Vol. 4, No. 2, Jul-Dec 2020

ANDALAS OBSTETRICS AND GYNECOLOGY JOURNAL

Alamat Korespondensi:
Ruang Redaksi Andalas Obstetrics and Gynecology Journal, Lantai 3 PPDS Obstetri dan Ginekologi Universitas Andalas, RSUP DR. M. Djamil Padang, Jl. Perintis Kemerdekaan Padang, Sumatera Barat 25127

Website:
http://jurnalobgin.fk.unand.ac.id/index.php/JOE

eISSN : 2579-8324 pISSN : 2579-8323

CASE REPORT

Amniotic Fluid Embolism in Post Caesarean Section

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Abstract

***Background**: According to WHO, around 73% of maternal deaths globally are caused by direct obstetric causes. The amniotic fluid embolism is a life-threatening obstetric emergency characterized by sudden cardiopulmonary system failure and can be accompanied by Disseminated Intravascular Coagulation (DIC). The amniotic fluid embolism event usually occurs during labor and birth, but can also occur immediately in the post partum period or after pregnancy termination. About 56% of women will not survive for first 2 hours after the acute event. Amniotic fluid embolism is an unpredictable event, so that no prophylactic intervention can be carried out effectively and the handling and enforcement of a diagnosis that still debatable.*

***Objective**: To report maternal deaths due to amniotic fluid embolism post cesarean section*

***Method**: Case Report*

***Case**: Reported case of a 30 years old woman with an initial diagnosis in emergency departement with decreased consciousness due to Severe hypoxia due to Pulmonary emboli due to Amniotic fluid emboli on P2A0L2 post Cesarean Section first day of puerperium. The patient experienced a sudden loss of consciousness accompanied by severe shortness of breath after 6 hours after cesarean section surgery in a private hospital. After initial examination and treatment by administering oxygen through the Nonrebreathing Mask, there was no improvement in the O_2 saturation value and then the patient was intubated by the anesthetist. After intubation, the O_2 saturation value still does not increase, then the patient suddenly experiences cardiac arrest and followed with cardiac resuscitation for 2 cycles accompanied by resuscitation drugs then the patient returns to spontaneous circulation. From the cardiology department, inotropic therapy was given and echocardiographic investigations were carried out. On echocardiographic examination, they found McConnel's sign which showed suspicios of pulmonary embolism. At the time the patient will be moved to the intensive care unit, the patient experiences a cardiac arrest for the second time, then resuscitation is performed again for 2 cycles, but it does not work and the patient is declared dead.*

***Conclusion**: Amniotic fluid embolism is an obstetric emergency condition that cannot be predicted and has a high mortality rate. Treatment is supportive to support the cardiopulmonary system and management of coagulopathy that may occur.*

***Keywords:** maternal mortality, amniotic fluid embolism*

Received : June 28th, 2020
Accepted : June 30th, 2020
Correspondence: Defrin, email: defrin_pdg@yahoo.com

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INTRODUCTION

Maternal Mortality Ratio (MMR) is one of the indicators to evaluate the success of maternal health efforts.[1] In addition to assessing maternal health programs, this indicator is also able to assess the degree of public health, because of its sensitivity to improving health services, both in terms of accessibility and quality.[2] The current world's maternal mortality ratio is still very high. Every day around 800 women die from complications of pregnancy or childbirth worldwide.[3] The World Health Organization (WHO) defines maternal mortality as the death of a woman during pregnancy or within 42 days of termination of pregnancy either due to causes related to pregnancy or aggravated by it. Maternal death can be classified based on etiology as direct or indirect. Direct maternal death is one of the consequences of obstetric complications from pregnancy (e.g., preeclampsia), while indirect maternal death is caused by related illnesses that may be exacerbated by the physiologic effects of pregnancy (e.g., pre-existing heart disease).[1] Amniotic fluid embolism is one of the of the five main direct causes of obstetric death in developed countries with a percentage of 6.5% followed by eclampsia / preeclampsia (5.3%), bleeding and placenta previa (4.6%), abortion outcomes including ectopic pregnancy (4.4 %) and other complications related to puerperium period.[4,5]

