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Management of polyhydramnios pregnancy without risk factors: a case report



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ABSTRACT

Introduction: Polyhydramnios is a condition in which the amount of amniotic fluid increases more than 2 litres. The causes of polyhydramnios are multifactorial, and most are idiopathic. Here we report challenging management of polyhydramnios case without apparent risk factors.

Case: A 30-year-old woman G2P1001, 27-28 weeks of gestational age referred due to our tertiary health care center due to polyhydramnios. The patient chief complaint was progressively enlarged abdomen since a month ago. Her previous pregnancy, medical history and family history were unremarkable. The obstetric examination reflects the size of uterus equivalent to 36 weeks of gestational age. The fetomaternal ultrasound reveals a life, single fetus with normal heart rate and fetal movement, estimated fetal weight about 1057 grams, placenta corpus posterior grade I, Maximum Vertical Pocket 22.83 cm, no major congenital abnormalities were visible and bladder appears filled. Laboratory

tests revealed blood glucose levels 90 mg/dl, Hb-A1c 5.2%, Ureum 27.30 mg/dl, Creatinine 3.39 mg/dl, and numerous leukocytes on urine sediment. Amnioreduction and fetal pulmonary maturation were conducted by Dexamethason protocol. Amnioreduction yield 1500 ml of clear, yellowish amniotic fluid. Regarding abnormality in renal function, diagnosis of Acute on Chronic Kidney Disease (ACKD) were established by Internal medicine department, and the patients were given a series of ceftriaxone injection. The patient was planned for indomethacin therapy; however, Indomethacin was not available in Bali.

Conclusion: Careful search for causes both from the maternal factor and fetal abnormalities can help to determine the prognosis of pregnancy. Ideally, amnioreduction, coupled with indomethacin therapy, are needed to reduce amniotic fluid, and serial monitoring of the amniotic fluid volume is required to prevent preterm labor.

Keywords: polyhydramnios, risk factor, perinatology, maternal-fetal medicine

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INTRODUCTION

Amniotic fluid is needed for the growth and development of the fetus in the womb. The benefits of amniotic fluid, besides providing protection to the fetus in the event of mechanical trauma, it is also a bacteriostatic agent that will maintain intrauterine sterility.¹ Amniotic fluid volume is the result of a balance between the inflow and outflow of the amniotic cavity. In the first trimester, most of the amniotic fluid is the result of active transport of sodium and chloride across the fetal membrane and skin. In the second trimester, the majority of fluid results from the fetal void and fetal respiratory tract secretions.²

Polyhydramnios is a condition in which the amniotic fluid volume increases by more than 2 liters. The diagnosis of polyhydramnios can be determined by a physical examination in the form of the height of the uterine fundus measurement that is higher than the estimated gestational age,

as well as through ultrasound examination. On ultrasonography, the measurement of amniotic fluid volume can be done through 2 methods, the Maximum Vertical Pocket (MVP) measurement (>8cm), and the Amniotic Fluid Index (AFI) measurement (> 24cm).^{2,3}

Polyhydramnios can be caused by an increase in fetal fluid production such as the case of fetal hydrops or due to fetal swallowing inhibition as in congenital gastrointestinal obstruction. Most polyhydramnios cases are idiopathic (60%).²⁻⁵ Other common causes are maternal diabetes mellitus (15%), fetal malformations (13%), multiple pregnancies (5%), and other rare condition (1%). Fetal malformations that cause polyhydramnios include neural tube defects (anencephaly, holoprosencephaly), cardiac anomalies (truncus arteriosus), atresia or gastrointestinal stenosis, masses of the abdomen or chest (diaphragmatic hernias, adenomatoid cystic malformations), skeletal dysplasia, neuropathic

atrophy (myotonic dystrophy), infection (parvovirus), metabolic disorders (Gaucher's disease), chromosomal abnormalities (trisomy 18), tumours (sacroccygeal teratomas), and genetic syndromes (Beckwith-Wiedemann syndrome).²

Polyhydramnios is strongly associated with high rates of prematurity (11% -29%). The state of overdistension of the uterus will trigger preterm contractions and preterm labor. Therefore, it requires higher levels of obstetric care, such as tracing the history of the maternal disease (e.g. diabetes mellitus), ultrasonography (USG) to rule out fetal structural malformations as well as to determine the degree and monitor the progression (serial USG). Treatment of polyhydramnios should focus on the underlying cause. Interventions in the form of a reduction in the amniotic fluid could reduce the distension and thus prevent premature birth. In the cases of idiopathic polyhydramnios, Indomethacin could also be utilized to reduce urine production and increase the absorption of fluids in the fetal lungs and increase fetal respiration.² Here we report challenging management of polyhydramnios case without apparent risk factors.

