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CASE REPORT

Pregnancy with severe preeclampsia, acute kidney injury and nephrotic syndrome

Joserizal Serudji[1], Haviz Yuad[1], Syntia Ambelina[2]

Affiliation*: 1. Obstetrics and Gynecology Department, Dr M. Djamil Hospital, Andalas University, Padang, West Sumatra, Indonesia; 2. Obstetrics and Gynecology Resident, Faculty of Medicine, Andalas University, Padang, West Sumatra, Indonesia*

Correspondece: Name: Joserizal Serudji ; *Email:jserudji@gmail.com; HP: 08126604980*

Abstract

Background: *Preeclampsia is one of the main causes of maternal death every year. Preeclampsia can have bad consequences for both the mother and the fetus. Complications in the mother in the form of HELLP syndrome (Hemolysis, Elevated Liver Enzyme, Low Platelet), pulmonary edema, kidney disorders, bleeding, placental abruption and even maternal death. Complications in infants can be premature birth, fetal distress, low birth weight or intra uterine fetal death (IUFD).*

Case Report: *A 34 year old female patient was brought to the emergency room of Dr. M. Djamil Padang, sent to the Batusangkar Private Hospital with complaints of shortness of breath which has been increasing when lying down. Physical examination found blood pressure 190/136. The patient was diagnosed with G2P1A0H1 gravid preterm 25-26 weeks, PEB on maintenance dose MgSO4 regimen from outside, suspected nephrotic syndrome, CAP with hypoxemia, pleural effusion, AKI with metabolic acidosis, UTI, hyponatremia, hypoalbuminemia.*

Discussion: *Preeclampsia, eclampsia and HELLP syndrome are serious and life-threatening conditions faced by pregnant women. Early diagnosis and prompt treatment via a multidisciplinary team in the ICU setting can prevent complications and reduce morbidity and mortality. The most common indications for intubation and mechanical ventilation are respiratory failure and hemodynamic instability. The cause of death in this patient was multiple organ failure which was exacerbated by suspected nephrotic syndrome and suspected SLE.*

Keywords: *Severe preeclampsia, acute kidney injury, nephrotic syndrome.*

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INTRODUCTION

Preeclampsia is one of the main causes of maternal death every year, it is reported that 50,000-60,000 people die.[1] The etiology of preeclampsia is still unknown. But the pathophysiology is caused by an ischemic placenta where hypoperfusion occurs in the developing placenta. The hypoxic placenta secretes antiangiogenic andpro inflammatory factor leading to maternal vascular endothelial dysfunction, hypertension, and other organ damage.[2]

Preeclampsia can have bad consequences for both the mother and the fetus. This case is often found in the second trimester (15%), third trimester (50%), before labor or the postpartum period up to 48 hours after. Complications in the mother in the form of HELLP syndrome (Hemolysis, Elevated Liver Enzyme, Low Platelet), pulmonary edema, kidney disorders, bleeding, placental abruption and even maternal death. Complications in infants can be premature birth, fetal distress, low birth weight or intra uterine fetal death (IUFD).[3]

In Indonesia, preeclampsia and eclampsia are still one of the main causes of maternal and perinatal mortality. Most of these deaths are caused by delays in the diagnosis and early treatment of preeclampsia and eclampsia, so that patients do not have time to receive adequate treatment before arriving at the referral hospital, or arriving at the referral hospital in a bad condition.[4] Not all referral hospitals have adequate intensive care facilities to handle cases of eclampsia in particular, so knowledge about the identification of risk factors to be able to detect preeclampsia early is very necessary so that there is no delay in first treatment and referral. In Cipto Mangunkusumo Hospital, in 2001, 400-500 cases of preeclampsia were found / 4000 – 5000 deliveries per year. Preeclampsia can cause complications in multiple organs, it was reported that as many as 10% of deaths in this case were caused bymultiorgan failure.[1,5]

Nephrotic syndrome (SN) is a complex disorder characterized by a number of features of renal and non-renal abnormalities, the most prominent being proteinuria > 3.5 g/1.73 m2 body surface area in 24 hours (in clinical practice > 3.0- 3.5 g/24 hours), hypoalbuminemia, edema, hyperlipidemia, lipiduri and hypercoagulability. In adults, the most common is membranous nephropathy (30-50%) with an average age of 30-50 years and a male and female ratio of 2: 1. The incidence of idiopathic NS in adults is 3/1000,000/year.[6]

