



Postpartum intracerebral hematoma following in vitro fertilization

Hatice Şeyma AKÇA*^{ORCID}, Serdar ÖZDEMİR

Department of Emergency Medicine, Ümraniye Education and Research Hospital, University of Health Sciences, İstanbul, Turkey

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Abstract

To contribute to the literature with a case of postpartum intracerebral hemorrhage following in vitro fertilization (IVF) treatment. A 41-year-old female patient presented to our clinic with the complaint of headache lasting for four days. It was determined that the patient underwent a cesarean section 10 days earlier and had received preoperative IVF treatment. Her general condition was moderate. She was cooperative and oriented but apathetic and drowsy. There was 4/5 paralysis in the right lower extremity and right arm. Her blood pressure was 197/115 mmHg. In the brain CT, there was an approximately 6x1.5 cm parenchymal hematoma and subarachnoid hemorrhage in the deep white matter in the left frontal region. The patient was followed up in the intensive care unit for five days, and then admitted to the ward following the improvement in her general condition and apathic findings. Although there are no risk factors for intracerebral hemorrhage that occurs after IVF, it can present with neurological sequelae during recovery. There is a need for detailed studies and meta-analyses that will guide both the treatment approach to these patients and preventive measures.

Keywords: intracerebral hematoma, postpartum intracerebral hematoma, IVF, peripartum period

1. Introduction

Physiological and vascular changes during pregnancy are very important in predicting possible complications. A 50% increase in blood pressure results in an increase in cardiac output along with an increase in the permeability of the blood-brain barrier. In addition, propensity to coagulation and changes in fibrinolysis are observed (1).

Vascular changes clearly have an important place in intracerebral hemorrhage that occurs during pregnancy and in the peripartum and postpartum periods. In addition, it has been reported that arteriovenous malformation (2), preeclampsia (3), and hemolysis, elevated liver enzymes and low platelets syndrome (4) are also effective in the etiology. The factors can be listed as hypertension, gestational diabetes, smoking, and chronic liver disease (5, 6).

In vitro fertilization (IVF) treatment was first performed in 1977 by Steptoe and Edwards (7). It has been suggested that risk factors for intracerebral hemorrhage during pregnancy and the peripartum period are similar in patients receiving IVF treatment (1). However, to our knowledge, there are no research articles in the literature on postpartum hemorrhage following IVF treatment and the approach to patients with this complication.

This case report aimed to contribute to the literature by describing a case of postpartum intracerebral hemorrhage that developed after IVF treatment.

2. Case Report

A 41-year-old female patient presented to our clinic with the

complaint of ongoing headache lasting for four days. It was determined that she underwent a cesarean section 10 days earlier and had no preoperative preeclampsia or history of intrauterine bleeding but had a history of IVF treatment. The patient's general condition was moderate. She was cooperative and oriented, and completely responded to orders but she was apathetic and inclined to sleep. There was 4/5 paralysis in the right lower extremity and right arm. Her bilateral light reflex was +/+, and there was no sign of meningeal irritation. Her body temperature was 36.5 °C, heart rate was 60/min, saturation was 97% at room air, and blood pressure was 197/115 mmHg. We were informed that her preoperative blood pressure value was 90/60 mmHg. No pathology was found in the thorax and abdominal examinations, and the laboratory test values were as follows: blood glucose, 91 mg/dl; blood urea nitrogen, 25.5 mg/dl; creatinine, 0.44 mg/dl; sodium, 141.4 mEq/L; potassium, 4.19 mEq/L; aspartate aminotransferase, 35 U/L; alanine aminotransferase, 23 U/L; white blood cell count, 9.91x10³ U/L; hemoglobin, 13.6 g/dl; platelet count, 330x10³ U/L, prothrombin time, 15.4(11-16) sec; international normalized ratio, 1.15(0.8-1.3); and activated partial thromboplastin time, 28.4(25-40) sec. According to the blood gas analysis, her pH value was 7.44, partial pressure of carbon dioxide was 34.2 mmHg, and bicarbonate was 23.2 mmol/L. The computed tomography and diffusion-weighted magnetic resonance images of the brain revealed an approximately 6x1.5 cm parenchymal hematoma in the deep white matter in the left

*Correspondence: haticeseymaakca@gmail.com

frontal region and a loss of density compatible with edema around the hematoma, followed by subarachnoid hemorrhage in the sulcus in the left frontotemporal region. There were mild findings of subarachnoid hemorrhage at the inferior gyrus level in the right frontal lobe and a 6-mm shift to the right due to parenchymal edema and hematoma in the left hemisphere (Fig. 1, Fig. 2). However, 3D-Angio imaging showed no signs of stenosis or aneurysm in the brain-neck vascular structures. During the follow-up, esmolol and phenytoin sodium were started for the treatment of hypertension, which reduced the patient's blood pressure to 178/88 mmHg.