CASE

A 30-year-old woman came to the Obstetrics and Gynecology Clinic of Sanglah General Hospital after referred from a private hospital in Tabanan with a diagnosis of G2P1001, 27-28 weeks of gestational age and polyhydramnios. The patient chief complaint was progressively enlarged abdomen since a month ago. No abdominal pain, vaginal discharge or change in the fetal movement were reported. Her previous pregnancy, medical history and family history were unremarkable. Vital signs and general physical examination within normal limits. Obstetric examination the uterus was measured 2-finger breadth under the processus xiphoideus or about 45 cm above the pubic symphysis which reflects the size of uterus equivalent to 36 weeks of gestational age. No contraction was felt on palpation, and Fetal heart rate measured about 130x/minute. The fetomaternal ultrasound examination was then performed. It reveals a life, single fetus, heart rate (+), fetal motion (+), estimated fetal weight about 1057 grams, placenta corpus posterior grade I, MVP 22.83 cm, no visible major congenital abnormalities, bladder appears filled. Laboratory tests revealed blood glucose levels 90 mg/dl, Hb-A1c 5.2%, Ureum 27.30 mg/dl, Creatinine 3.39 mg/dl, and numerous leukocytes on urine sediment (4612/LPB).

Amnioreduction and fetal pulmonary maturation were planned for the patient. Fetal pulmonary maturation was performed through

injection of 6 mg dexamethasone every 12 hours for two days. Regarding abnormality in renal function, the Internal Medicine department was notified for consultation. Internal department concludes a diagnosis of Acute on Chronic Kidney Disease (ACKD). Chronic Kidney Disease (CKD) possibly due to Chronic Pyelonephritis and complicated urinary tract infections. Patients were given 2 grams of ceftriaxone injection every 24 hours for seven days after the urine sample taken for culture.

Amnioreduction was performed and yielded 1500 ml of clear, yellowish amniotic fluid. Karyotyping cannot be carried as the laboratory temporarily stops accepting karyotyping order due to the outbreak of COVID-19. After amnioreduction, the patient was planned for indomethacin therapy, 25 mg every 12 hours until 31 weeks of gestational age. However, Indomethacin was not available in Bali. Thus, after a day of observation without any complaints, the patient was discharged without indomethacin medication and planned for a follow-up appointment within a week for obstetric evaluation. One week after re-examination at Sanglah Hospital, the patient experienced a rupture of membranes (PROM) and gave birth at the nearest hospital in Tabanan area (25 km from Sanglah Hospital). A baby weighed 1100 grams was born, immediately cried, but the baby only lives for two days as it experienced deterioration and death.

DISCUSSION

The high incidence of preterm birth in polyhydramnios patients requires several interventions so that pregnancy could be maintained. Tracing the maternal risk factors, ultrasound examination, and laboratory examination need to be done in order to find out the cause of polyhydramnios. Maternal diabetes mellitus is one of the maternal side risk factors for polyhydramnios that relatively easy to recognize and more straightforward to treat. High maternal blood glucose would also translate to increased fetal blood glucose. High fetal blood glucose will promote fetal diuresis and thus contribute to polyhydramnios.⁵

Another risk factor that also plays a role in fetal anatomical abnormalities. Some abnormalities that often occur include anomalies in the heart, digestives, central nervous system and musculoskeletal system. In one study regarding the fetal abnormalities in pregnancy with polyhydramnios, abnormalities of the central nervous system such as anencephaly and hydrocephalus were the most common abnormalities, followed by digestive tract abnormalities in the form of esophageal atresia. Through ultrasound examination is the primary

