

Intrauterine Fetal Death as a Complication Pregnancy with Preeclampsia, Diabetes Mellitus Type 2 and Obesity Grade 2

The Angela Prisilia Taroreh¹, I Made Sudarmayasa²

¹Intern of Obstetrics and Gynecology Department Wangaya General Hospital, Denpasar, Bali, Indonesia
anglaprisilia[at]hotmail.com

²Obstetrician of Obstetrics and Gynecology Department Wangaya General Hospital, Denpasar, Bali, Indonesia

Abstract: ***Objective:** Reported patient with Intrauterine Fetal Death as a complication Pregnancy with Preeclampsia, Diabetes Mellitus type-2 and Obesity grade 2. **Methods:** Case Report. **Result:** Intrauterine Fetal Death (IUFD) is a death that occurs at > 20 weeks of gestation and the fetus has reached a size of 500 gram or more. Every year childbirth in Indonesia ranges from 5,000,000 people and it can be described that infant mortality occurs every 25-26 minutes. Causes of infant mortality include maternal, fetal and placental factors. We report the case of a female 20 years with G1P0A0 at 35 weeks with intrauterine fetal death + Preeclampsia + Diabetes Mellitus type-2. + Obesity grade 2. In this patient, management was carried out in the form of pregnancy termination. **Conclusion:** In this patient after anamnesis, physical examination and investigation, this patient was diagnosed as IUFD. Maternal factor are the most likely cause of fetal death in this case namely due to complication from preeclampsia, diabetes mellitus and obesity. Early diagnosis and appropriate treatment are needed to prevent complications for mother and baby.*

Keywords: IUFD, Preeclampsia, Diabetes Mellitus, Obesity

1. Introduction

Intrauterine Fetal Death (IUFD) is a death that occurs when the gestational age is > 20 week and the fetus has reached a size of 500 grams or more. Generally, IUFD occurs before delivery when pregnancy has entered the age of 32 weeks and the term stillbirth (stillbirth) which is the birth of the conception in an attained state of death 28 weeks of gestation, often used in conjunction with IUFD. ¹

Based on research from the World Health Organization (WHO) around the world, there are infant mortality of 10,000,000 inhabitants per year. Indonesia is a country with numbers highest perinatal mortality. This illustrates that health services in Indonesia are still need a lot of improvements that are comprehensive and of higher quality. Childbirth in Indonesia each year around 5,000,000 people and it can be described that infant mortality occurs every 25-26 minutes. ²

Causes of infant mortality include maternal, fetal and placental factors. Factor maternal, namely, the age of the mother, gestational age and illness suffered by the mother such as preeclampsia, eclampsia, diabetes mellitus, and premature rupture of membranes (PROM). Fetal factors namely pregnant with twins, congenital abnormalities. Placental factors, namely umbilical cord abnormalities, umbilical cord twists, placental abruption and placenta previa. ³

It is not certain the cause of fetal death in the womb is not yet known. Some causes that can result in the death of the fetus in the womb, including: 1) Bleeding: placenta and placental abruption 2) Preeclampsia and eclampsia 3) Diseases blood disorders 4) Infectious and infectious diseases 5) Urinary tract diseases 6) Endocrine diseases:

diabetes mellitus 7) Malnutrition. ⁴

The diagnosis of IUFD is made based on history, physical examination, and supporting investigation. In the history, complaints can be found such as the patient does not feel fetal movement within a few days, or fetal movement is greatly reduced, the patient feel her stomach is not getting bigger, even getting smaller or pregnancy is not as usual and the patient has felt lately that his stomach has become hard and felt sick like going to give birth. Meanwhile, physical examination can be done by inspection, palpation and auscultation. ³

On inspection, no fetal movements are seen, which can usually be seen especially in thin patients. On palpation, a fundal height can be found lower than gestational age, fetal movements should not be felt and with careful palpation, you can feel the presence of crepitus on the fetal headbone. On auscultation it is good to wear stethoscope, monaural or with doptone, does not hear the fetal heartbeat (FHR). The new pregnancy reaction is negative after a few weeks the fetus has died in the womb. ⁵

In 2012, it was shown that the predisposing factors were diabetes and hypertension very influential on the incidence of IUFD. This research shows that Level incidence of IUFD (2.2%), births at gestational age before 32 weeks of gestation (10.1%), and preterm birth before 37 weeks (35.5%) was higher in women with hypertension chronic and pregestational diabetes compared with women with either disease only. Use women without chronic hypertension or pregestational diabetes as referral group, there is an increased likelihood of IUFD incidence in the combined group (OR, 7.1), in the group with chronic hypertension (OR), and in the group with diabetes pregestational (OR, 3.2). ⁶

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2. Case History

The female patient, 30 years old, came to the Wangaya General Hospital with G1P0A0H0 Gestation Age 35 weeks + IUFD. The patient complains of headaches and infant movements reduced since 1 day ago. The patient also said that he still felt the baby's movements for 3 days ago. Patient History of routine antenatal care (ANC) at doctor Obstetric and Gynecologist. Recent ANC history on 8/2/21 with Ultrasonography (USG), there was no baby's heartbeat. Complaints of abdominal pain, water out, and blood mucus were denied. and history of trauma be denied.