SN is categorized in the form of primary and secondary. The primary form is now known as idiopathic SN which is associated with primary abnormalities of the renal parenchyma and the reason is unknown. While the secondary form is caused by certain diseases

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such as malignancy, toxins, mechanical circulation disorders, anaphylactoid purpura, systemic lupus erythematosus, diabetes mellitus, sickle cell disease and syphilis.[7,8]

CASE DESCRIPTION

A 34 year old female patient was brought to the emergency room of Dr. M. Djamil Padang, sent to the Batusangkar Private Hospital with complaints of shortness of breath which has been increasing when lying down since the last day, complaints are accompanied by blurred vision. The whole body feels increasingly swollen since the last 3 months. Puffy eyes felt since 2 months. The patient is pregnant with her first child.

Physical examination found moderate general condition, composmentis consciousness, blood pressure 190/136, pulse 89, respiratory rate 26, T 36.8. Eye examination revealed anemic conjunctiva. Lung examination revealed crackles at the lung bases. There was edema in both extremities. Examination of obstetric status found that the abdomen looked distended according to preterm gestational age, hyperpigmented linea mediana (+), striae gravidarum (+), height of the uterine fundus 2 fingers above the center, ballotemen (+), His (-), Fetal heart rate 120-130x/ minute.

Laboratory tests revealed hemoglobin 11.7 gr/dl, leukocytes 8.820/mm3, hematocrit 23%, platelets 280,000/mm3, urea 24 mg/dl, creatinine 1.4 mg/dl, GDS 81 mg/dl, albumin 1, 5 gr/dl, globulin 2.8 gr/dl, SGOT 9 u/L, SGPT 7 u/L, sodium 129 mmol/L, calcium 9.0 mmol/L, potassium 4.6 mmol/L, chloride 116 mmol /l. Urinalysis showed red, cloudy urine, leukocytes 100-150, erythrocytes 400-450, protein +3. Examination of blood gas analysis obtained pH 7.209, pCO2 40, pO2 38.8, SO2% 65.4, HCT 26, HCO3- 16.2, CEecf -12, BE(B) -10.3. The results of laboratory tests are metabolic acidosis, urinary tract infection, hyponatremia and hypoalbuminemia. Ultrasound examination showed a gravid pregnancy impression of 25-26 weeks according to biometry, the fetus was alive.

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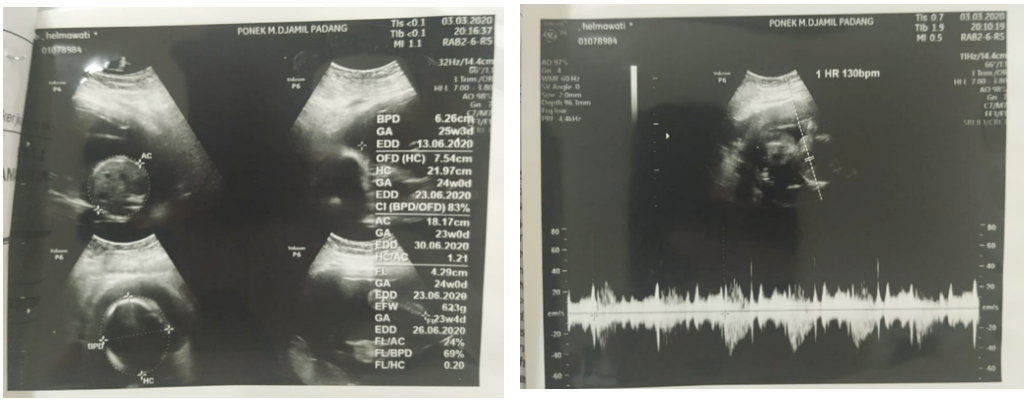

Figure 1. Ultrasound Examination

Based on history, physical examination, and investigations, the patient was diagnosed with G2P1A0H1 preterm gravid 25-26 weeks + PEB on external maintenance dose MgSO4 regimen + suspected nephrotic syndrome + CAP with hypoxemia + pleural effusion + AKI with metabolic acidosis + UTI + hyponatremia + hypoalbuminemia. Patients were treated with NRM 10 lpm, IVFD RL drip MgS04 40% maintenance dose 1gram/hour, 100 cc albumin 25% transfusion, Ceftriaxone injection 2x1 gram IV, Meylon correction 100 mcg in 300 cc NaCl 0.9% finished in 8 hours, N Acetyl cysteine 3x200 mg, Dexamethasone injection 2 x 6 mg IM (2 days), paracetamol 3x500 mg, methyldopa 3 x 500 mg.