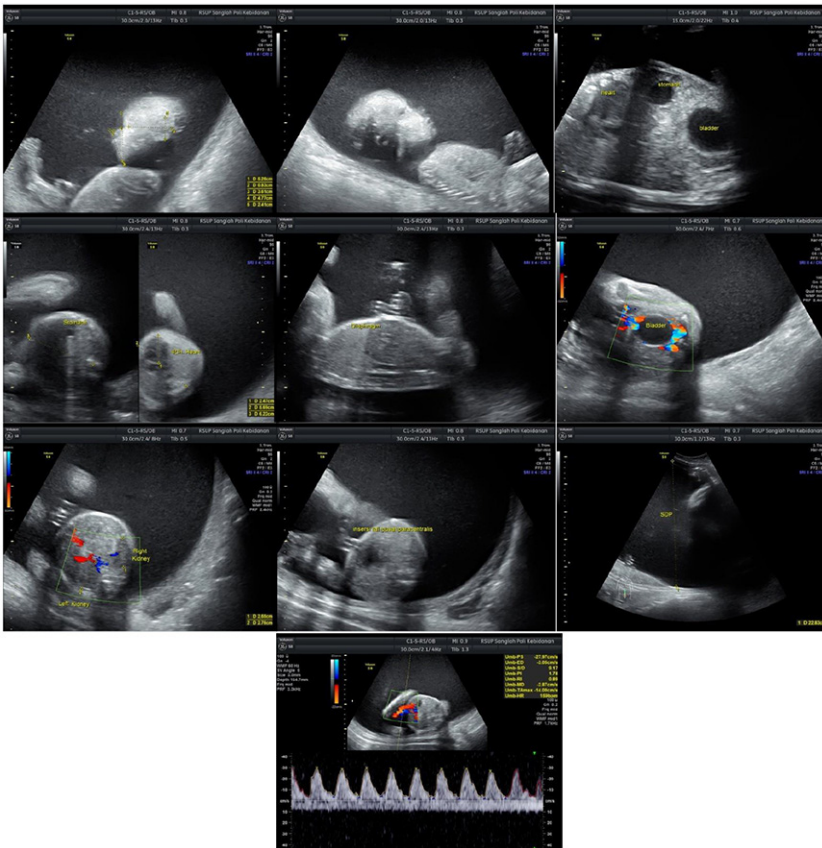


Figure 1. Ultrasound screening

modality to examine anatomical abnormalities in the fetus as well as to estimate the volume of amniotic fluid. Understanding the anatomical abnormalities of the fetus is the key to determine the prognosis and to map out the necessary intervention.^{4,6}

In addition to maternal and fetal risk factors that can cause polyhydramnios, idiopathic is the most common cause of polyhydramnios. Indomethacin administration can help to reduce amniotic fluid through suppression of fetal diuresis. Optimal levels of Indomethacin in the treatment of polyhydramnios are still uncertain. Most studies advocate 25 mg of oral tablets every 6 hours or equivalent to 2-3mg/kg/day as it has demonstrated a reduction in the amount of amniotic fluid. Indomethacin is also used as a tocolytic agent in cases of preterm birth. In addition to the benefits, Indomethacin also showed to increase the risk of neonatal complications, kidney failure, necrotizing enterocolitis, intraventricular haemorrhage and closure of patent ductus arteriosus (PDA). If a risk of PDA is imminent, fetal echocardiography is required at the first 24 hours of administration and then every week.^{2,7} In one case report from Texas, nephrogenic diabetes insipidus was found in infants

aged six months with a history of polyhydramnios pregnancy without fetal anatomic abnormalities and used Indomethacin as the treatment.⁸ In this case, we could not offer the patient Indomethacin therapy as it was not available in Bali. Thus, our attempt to reduce the production of amniotic fluid through indomethacin therapy could not be conducted. This might be one of the factors hindering the optimal therapy.

Amnioreduction is an effort to reduce large amounts of amniotic fluid. This action has long been used in the management of polyhydramnios. However, a reduction in amniotic fluid can quickly lead to placental abruption, preterm labor, and premature rupture of membranes. Reducing the amount of amniotic fluid can help patients to reduce complaints of stertorous that occur due to overdistension of the abdomen. This invasive action can also be repeated until the fetus is mature so that it can prolong the gestational age, and help buy time to prepare surgical intervention should the circumstance compelled us to do so.⁹ After reducing the excess amniotic fluid, complaints of shortness of breath were markedly reduced, and fetal movements were felt to be more active. Nevertheless, overdistension due to polyhydramnios that occurs in these patients is one of the key risk factors that induce premature rupture of membranes and premature labor, which unfortunately deliver an unfavourable final result.

CONCLUSION

Polyhydramnios is caused by many factors, but most are idiopathic. A careful search for causes of polyhydramnios during pregnancy both from the maternal factor and fetal abnormalities can help to determine the prognosis of pregnancy and prepare necessary resources to conduct treatment or intervention when the circumstance compelled us to do so.

CONSENT

Patients have agreed and given their consent to be reported for academic purpose.

CONFLICT OF INTEREST

All authors declare there is no conflict of interest.

AUTHOR CONTRIBUTION

All authors have contributed substantially in conducting the study, drafting and revising the manuscript, giving final approval and have agreeing to be accountable.

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