Case Report

Near Miss Postpartum Woman with an Amniotic Fluid Embolism, a Rarity Requiring Multidisciplinary Approach

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Abstract

An amniotic fluid embolism (AFE) is a condition with one of the highest pregnancy-associated mortality rates, accounting for 5-15% of pregnancy-related deaths worldwide [1,2,3]. These mortalities often result from AFE-induced cardiac arrest and disseminated intravascular coagulopathy (DIC). We examine a case of AFE in the setting of primary hospitalization in order to review the evaluation and management of the condition, its complications, and to reiterate the importance of prompt recognition of AFE.

Key Words:
Amniotic fluid embolism, disseminated intravascular coagulation, vaginal bleeding, factor VII

Introduction

An amniotic fluid embolism (AFE) is a rare condition with one of the highest mortality rates associated with pregnancy, accounting for approximately 5-15% of pregnancy-related deaths worldwide [1,2,3]. These mortalities often result from AFE-induced cardiac arrest and disseminated intravascular coagulopathy (DIC). We examine a case of AFE in the setting of primary hospitalization in order to review the evaluation and management of the condition, its complications, and to reiterate the importance of prompt recognition of AFE.

Case Presentation

A 36-year-old G4P1 patient at 38-weeks of gestation presented for a scheduled cesarean section for complete placenta previa. She has one daughter born via spontaneous vaginal delivery and a history of two spontaneous abortions. Her prenatal screening was unremarkable except for non-immunity to rubella; she was group B strep negative, O+ blood type, and Coombs negative. She smoked less than five cigarettes per day during the pregnancy and reported taking Ambien for sleep. Her pregnancy course was unremarkable except for painless spotting which started during the second trimester secondary to a complete placenta previa confirmed by ultrasound. A Cesarean section was scheduled, and given concerns for postpartum complications, the procedure was moved to a larger operating room. Prior to the operation, blood values were as follows: Hgb: 11.7, Hct: 35.3, PTT: 27.7, INR: 0.9. The child was born with an APGAR of 8/9 at 0804. At 0805 the patient developed seizure-like activity and became unresponsive. She was intubated, received Atro-
Discussion

An AFE typically ensues when amniotic fluid/ fetal cells enter the maternal blood stream [3]. It usually requires cells to enter the circulation in order for an embolism to occur. The fetal material then accumulates in vessels and the resultant pulmonary vasoconstriction leads to pulmonary hypertension [1,2,3]. There is, consequently, an increase in right ventricular pressure and subsequently right congestive heart failure. This can lead to cardiopulmonary collapse as reflected by sudden hypoxia, increased work of breathing, respiratory distress and finally cardiac arrest [3,4]. The cells may also invade the uterine tissue locally [3]. This causes an anaphylactoid-like reaction and can ultimately result in DIC or uncontrollable postpartum hemorrhage secondary to an atomic uterus. Typically, evidence of an amniotic embolism and subsequent complications arise within thirty minutes of initial insult [1].

A diagnosis of amniotic embolism is a diagnosis of exclusion, as there is no uniform clinical diagnostic criteria for an AFE [2,4]. The proposed descriptive symptoms include sudden onset of restlessness, tachypnea, new audible wheeze, altered level of consciousness, and fetal compromise such as fetal bradycardia [3,5]. Because of the rapid onset and severity of symptoms, a high level of suspicion for AFE should be maintained in order to preempt and compensate for its sequelae. Commonly cited risk factors include age greater than 35, placenta previa, cesarean section, multiple pregnancies and induction of labor [1,3,4,6]. There has been some research with regards to diagnostic markers used to assess severity of AFE. Since approximately 50% of women with an AFE will develop DIC [1], diagnostic markers to identify DIC- CBC, fibrinogen, fibrinogen- fibrin split products, PTT and INR- are recommended [6]. While marked decreases of C3/C4 levels have been demonstrated to have 100% specificity and 88% sensitivity for an AFE [8], use is limited due to availability and turn- around time. C1 esterase inhibitor, a more recently identified marker, inhibits C1 esterase, factor XIIa and Kallikrein [3]. Low levels of C1 esterase inhibitor, it is theorized, can be found prior to the onset of major symptoms of an AFE, but further research is needed. Treatment of AFE should begin with basic lifesaving care, including, when indicated, intubation, volume replacement, early use of pressers, and correction of coagulopathies [2,5]. It is important to assess fibrin levels promptly as DIC can progress quickly. It was found that the fibrinogen levels would decline to <100 mg/dL (nm 200-400 mg/dL) within two hours of physical signs of DIC. [3]. Delayed transfusion results in an increase in mortality rate and early transfusion with fresh frozen plasma can be indispensable to help control the DIC [3]. There have been some instances where recombinant factor VIIa has been used to successfully manage DIC in patients with AFE [1]. These women were noted to have a decrease in tissue factor concentration, increased uterine atony, uterine rupture or abnormal placenta [9]. However, recombinant factor VII is not well established, and should only be considered with women who are refractive to traditional treatment. In our case, there were no symptoms suggesting an AFE prior to the cardiac arrest. However, high suspicion was warranted in this case given her maternal age, placement of the placenta, and method of delivery. Completing the caesarean section in the larger operating room allowed for a larger, multidisciplinary team to help with resuscitation and provide more efficient care. This case reflects the importance of considering all potential com-
complications and their associated risk factors, because even with high suspicion, there may not be any warning signs. AFE is dangerous but a manageable rarity in delivering mothers. High suspicion and prompt recognition of AFE can improve morbidity and mortality. It is important to consider AFE with sudden changes such as restlessness, new onset wheezing, respiratory changes, uncontrolled postpartum bleeding, and hemodynamic changes in the fetus. There is no definite tool that can be used to predict the onset of AFE, thus the importance of high clinical suspicion. There are developing diagnostic tools that may be able to help evaluate patients for suspected AFE. This ongoing development of evidence based medicine and collection of data and research will further improve the obstetric care of these women as well as a strong and supportive multidisciplinary team.

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Declaration of Interest
None

References