On the second day of treatment at 08.00 a laboratory result was obtained with the impression of moderate anemia normocytic normochrome, neutrophilia shift to the right, hypertriglycerides, hypocalcemia, hyponatremia, hypoglycemia. Diagnosis of G2P1A0H1 gravid preterm 25-26 weeks + PEB completed MgSO4 regimen + suspected nephrotic syndrome + CAP with hypoxemia + pleural effusion + AKI with metabolic acidosis + UTI + moderate anemia + hypocalcemia + hyponatremia + hypoalbuminemia. The patient was given additional Ca gluconate injection therapy 1 amp. At 23.00, the patient experienced a decrease in consciousness with blood pressure 90/60, pulse 60x/minute, respiratory rate 16x/minute, urine 50 cc/4 hours. The patient was transferred to the ICU. The patient was given additional Bicnat therapy 3x500 mg, tutofusin ops 100 cc, bolus D40%.

On the 3rd day of treatment, it was planned to terminate the cito abdominal pregnancy. Hysterotomy was performed under general anaesthesia. Born baby boy, birth weight 600 mg, Apgar score 1/3. On day 4 the patient was admitted to the ICU with IVFD therapy NaCl 0.9%

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1800cc/24 hours, D40% 200 cc/24 hours, Drip nicardipine, Transfusion of PRC 1 unit, FFP 2 units, Transfusion of albumin 25% 100 cc, Inj. Ceftriaxone 2x1 gram IV, Inf metronidazole 3x500 mg IV, Inj Asam tranexamat 3x500 mg IV, Inj Vit K 3x10 mg IV, Inj. OMZ 2 x 40 mg IV, Inj metoclopramide 3x10 mg IV, Inf Paracetamol 4x1 gr IV, Inj Furosemid 3 x 2 amp IV, Combivent resp 6x, Flumucil resp 2x, Metyldopa 3x500 mg.

On the 9th day of treatment, the patient experienced oxygen desaturation, with urine output (-). The patient was given Lasix 2 amp. Blood pressure 92/58, pulse 77, SO2 74%, norepinephrine and dobutamine doses increased. Then the heart rate dropped to 39x/minute and 2 amps of atropine sulfate were given. 2 minutes later, the ECG showed asystole and 1 amp of adrenaline was given. DNR patient.

DISCUSSION

The patient was diagnosed with G2P1A0H1 gravid preterm 25-26 weeks + PEB on maintenance dose MgSO4 regimen from outside + suspected nephrotic syndrome + CAP with hypoxemia + pleural effusion + AKI with metabolic acidosis + UTI + hyponatremia + hypoalbuminemia, the basis of this patient's diagnosis was obtained from the examination results physical and supporting examinations. Examination of blood pressure found 190/136 mmHg, pulse 112 x/minute, breathing 28x/minute, and 94% SO2. Physical examination found crackles in both lungs and found anasarca edema. Laboratory results at M.Djamil Hospital Padang found Hb: 11.7 gr/dl, leukocytes: 8,820/mm3, Hematocrit: 32%, Platelets 280,000/mm3, creatinine 1.4 mg/dl, albumin 1.5 g/dl, and sodium 129 mmol/l. Urinalysis results obtained urine leukocytes 100-150 ABG examination found the impression of metabolic acidosis. Examination results met the criteria for the diagnosis of PEB, CAP with hypoxemia, AKI with metabolic acidosis, UTI, hyponatremia, and hypoalbuminemia.

Patients with initial diagnosis G2P1A0H1 gravid preterm 25-26 weeks + PEB on maintenance dose MgSO4 regimen from outside + suspected nephrotic syndrome + CAP with hypoxemia + pleural effusion + AKI with metabolic acidosis + UTI + hyponatremia + hypoalbuminemia. The initial management of this patient was conservative care to improve the general condition in the obstetrics intensive care unit. During the treatment period, the patient experienced a decrease in consciousness and a worsening of his general condition. The patient's care was transferred from the obstetrics HCU to the ICU for intensive monitoring and management.

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Based on ACOG 2013 recommendations, preeclampsia with severe symptoms can be evaluated within 24-48 hours. Evaluations are carried out regarding the condition of the mother through symptom assessment, physical examination, laboratory examination, and evaluation of the condition of the fetus' welfare while providing medical management. PEB with severe symptoms with unstable maternal and fetal conditions is recommended for termination of pregnancy immediately after stabilization of the mother's condition regardless of gestational age. Because the patient's deterioration was caused by pregnancy complications, the management of post-stabilization termination of pregnancy was the right choice to do.

