Poster Presentation

Cardiopulmonary Bypass for Amniotic Fluid Embolism

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Abstract

Amniotic Fluid Embolism is a catastrophic complication in obstetrics. A 27-year old female developed cardiac arrest two hours after undergoing a Caesarean section. After an hour of CPR, the patient was taken to the operating room and placed on cardiopulmonary bypass. Due to brisk hemorrhage from the uterus and the development of DIC, a total abdominal hysterectomy was also performed. Large amounts of friable tissue and thrombus were retrieved from the pulmonary arteries. The patient was successfully weaned from bypass and was discharged from the hospital 13 days after this surgery. This presentation will document this very interesting case and review the literature on amniotic fluid embolism.

Introduction

Amniotic Fluid Embolism is a rare and catastrophic complication in obstetrics. This malady has a mortality rate of 86%, and is estimated to be responsible for 9% of all maternal deaths.

The first reported case of Amniotic Fluid Embolism was published by Meyer in 1926. Attwood, in 1979, suggested that Matthew Bailie may have described the first case in an autopsy report in 1825.

This author conducted an extensive review of papers listed in the reference section, and would suggest the reader might find interesting information by also reviewing these authors' excellent papers on Amniotic Fluid Embolism.

The classical symptoms of Amniotic Fluid Embolism are respiratory failure, cyanosis, cardiovascular collapse and hemorrhage. In those patients surviving the first hour of this condition, DIC will usually develop.

Treatment has generally been supportive in nature. Cryoprecipitate therapy has most recently been suggested as an alternative treatment.

In this case presentation, total cardiopulmonary bypass was used in a classic case of Amniotic Fluid Embolism

Pre-Bypass Events

0630 - 27--year old female admitted to hospital for Caesarean

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Section scheduled at 1200.
1258 - Delivered baby girl by C-Section. Procedure uneventful.
1500 - B/P 100/64; Heart Rate 76.
1505 - Talking in room with husband. Sudden snorting respirations; became unresponsive.
1507 - Respiratory arrest; Ventricular Tachycardia; Code Blue called.
1510 - Patient intubated, external CPR initiated.
1524 - Seizure-like activity; AV dissociation to electrical dissociation; no palpable pulses; ABG's indicate mild acidosis with PO2 of 250 **
1607 - CPR continues; heavy vaginal bleeding noted.
1623 - CPR continues and ABG's indicate mild acidosis with PO2's remaining above 200. Pupils remain reactive throughout Code. Decision by family and surgeon to proceed to OR for exploratory surgery and control of vaginal bleeding.

** Multiple attempts at cardioversion continued throughout the Code Blue.

Case Description

With ongoing cardiopulmonary resuscitation, the patient's chest was opened, she was heparinized with three mg/kg, cannulated and placed on total cardiopulmonary bypass.

Bypass was conducted for a period of 122 minutes. Flow rates were high at 5.4 liters per minute. Pressures were 70-90, venous saturation averaged 85. The patient was cooled to 17°C. ACT's were monitored every 10 minutes and remained high throughout the case. ABG's were q 15 minutes and revealed mild to moderate acidosis with P02's between 200-450. Hemoglobin and hematocrit were very low, 5.0-6.2 and 14-18 respectively. Blood products were added as follows: three units of packed RBC's; two units of whole blood; and two units of fresh frozen plasma. Additionally, five units of blood were processed through the cell saver.

The patient was weaned from bypass with minimal difficulty. With the administration of Protamine, the ACT was 113.

Due to the ongoing uterine bleeding, a total abdominal hysterectomy was performed on bypass as well as exploration of the heart.

The right heart was very dilated. Evidence of myocardial infarction was not present. No evidence of air in the coronary
arteries or thrombus of the coronary arteries or veins. The aorta was normal with no evidence of dissection. The main and proximal branches of the pulmonary arteries were inspected and found normal. A suction catheter was passed far out distal to the left pulmonary artery and large amounts of friable tissue and thrombus were retrieved. Multiple passes of small suction catheters into all of the branches of the pulmonary arteries produced maximal amounts of embolic tissue.

**Conclusion**

In a search of the literature on amniotic fluid embolism, this author found no published reports on the use of cardiopulmonary bypass as a form of treatment for this condition.

As a result of this very interesting case, the author suggests that this is one of those case situations where the patient’s condition warrants consideration for cardiopulmonary bypass.

It is my opinion that this patient was an ideal candidate for bypass. She was young and had no evidence of other ongoing disease processes. Most importantly, she had received the maximum benefits from cardiopulmonary resuscitation. In a malady of this nature, with such an overwhelming mortality rate, the use of the heart/lung machine is totally warranted.

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**References**