According to WHO, around 73% of maternal deaths globally are caused by direct causes of obstetrics. Bleeding still occupies the highest number of cases, around 28%, high blood pressure during pregnancy (14%) and sepsis (10.7%).[6] Maternal deaths in Indonesia 80% are caused by direct obstetric causes such as bleeding, sepsis, unsafe abortion, preeclampsia-eclampsia, and stalled labor. The remaining 20% occurs due to illnesses aggravated by pregnancy. The situation of maternal mortality in Indonesia in 2010-2013 shows that the cause of bleeding is still high although it tends to decrease (35.1% to 30.3%), while the causes of maternal death both in the world and in Indonesia still revolve around 3 main problems namely bleeding, preeclampsia-elampsia and infection. [7-8]

Amniotic fluid embolism is a life-threatening obstetric emergency characterized by sudden cardiorespiratory system failure and can be accompanied by disseminated intravascular coagulation (DIC).[9] In the United States, amniotic fluid embolism is recorded to cause 7.5% of maternal deaths.[10] In France amniotic fluid embolism contributes in 9.1% of maternal mortality.[11] Initially, amniotic fluid embolism has a mortality rate of 80% to 90%. However, with the improvement and progress of critical care facilities, the currently reported mortality rate ranges from 11% to 60%.[9] The exact incidence is unknown due to inadequate reporting and the lack of consistent diagnostic criteria. However, experts estimate the incidence of amniotic fluid embolism to be between 1 in 12,500 to 1 in 50,000 births. Mortality and incidence rates are often underestimated because they are not consistent with the diagnosis and the reporting of death. [9] The amniotic fluid embolism usually occurs during labor and birth, but can also occur immediately in the post partum period or after termination

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of pregnancy. Approximately 56% of women will not survive the first 2 hours after an acute event.[2] Amniotic fluid embolism is an unpredictable event, there is no prophylactic intervention that can be done effectively to prevent it. The unpredictable nature results in the management and diagnosis determination which is still under debate.[12]

CASE REPORT

A 30-year-old female patient was reported has been referred from a private hospital in Padang with a diagnosis of P2A0H2 referral post CS due to once previous CS + decreased consciousness. Alloanamnesis obtained information that previously the patient underwent cesarean section surgery in a private hospital in Padang due to previous CS, at 19:15. After 5 hours since the surgery the patient began to complain of a little tightness and cough. Because the patient's awareness has decreased and O2 saturation was low, the patient was referred to M Djamil Padang Hospital with NRM oxygen, infusion and catheters inserted.

Physical examination revealed GCS 8 awareness, BP 130/75 mmHg, pulse frequency 155 x / minute, respiratory frequency 32 x / minute, fast and deep with 42% O2 saturation, 36.9^{o}C temperature. The conjunctiva was not anemic and the sclera was not jaundiced. From the examination of the abdomen, the surgical wound appeared closed with a bandage, no visible seepage of blood from the around area of the surgical wound, fundus height was 2 fingers under the center, good contractions, no signs of acute abdomen were found. From genitalia found v/u calm, vaginal bleeding (-), lochia rubra (+) .

After evaluating oxygen administration with NRM, there was no improvement in the O2 saturation value then the patient was consulted with an anesthesiologist for managing the suspected respiratory failure and it was decided to do intubation. After intubation, the patient experiences cardiac arrest and two cycles of cardiac resuscitation was carried out and resuscitation drugs (sulfas atropine and epinephrine) was administered then the patient returned to spontaneous circulation (ROSC). The working diagnosis of the patient was established by a decrease in consciousness due to Severe hypoxia due to? Furthermore, patients are consulted to the Department of Cardiology and stabilization was carried out for evaluation of possible cardiopulmonary causes.

