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INTRAUTERINE FETAL DEATH ASSOCIATED WITH PRETERM PREMATURE RUPTURE OF MEMBRANES AND GASTROSCHISIS FETUS: A CASE REPORT

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ABSTRAK

Kematian janin dalam rahim (KJDR) penyumbang angka kematian perinatal terbesar yang dapat disebabkan oleh gastroschisis dan ketuban pecah dini (KPD) *preterm*. KPD *preterm* pada fetus dapat menyebabkan chorioamnionitis yang pada akhirnya menimbulkan kematian pada janin. Defek pada dinding anterior abdomen dapat menyebabkan kematian janin dikarenakan penekanan tali pusar akibat dilatasi usus akut. Gastroschisis menyebabkan KJDR adalah kejadian yang langka yakni berkisar 4.5%. Wanita berusia 25 tahun, G2P1A0 usia kehamilan 28 minggu datang ke RS Puri Bunda Tabanan dengan keluhan keluar darah disertai dengan nyeri perut dan gerak janin yang menghilang sejak 1 hari sebelum masuk RS. 3 minggu sebelumnya, pasien sempat dirawat inap di RS lain dengan diagnosis KPD *preterm* Pasien tidak pernah melakukan pemeriksaan USG sebelumnya dikarenakan pasien seorang pedagang dengan penghasilan yang rendah. Pemeriksaan obstetri didapatkan tanda inpartu, presentasi kaki dan ketuban negatif. Hasil USG obstetri didapatkan denyut jantung janin menghilang, skor AFI 2 dan ditemukan leukositosis dari pemeriksaan lab darah. Dilakukan sectio cesaria dan ditemukan bayi meninggal dengan gastroschisis maserasi tingkat II. KPD *preterm* dan gastroschisis berkaitan dengan terjadinya KJDR sehingga diperlukan deteksi dini dan penatalaksanaan komprehensif yang tepat. Gastroschisis seharusnya dapat ditegakkan secara prenatal menggunakan USG obstetri, sehingga penting bagi klinisi untuk melakukan deteksi dini yang tepat agar dapat mencegah morbiditas dan mortilitas ibu dan janin.

Kata kunci: *Gastroschisis, KJDR, KPD preterm*

ABSTRACT

Intrauterine fetal death (IUFD) is the most significant contributor to perinatal mortality caused by gastroschisis and preterm premature rupture of membranes (PPROM). Additionally, PPROM in a fetus may cause chorioamnionitis, resulting in the death of the fetus. The incidence of fetal death may occur because defects in the anterior abdominal wall cause umbilical cord compression after acute intestinal dilation. However, gastroschisis-provoking IUFD is a rare event, namely around 4.5%. A 25-year-old woman, G2P1A0, 28 weeks pregnant, came to Puri Bunda Tabanan Hospital with complaints of bleeding along with abdominal pain and loss of fetal movement, which disappeared a day before entering the hospital. Three weeks earlier, the patient admitted to another hospital with a diagnosis of PPROM; the record showed that the patient never had an ultrasound examination before since the patient was a trader with a low income. Obstetric examination revealed signs of birth, footling presentation and negative result of amniotic fluid. Obstetric ultrasound results showed that the amniotic fluid index (AFI) score was 2 and fetal heart rate had disappeared. Leukocytosis was found on blood laboratory examinations. A caesarean section was performed, and the baby was found dead with gastroschisis with grade II maceration. PPROM and gastroschisis are related to IUFD, in which early detection and appropriate comprehensive management are needed. Gastroschisis should be diagnosed prenatally using obstetric ultrasound. Clinicians need to carry out appropriate early detection in order to prevent maternal and fetal morbidity and mortality.

***Keywords**: IUFD, PPROM, Gastroschisis*

PENDAHULUAN

PPROM applies in cases occurring before labour starts, prior to 37 weeks of gestation. It appears in 2 to 3% of pregnancies and is associated with higher maternal and neonatal morbidity and mortality. Moreover, another neonatal complication is IUFD, which is defined as the occurrence of fetal death at >20 weeks gestation. It affects about 1 in 160 pregnancies (6 - 7 per 1,000 births). Gastroschisis is an anterior abdominal wall defect associated with IUFD ; one recent meta-analysis estimated the prevalence of IUFD in gastroschisis is 4.5%. We report a case of a 25-year-old woman with preterm premature rupture of membranes and gastroschisis fetus associated with intrauterine fetal death (ACOG, 2020).

CASE PRESENTATION

On the 13th of November 2023, a 25-year-old woman, G2P1A0, 28 weeks gestation, came to Puri Bunda Tabanan Hospital with complaints of bleeding along with abdominal pain and loss of fetal movement, which disappeared a day before entering the hospital. Earlier, on the 21st of October 2023, the patient was admitted to another hospital with a diagnosis of PPROM; the patient was treated conservatively for one week and given dexamethasone for lung maturation. The patient was then sent home because there was no more amniotic fluid seepage and the amniotic fluid was still sufficient. The patient had never had an ultrasound examination before due to low income as a trader.