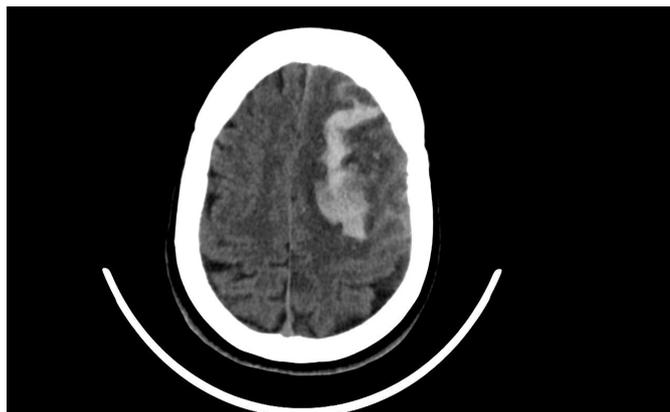


Fig 1. Computed tomography image taken at the time of presentation showing intracranial hematoma and a shift to the right

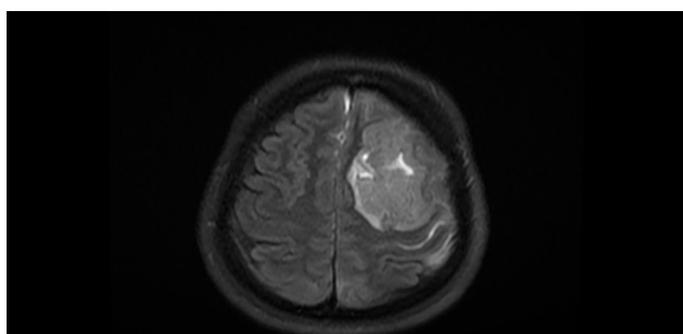


Fig 2. Diffusion-weighted magnetic resonance image taken at the time of presentation showing intracranial hematoma and a shift to the right

Upon consultation with the neurology and neurosurgery departments, intracranial intervention was not considered but it was considered appropriate to admit her to the intensive care unit. The patient was followed up at the intensive care unit for five days, and then moved to the ward with an improvement in her general condition and apathetic findings. After one week of follow-up at the ward, she was discharged with 2/5 hemiplegia in the right lower extremity and 1/5 paralysis of the right arm.

3. Discussion

We consider that our case report will contribute to the literature by describing a case of intracerebral hemorrhage following IVF treatment. In studies performed, intracerebral hemorrhages associated with pregnancy are mostly seen in the third trimester, while those that develop in the postpartum

period rank second in terms of frequency (6). Our patient presented to our clinic on the postpartum 10th day. In a previous case report, quadriplegia was reported in a patient who developed epidural hematoma on the postpartum 15th day (8). In our patient, there was significant paralysis in the right arm and right lower extremity and tendency to sleep at first presentation. At the timeshe was discharged, recovery was partially achieved.

If intracerebral hemorrhage is considered to be due to a ruptured vascular lesion, vascular imaging should be requested (1). In our patient, 3D Angio imaging was performed, and no vascular lesion was detected. Although the target blood pressure value is not clear in intracerebral hematoma in pregnant and postpartum patients, hypotension should be avoided due to the risk of fetal hypoxia (1). The blood pressure of our patient was only partially reduced, and thus a significant decrease was prevented.

Although the approach to the case of intracerebral hemorrhage is similar to that of non-pregnant patients (1), the literature contains no research comparing the management of intracerebral hemorrhage during pregnancy and the postpartum period (6). To our knowledge, there is also no study examining the cases of intracerebral hemorrhage after IVF treatment. In addition, we did not find any study comparing intracerebral hematomas observed in the first, second or third trimester or postpartum period with those seen in non-IVF pregnancies.

In a case report, Winarno et al., (2019) described a 42-year-old patient who became pregnant following IVF. The patient was in her third trimester when she developed intracerebral hemorrhage in the midbrain without a history of chronic disease, smoking, operation, or hypertension (9). Similarly, our patient did not have any risk factors, but she did also develop parenchymal hematoma and subarachnoid hemorrhage.

Although pregnancy-related intracerebral hemorrhages are rare, they can result in an increase in the length of hospital stay, morbidity, and mortality, and negatively affect quality of life. However, these complications may also occur in pregnancies after IVF treatment. Although there is no risk factor, patients can remain in a state of recovery with neurological sequelae. There is a need for detailed studies and meta-analyses that will guide both the approach to the treatment of these patients and preventive measures.

Conflict of interest

None to declare.

Acknowledgments

None to declare.

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