From the Cardiology Department, a transthoracic echocardiography was carried out and a suspicion of pulmonary embolism was established. Thus the patient was diagnosed with decreased consciousness due to Severe hypoxia + obstructive shock due to Suspected Pulmonary embolism due to Suspected Amniotic fluid embolism on P2A0H2 post LSCS from other institution, NH1. Central venous catheter insertion was performed by anesthesiologist for better intravenous access then from the Cardiology department, patient were given drip vascon® therapy starting at 2.6 cc/hour (increased titration), drip furosemide 10 amp → 0.5 cc/hour, dripping Meylon® 50 cc (IV) followed by a second Meylon® dose of 100 cc (IV). The

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patient was planned to be treated in intensive care with a ventilator. At the time of preparation of the patient's transport to the intensive care room, the patient experienced a cardiac arrest for the second time and then resuscitation was performed again for 2 cycles, but the resuscitation action was unsuccessful. The patient was declared dead at 03.30 WIB.

DISCUSSION

In cases of maternal collapse with suspected pulmonary embolism, especially amniotic fluid embolism, the diagnosis is determined based on clinical findings. Clinical criteria in establishing the diagnosis of amniotic fluid embolism in several countries and studies was found to have considerable variation. However, for confirmatory diagnosis, most agree to do a postmortem examination with the findings of fetal or squamous material in the pulmonary veins or in the lungs.

At the time of admission to the emergency room, the patient's awareness appeared to be in a coma state, BP: 130/75, pulse frequency 155 x/minute, respiratory frequency 32x/minute, fast and deep with only 42% oxygen saturation, many pink mucus was found in the respiratory tract, acral appeared cyanotic, no operative wound bleeding or vaginal bleeding was found. A decrease in oxygen saturation was a sign that perfusion disturbance has occurred to the tissue. This is consistent with Clark and colleagues' criteria which is cardiopulmonary attacks and respiratory disorders such as dyspnea, cyanosis, or peripheral capillary oxygen saturation [SpO2] <90%). The onset of the disorder was found about 6 hours postpartum by caesarean section, this is according to the criteria revealed by INOSS where the average onset of cardiopulmonary collapse is found within 6 hours after delivery, or ruptured membranes. After doing a Primary Survey and oxygen was given with NRM as much as 15 liters/minute and then evaluated, there was no increase in oxygen saturation. Then the patient was consulted to an anesthesiologist and was intubated to provide more adequate respiratory support. The patient experienced a sudden cardiac arrest and resuscitation was carried out for 2 cycles then the patient returned to spontaneous circulation.

The patient was then consulted to the cardiology department, and a transthoracic echocardiographic procedure was performed. From echocardiography examination by a cardiologist, the right ventricular hypokinetics and McConnell's sign were found, i.e. visible dilation of atrium and right ventricle, moderate tricuspid regurgitation, and M-mode shows the right middle ventricular wall akinetic with right ventricular hyperexactile epex. With the findings of this echocardiographic examination, the patient can be stated suggestive of experiencing pulmonary embolism. The Revised Geneva Score obtained a score of 9 and gives a moderate probability value towards pulmonary embolism. From the combined data obtained through alloanamnesis, history of the disease, clinical findings supported by further investigations, the presumption that most closely approaches the patient's diagnosis is

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Decreased consciousness due to severe hypoxia + obstructive shock due to Suspension Pulmonary embolism due to suspected Amniotic fluid emboli on P2H2 post LSCS from other institution + metabolic acidosis. Nevertheless, a more accurate diagnosis requires further evaluation and investigation as well as more complete investigations, especially postmortem examinations. However, postmortem examinations in Indonesia are not a requirement for all deaths and are only intended for cases of death related to the legal aspects of the applicable law.

CONCLUSION

The diagnosis established in this case is correct, based on clinical findings and supporting investigations. Although the existing investigations can not be said to be maximal to further lead to the diagnosis of amniotic fluid embolism. The patient was treated based on existing clinical conditions by providing support to the cardiopulmonary system in the form of inotropic administration and intubation.[12]

The main cause of death of the patient is pulmonary embolism due to amniotic fluid embolism. This is based on clinical and supportive findings that lead to the diagnosis. Although definitive diagnosis requires postmortem examination, based on existing law postmortem examination is not an examination that must be performed on all patients who died.

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