Due to the deteriorating general condition of the patient during the hospitalization period, the patient was transferred from the obstetrics unit to the ICU for intensive monitoring and management. Termination of pregnancy is done to overcome the patient's worsening caused by complications of pregnancy. Post-termination the patient requires close monitoring to improve general condition. Preeclampsia, eclampsia and HELLP syndrome are serious and life-threatening conditions faced by pregnant women. Early diagnosis and prompt treatment via a multidisciplinary team in the ICU setting can prevent complications and reduce morbidity and mortality. The most common indications for intubation and mechanical ventilation are respiratory failure and hemodynamic instability. PEB patients with severe symptoms requiring mechanical ventilation have a poor prognosis. It has been reported that the antepartum and postpartum mortality rates from ARDS are 23% and 50%. One thing to remember in this setting is that these patients have the potential to develop laryngeal edema which can complicate intubation and lead to death.

Based on the Modified Early Obstetrics Warning System Score (MEOWS), this patient's preoperative score when considering moving from the Obstetrics HCU to the ICU was 8 where systolic BP was 90 (score 2), diastolic BP was 60 (score 0), VAS ≥3 (score 2)), temperature 36.8 (score 0), pulse 60 (score 0), respiration 16x (score 0), somnolence awareness (score 2), urine output 50cc/4 hours (score 2). Patients with a total score of ≥6 are classified as red zones and require ICU care, so it is important to contact an intensive care consultant and involve multidisciplinary knowledge. Postoperatively it is important to continue intensive monitoring of these patients.

When traced from the beginning, the cause of death of the patient is a combination of multiple organ failure which is a complication of the disease that occurs in the patient. From the

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beginning the patient came to the IGD PONEK RSUP dr. M. Djamil was in quite severe condition, BP 190/136 accompanied by shortness of breath with 94% SO2 before administering O2 via NRM. The results of physical and supporting examinations showed PEB, CAP with hypoxemia, AKI with metabolic acidosis, UTI, hyponatremia, and hypoalbuminemia. At the initial admission, the patient was also diagnosed with suspected nephrotic syndrome, but this diagnosis could not be confirmed because it required the results of an Esbach protein analysis, while this examination could not be carried out at M. Djamil General Hospital. After 1 day of treatment the patient's consciousness decreased and the patient was decided to move the treatment room to the ICU. The patient's urine production decreased in amount until he experienced anuria. The patient was given optimal therapy for fluid restriction and was planned to prepare for hemodialysis. To reduce pregnancy complications experienced, termination of pregnancy is carried out. Post-termination the patient is closely monitored in the ICU. During monitoring the patient is attached to a ventilator as a treatment for respiratory disorders. In addition, the results of further analysis by the internal medicine department indicated that the patient had an autoimmune disease (SLE), so an Ana profile examination was planned on day 7 of the ICU stay. However, the patient died before the examination was carried out.

Maternal death in preeclampsia is caused by various complications, including neurovascular damage, acute vascular accident, pulmonary edema, heart failure, kidney damage, impaired liver function, eclampsia, HELLP syndrome, postpartum hemorrhage or bleeding placental abruption, and total failure of vital organs.

In this patient, there was a marked worsening of the general condition. During monitoring in the ICU, at 10.00, 11/03/2020, the patient experienced a desaturation of 93% with a urine output of 0 cc, the patient's vital sign continued to experience a drastic decline within 1 hour even though he had been given inotropic, vasoconstrictor, and anticholinergic therapy.

CONCLUSION

Preeclampsia and eclampsia are still one of the main causes of maternal and perinatal mortality. PEB with severe symptoms with unstable maternal and fetal conditions is recommended for termination of pregnancy immediately after stabilization of the mother's condition regardless of gestational age. Intubation and mechanical ventilation are necessary in patients with respiratory failure and hemodynamic instability. PEB with severe symptoms

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requiring mechanical ventilation has a poor prognosis. Management and decisions for ICU treatment in this patient are appropriate. The cause of death in this patient was multiple organ failure which was exacerbated by suspected nephrotic syndrome and suspected SLE.

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CONFLICT OF INTERESTS

The authors declare no conflicts of interests in preparing this article

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