Acute episode of itching and possible amniotic fluid embolism with circulatory collapse in a full term pregnant patient

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Amniotic fluid embolism (AFE) is a rare but serious obstetric condition. Its presentation includes a variety of signs and symptoms, most commonly hypoxia, hypotension, cardiac arrest, disseminated intravascular coagulopathy (DIC) and severe bleeding. A 28-year-old G1P0 full-term patient was admitted for an acute severe itching episode. After ruling out cholestasis, induction of labor and epidural analgesia was started. No significant progress of labor was seen in the next several hours. Blood was seen soaking the epidural catheter site. This was thought of as possibly an early sign of DIC. The decision was made to perform an urgent cesarean section. The patient bled profusely in the operating room and her hemodynamic condition deteriorated. Aggressive resuscitation was performed. We hypothesized that the itching on admission was a possible indicator of early AFE.

Key Words: Amniotic fluid embolism; cholestasis; cardiac arrest; circulatory collapse.

INTRODUCTION

AFE is a rare but potentially fatal obstetric condition. In the United States, it is one of the leading causes of obstetric deaths that cannot be predicted [1]. Some of the signs include hypotension, shortness of breath, cyanosis, unconsciousness, cardiopulmonary collapse and bleeding diathesis [2]. However, the exact definition is noted to be, "presence of acute hypoxia, acute hypotension/cardiac arrest and DIC/severe hemorrhage during delivery or within 30 minutes postpartum and for which there is no alternative explanation" [3].

CASE REPORT

A 28-yrs-old G1P0 white, full-term patient with a past medical history of hemochromatosis was admitted for induction of labor for acute severe itching all over her body including palms but predominantly on the abdomen. After ruling out cholestasis, labor epidural analgesia was started. Misoprostol and oxytocin were used to induce labor. The patient had a spontaneous rupture of membranes but only minimal cervical dilation after 20 h of labor. Bloody fluid was seen through the indwelling epidural catheter's dressing. The healthcare team suspected it to be an early onset sign of DIC.

The clinical decision was made to perform an immediate cesarean section prior to laboratory confirmation for suspected DIC and epidural anesthesia was used for the procedure. Fresh frozen plasma (FFP), cryoprecipitate and albumin were immediately given. The patient became acutely hypotensive shortly after delivering a healthy baby. Later, the patient became dyspneic. The patient was intubated and packed red blood cells (PRBCs) transfusion was started and a left radial arterial line was placed. A large amount of blood was seen between the patient's legs. The blood pressure fell to a nadir of 54/20 mm Hg. The patient did not respond to multiple doses of phenylephrine. Desmopressin (20.96 mcg) was given for possible bleeding diathesis. The platelet count, hemoglobin, and hematocrit fell to the lowest level of 56 k/uL, 7.7 g/dL, and 24% respectively. Arterial blood gases showed hemoglobin of 4.9 Mg/dL and lactic acid of 3.9 mMol/L. The electrocardiogram showed tachycardia and ST depression. The patient was rapidly transfused with four units of PRBCs, four units of FFP and a unit of cryoprecipitate. An intrauterine balloon was placed to control the bleeding during the CS and the patient was transferred to the surgical intensive care unit (SICU) where she was continued to be resuscitated with more packed red blood cells, fresh frozen plasma, and cryoprecipitate. The partial thromboplastin (PTT) time was 40.4, international normalization ratio (INR) was 1.3 and the platelet count was 61. Several hours after SICU admission, PTT and INR normalized to 30.0 and 1.1, respectively.

Significant pulmonary edema was noticed on the chest radiograph. Creatinine increased to 2.1 implying acute kidney injury. Twelve hours later she was extubated. The vaginal bleeding decreased as the INR and platelet count improved. The intrauterine balloon was removed on the first postoperative day with minimal bleeding. The placental pathology did not show any evidence of abruption.

DISCUSSION

There are many causes of itching in pregnancy but intrahepatic cholestasis is the most common cause, in which, it frequently occurs in the palms and soles [4,5]. Itching is believed to be caused by elevated bile acids or by lysophosphatidic acid [6]. A normal liver function test and lack of clinical signs rule out cholestasis. Itching has also been seen in amniotic fluid embolism cases in the past [7-9]. AFE associated itching is characteristically different from the one seen in intrahepatic cholestasis of pregnancy and the exact pathophysiological mechanism of how it develops is not known [10]. In our case, the patient complained of severe itching predominantly in the abdominal area. Itching in DIC during pregnancy seems to be more associated with AFE than other conditions causing DIC in pregnancy [7-9]. More cases need to be reported to understand this association and the pattern of distribution of itching in AFE. There are some other risk factors that support the diagnosis of AFE in the case under discussion. Knight et al found that there is an increased risk among those undergoing an induction of labor (adjusted odds ratio=3.9) and women who underwent cesarean delivery (adjusted odds ratio=8.84) [11].

Timely diagnosis of DIC during pregnancy can be challenging but is paramount for a favorable outcome. A high index of suspicion is required for the diagnosis of DIC secondary to amniotic fluid embolism. Several criteria have been made for diagnosis of DIC; most reliable one to date is modified DIC score which is based on original ISTH overt DIC score [12].

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Because of the pregnancy-related physiologic changes in ISTH overt DIC score components, only three components of this score i.e., platelet count, fibrinogen concentration and the PT difference were used. Conclusively, modified DIC score was able to gain the sensitivity of 88% and specificity of 96% [13]. However, in real clinical settings, clinical signs should be relied upon and treatment should be initiated based on them rather than waiting for confirmation of diagnosis through laboratory investigations results. Bleeding from any of the catheter insertion sites is pathognomonic. In the above-mentioned case, the epidural dressing was soaked with bloody fluid which rose suspicion of the presence of underlying DIC. Waiting for laboratory confirmation of DIC would only have decreased the chances of recovery; therefore, immediate and aggressive resuscitation is key to a better outcome.

Fluids, blood product resuscitation, and correction of ensuing coagulopathy using massive transfusion protocol are an important part of the management of AFE [14]. Patients who have the classic clinical presentation of AFE have mortality rates of more than 60% [3]. Prognosis depends on the clinical picture, cardiopulmonary system affection and skill level of the team involved in management [15]. Management of DIC during pregnancy includes treating the underlying condition and an immediate delivery [16]. For any post-partum hemorrhage, standard prevention and management protocols should be followed which include the use of oxytocin followed by coagulation screen, tranexamic acid, fibrinogen supplementation and blood products transfusion. At the same time, surgical/obstetrical interventions to control the bleeding include bimanual compression, intrauterine balloon, uterine packing or embolization of the uterine artery. If everything fails the final option is a hysterectomy [17].

Itching in the background of DIC can be a symptom of underlying AFE. Aggressive resuscitation upon clinical suspicion is of utmost importance in increasing the odds of a favorable outcome. Obstetric teams should be well versed with identifying signs of DIC and massive transfusion protocols.

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COMPETING INTERESTS

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