Ischaemic Stroke with Ovarian Hyperstimulation Syndrome

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Abstract

Ovarian hyperstimulation syndrome (OHSS) is a rare and serious complication of hormonal treatment for induction of ovulation. Haemoconcentration owing to the large fluid shift from the intravascular to the peritoneal cavity resulting in increased blood viscosity that can lead to arterial and venous occlusion. Thromboembolic stroke, cerebral venous thrombosis and systemic arteriovenous thrombosis have been reported in OHSS. We report a case of a 30-year-old female who had undergone a successful in vitro fertilization and presented in the emergency department with sudden onset of left hemiplegia. Her CT scan showed a full thickness right- MCA territory infarct. The patient was treated with oral aspirin, intra venous plasma expanders and Mannitol. Her repeat MRI showed haemorrhagic conversion of infarct. She made a good recovery and was independent in activities of daily living when seen for follow up after six months.

Introduction

Ovarian hyperstimulation syndrome (OHSS) is considered to be a rare but serious phenomenon arising as a complication of hormonal treatment for induction of ovulation.[1] OHSS is usually more severe during the first trimester of pregnancy.[2] In its most severe form, this syndrome is characterized by massive ovarian enlargement and the formation of multiple ovarian cysts, fluid shifts resulting in extravascular accumulation and intravascular volume depletion, renal failure, hypovolaemic shock and in some cases, death.[2,3] Thromboembolic stroke, cerebral venous thrombosis and systemic arteriovenous thrombosis have been reported in OHSS.[4] The causes of thromboembolic phenomenon in OHSS remain unclear but haemoconcentration owing to the large fluid shift from the intravascular to the peritoneal cavity, results in increased blood viscosity that can lead to arterial and venous occlusion.[1] Very few cases of cerebral arterial infarct secondary to OHSS are found in literature. To our knowledge, OHSS has not been reported from Pakistan. We report a case of OHSS with middle cerebral artery territory stroke secondary to in-vitro fertilization.

Case Report

A 30-year old married female presented to the emergency department with complaints of sudden onset left sided weakness of the body. (There was no history of any other symptoms). She had undergone successful in-vitro fertilization at a private clinic ten days prior to admission. In the emergency department Her pulse was 92/min regular, temperature 37^{o}C, basic relevant work-up showed an AsT of 63U/L, elevated WBC count of 16,300/µL and haematocrit of 43.40%. Beta HCG level was 84.2mIU/ml.

On the day of admission, she was oriented and followed simple commands. She had a slurred speech. Her

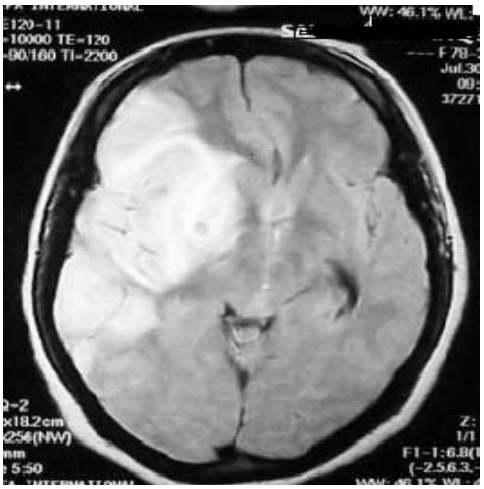

Figure. Axial flare MRI image of the brain showing full thickness right middle cerebral artery infarct.

Table. Relevant laboratory data.

	Day 1	Day 2	Day 3	Day 4	Day 5
WBCs	16300	16300	16000	15000	10500
AsT	63U/L	61U/L	46U/L	49U/L	61U/L
HcT	43.40%	43.50%	34.30%	37.20%	37.6%
AlT	34U/L	34U/L	35U/L	37U/L	48U/L
T.Bil	1.6mg/dl	1.66mg/dl	2.14mg/dl	2.09mg/dl	1.2mg/dl

WBCs: White blood cells
AsT: Aspartate aminotransferase
AlT: Alanine aminotransferase
T.Bil: Total bilirubin
HcT: Haematocrit

motor examination showed marked weakness of the left half of body (MRC grade 1/5). Deep tendon reflexes were brisk on the left side with an extensor plantar response on the left. CT scan of the head showed full thickness right MCA infarct. She was given aspirin 75 mg Q O.D. and haemaccil 500 cc over 5 hours, a normal saline bolus of 500cc. injection Mannitol 200cc q 8 hourly and Injection Ceftiaxone 1 gram I/V q 12 hourly. An urgent gynecological consult was done. Ultrasonography abdomen showed moderate ascites, right sided pleural effusion and large multi cystic ovaries (right ovary 152mm x 98mm x 106 mm, left ovary 101mm x 98mm x 91mm) in both adenexa. She fulfilled the criteria for diagnosis of OHSS[3] based on the clinical features, elevated beta HCG levels, ovarian enlargement and ascites on sonography and an elevated haematocrit. On the second day of admission her neurological examination showed improvement in speech and motor power on left side. The patient complained of mild headache. MRI of the brain was ordered. MRI showed small haemorrhage in the infarct (Figure). Carotid Doppler revealed mild carotid arteriosclerosis. Ascitic tap was negative for malignant cells. The daily routine lab tests including CBC and LFT's showed improvement over the next few days (Table). Anti DNA, hepatitis B and C serology were negative. Over the next five days she showed a steady improvement and was discharged home.

She came for follow-ups regularly and was last seen in February 2006. She was independent in activities of daily living .

Discussion

The incidence of OHSS is reported to be between 0.3% and 6% with the risk being increased by pregnancy.[1] A recent review of the literature found 54 cases of thromboembolic disease associated with ovulation induction therapies and two third of these patients had OHSS. Most of the complications are venous occlusive disease of the upper limb, head and neck veins. The most common mechanism of stroke in OHSS reported in the literature is large artery occlusion, usually of the middle cerebral artery.[4] Our patient also had full thickness right middle cerebral artery infarct.

Management of OHSS is often close observation but may require hospitalization for IV hydration with IV fluids and administration of human albumin 25%[5] and supportive care. The successful use of rt-PA to lyse a cerebral arterial thrombus resulting from OHSS has been reported by Elford K et al..[6] Our patient was given IV hydration and aspirin. Anticoagulation or thrombolysis was not considered because of the large size of the infarct. An ultrasound guided ascitic tap was done for abdominal ascites. The drainage of ascites by paracentesis and self-transfusion of fluid is a good therapeutic option in patients with severe OHSS.[5]

The cerebrovascular complications are by far the most serious side effect of OHSS.[7] Cases have been reported in literature[7,8] that resulted in severe cerebral infarcts secondary to in-vitro fertilization. Rarely, fatal cerebral infarcts involving in-vitro fertilization have also been reported.[9] To our knowledge this is the first such case in Pakistan

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Opinion and Debate