The patient had a history of uncontrolled hypertension. Family history with Father of Hypertension (+). Allergy history refuted. Gynecological history of the patient married at age 28 years, first marriage, been married for 2 years and first menstruation age 13 years, regular, no complaints during menstruation and the length of menstruation 4-5 days, menstrual cycle 28 days. Last Menstrual Period dated 7 June 2020. History of smoking, drinking alcohol, taking drugs and herbal medicine is denied.

On physical examination, the general condition is found: Good, awareness: Compos mentis, GCS E4V5M6, Weight: 81.5 kg, Height 155 cm (BMI: 33.7). Vital sign Blood Pressure (BP): 170/110 mmHg, Pulse (N): 82 x / minute, Respiration Rate (RR): 21x / minute, Temperature (t): 36.2 °C. Physical Examination: Head appears normocephali, both conjunctiva eyes are not anemic and not icteric, lymph

nodes) in the neck are not enlarged, mammary appear symmetrical, enlarged and hyperpigmented areola, lungs, heart and both's extremities oedem (+).

Obstetric examination revealed uterine fundal height 28 cm, estimated fetal weight: 2480g. Fetal heartbeat not found, uterine contractions (HIS): (-). Vaginal toucher (VT): opening pø1 cm, amniotic (-), palpable head, Hodge I, not felt small part of fetus or umbilical cord.

Laboratory tests obtained (8/2/21) Hemoglobin (Hb): 12.4 g / dL, Erythrocytes (Ery): 4.50×10^6 / uL, Hematocrit (Hct): 37.5%, Leukocytes (leu): 14.4×10^3 / uL, Platelets (thromb): 250×10^3 / uL, HBsAg: (-), Proteinuria: +1, SGOT: 16U / dL, SGPT: 13U / dL, GDS: 273 mg / dL, Na: 144 mmol / L, K: 4.1 mmol / L, Cl: 99mmol / L. SARS COV-19 Antigen Swab: Negative (9/2/21 06:00) GDS 225mg / dL (9/2/21 20:00) GDS 301 mg / dL (10/2/21 06:00) GDS 230mg / dL HbA1c 8.4% Patient was diagnosed with G1P0A0 Gestation Age 35 weeks 1 day + IUFD + Obesity Gr II, DM Type II + Severe Eclampsia. Vaginal delivery plan. The patient was given MgSO₄ 40% 4 grams bolus and followed by MgSO₄ 40% 6 grams in 500 cc of Ringer's Lactate 28 drops per minutes (tpm). Misoprostrol 100mcg every 2 hours. The patient is consulted to a Internist in with type II DM + Hypertension, given Catopril 25 mg therapy every 12 hours PO, Lantus 10 iu, Apidra 3x4 iu



(A)



(B)

Figure 1: (A) USG date 10/8/2020. (B) Baby Picture- Maceration Grade II

3. Discussion

In this case, the diagnosis of Intra Uterine Fetal Death (IUFD) was based on history, physical examination and investigations. 30 years old pregnant female patient, with a gestational age of 35 weeks, the first pregnancy. The history in this patient is present complaints of headache and the patient feels the baby's movement is reduced. Routine patient control to Doctor Sp. OG. This patient has a history of hypertension, and a family history. Smoking history, drinking alcohol and history of trauma were not found in this patient. On physical examination edema in both extremities with a blood pressure of 170/110 mmHg. On

examination supporting results obtained by blood tests with Hemoglobin (Hb): 12.4 g / dL, Erythrocytes (Ery): 4.50×10^6 / uL, Hematocrit (Hct): 37.5%, Leukocytes (leu): 14.4×10^3 / uL, Platelets (thromb): 250×10^3 / uL, HBsAg: (-), Proteinuria: +1, SGOT: 16U / dL, SGPT: 13U / dL, GDS: 273 mg / dL, Na: 144 mmol / L, K: 4.1 mmol / L, Cl: 99mmol / L. Severe preeclampsia is hypertension with systolic blood pressure > 160mmHg and diastolic pressure > 110mmHg with increased proteinuria. Diagnosis of severe preeclampsia if one or more of the following symptoms are found: systolic blood pressure > 160 mmHg and diastologist blood pressure > 110 mmHg, proteinuria, elevated plasma creatinine levels, disturbances vision and cerebral, decreased consciousness, headache, blurred vision,

pulmonary edema, thrombocytopenia, impaired hepatic function with an increase in AST and ALT, stunted fetal growth.^{7,8}

