest.

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