The theory of the causes of preeclampsia, which was first put forward, was the theory of disorders placental vascularization indicating failure of spiral artery remodeling. Invasion of cells trophoblasts in the muscle layer of the spiral arteries do not occur in preeclampsia, so the arteries spiralis failed to vasodilate. This spiral artery vasodilation occurs in normal pregnancy and it is important to maintain blood flow to the fetus so as to increase tissue perfusion and ensure proper fetal growth.^{10,11} Failure to remodeling the spiral arteries occurs in preeclampsia, the vessels are fixed stiffness leading to placental hypoperfusion and ischemia. The ischemic condition will trigger the placenta produces oxidants (free radicals) which can cause cell damage endothelium. Ischemia can also progress to atherosclerosis, fibrin necrosis, thrombosis, narrowing of the arterioles and placental infarction.¹¹

Preeclampsia is one of the risk factors for IUFD, where preeclampsia is a disease factor suffered by the mother. In preeclampsia, vessel spasm occurs blood is accompanied by salt and water retention. If all the arterioles in the body experience spasm, then the blood pressure will rise, in an effort to deal with the increase in pressure peripheral so that tissue oxygen can be fulfilled. Then the blood flow decreases to the placenta and causes impaired fetal growth and due to lack of oxygen is dangerous fetus. The most important cause for IUFD is limited fetal growth, this emphasizes the importance of the role of the placenta in optimizing fetal growth.^{4,12}

In these patients, the risk factors for obesity and diabetes mellitus were found, which were the results Physical examination of the patient's body weight has increased and obtained a BMI of 33.7 kg / m² and supporting examination HbA1c 8.4%, GDS 273mg / dL. Judging from the patient's BMI, this patient having grade 2 obesity has a high risk for preeclampsia and diabetes mellitus than normal pregnant women. In pregnant women with obesity will occur an increase in triglycerides in adipose cells that interfere with the release of proinflammatory cell cytokines in an effort to maintain energy balance. These cytokines will induce the production of CRP and cause oxidative stress and damage to spiral artery endothelial cells.⁹

On 2nd and 3rd semesters, placenta steroid and peptide hormone levels (such as estrone, progesterone and chorionic somatomammotropins) will increase. Some of these hormones will lead to insulin resistance. In normal conditions insulin will secrete the intake of incoming calories and maintain blood glucose levels, but at the time pregnancy because of insulin resistance so that hyperglycemia can occur.¹³

On ultrasound examination, found a single fetus, FHR (-) and IUFD impressions, so that a definite diagnosis of IUFD. In these patients the cause of fetal factors has not been we can confirm because we have to do an autopsy, if there are any congenital abnormalities.

Management of these patients has been carried out well according to procedures, namely with management therapy, administration of MgSO₄ 40% 4 grams bolus and continued with MgSO₄ 40% 6 grams in 500 cc of Ringer's Lactate 28 drops per minute (tpm) intercept seizures by inhibiting or reducing acetylcholine levels in stimulation of nerve fibers by inhibiting neuromuscular transmission so that competition occurs inhibition between calcium ions and magnesium ions. MgSO₄ administration can also decrease the risk of maternal death and obtained 50% of the administration has a flush effect.^{10,15}

This patient was given Catopril 25 mg every 12 hours PO, Lantus 10 iu, and Apidra 3x4 iu with the aim of controlling the patient's blood sugar levels and inhibiting the production of substances in the body that causes the blood vessels to constrict, thus vessels the blood will relax more so that blood pressure decreases and the blood supply is not oxygenated heart will increase. 16 Management of IUFD patients is divided into 2, namely active management and management passive, and in this patient is given passive management of spontaneous labor by induction misoprostol.¹⁴

4. Conclusions

Fetal death in the womb is a fetus that dies in the womb with its weight 500 grams or more or death of the fetus in utero at 20 weeks of gestation or more. Risk factors for Intrauterine Fetal Death (IUFD) are divided into 3, namely: maternal risk factors, factors fetal risk and umbilical cord risk factors.

In this case the possible cause of IUFD is a maternal factor, namely preeclampsia, diabetes mellitus, and obesity. And is a complication of fetal death in the womb. Management of IUFD patients is divided into 2, namely active management and management passive. Early diagnosis and appropriate treatment are needed to prevent complications mother and baby

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6. Declarations

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