Glasgow coma scale (GCS) examination score was 14, blood pressure 116/80 mmHg, heart rate 80x/min, respiratory rate 18x/min. Obstetric examination showed that the cervix was open 4 cm, the fetal feet were palpable, and there was no amniotic fluid. An obstetric ultrasound examination was carried out for further investigation. The results showed that the fetal heart rate had disappeared, and the amniotic fluid was reduced with an AFI score was 2 **(Figure 1)**. The results of the laboratory examination showed that the leukocytes were elevated, indicating a bacterial infection. The diagnosis was carried out as PPROM with IUFD

Emergency caesarean section was then performed with the aim of saving the mother by removing the fetus due to the footling presentation. Cefotaxime 2 gr IV, the pre-operative antibiotic, was given to the patient as prophylaxis. The baby experienced post-operative death due to gastroschisis with grade II maceration **(Figure 2).** The mother was moved to the inpatient room to be given pharmacological therapy, such as cefotaxime, metronidazole, intravenous analgesics, and methylergometrine. After two days of treatment at the hospital, the mother's condition stabilized, and she was then sent home.

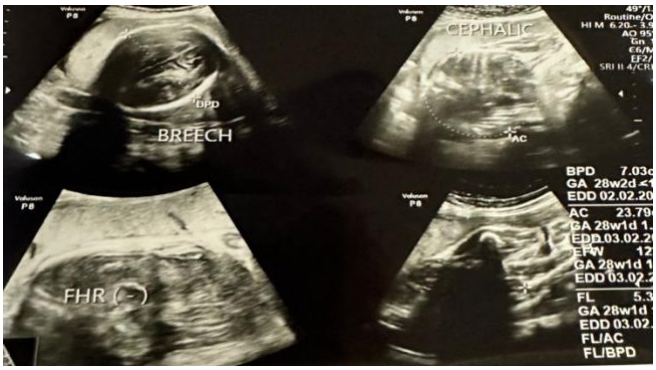

Figure 1. USG examination

Figure 2. Gastroschisis fetus

DISCUSSION

Intrauterine Fetal Death has proven to be the most significant contributor to perinatal mortality; with rates of 75% and even higher in Asian and African countries. An estimated 98% of IUFD events occurred in a country with lower-middle backgrounds, i.e. Indonesia (ACOG, 2020). Perinatal mortality rate in Indonesia is estimated at 21 deaths per 1,000 births (Asfia, 2023). The number dates back to the fact that public access still needs to be working optimally as part of health facilities. In the case reported, the patient is a trader with a lower-middle income in need of help to get optimal health services. Some theories explain that infant mortality rates are closely related to economic conditions, precisely due to the fact that a stable income and wealth in a family will guarantee nutritious food,

amount and quality of water, and also better access to hospitals (Suhaeri, 2020).

A gestational age of less than 37 weeks, the patient's previous medical history of PROM, and a small amount of amniotic fluid from the ultrasound examination were enough to establish the diagnosis of PPROM in this case. Furthermore, the incidence of PPROM occurs only in 2 - 3% of the entire pregnancy and is closely related to the morbidity and mortality of both the mother and the fetus. On top of that, fetal complications are primarily caused by prematurity and ascending infection from the amniotic fluid or chorioamnionitis, which can eventually lead to IUFD (Enjamo *et al*., 2022). The incidence of infection-induced IUFD varies between 5%-25%, which occurs mainly in premature birth. A cohort study in the United States proved that infection is a possible cause of IUFD in around 12.9% of cases. Rigidly, the predominant bacteria that cause infection include *Escherichia coli* (29%), Group B Streptococcus (GBS) (12%), Enterococcus (12%), and sometimes *Listeria monocytogenes*. Additionally, non-bacterial agents that cause IUFD include Cytomegalovirus 8%, Parvovirus 3%, Syphilis 2%, and Herpes Simplex Virus 2% (Mark & Lori, 2022).

The diagnosis of gastroschisis in this patient was carried out postnatally with the discovery of a congenital disability where the intestine appears out through the defect and without the membrane. The incidence of gastroschisis in the world ranges from 4 - 5 per 10,000 live births and is more common in premature infants and low birth weight infants (Melov *et al*., 2018). Indonesia is a country with a high risk because many pregnancies are found at a young age (<21 years), high parity, lack of nutritional intake in pregnant women and the habit of consuming alcohol and drugs. Research by Nukana and Darmajaya received gastroschisis events at Sanglah Hospital in 2010-2012, which reached 37 cases (Tri *et al.*, 2022). The fetus with gastroschisis has a higher risk of experiencing IUFD. There are several cause hypotheses, including umbilical cord compression after acute intestinal dilation, oligohydramnios, cardiovascular compromise that is related to high protein loss through the defect and subsequent hypovolemia, and cytokine-mediated inflammation. Additionally, there is an increased risk for volvulus and vascular compromise that could lead to fetal death (Rebecca & Vikas, 2022). One recent meta-analysis estimated that the prevalence of IUFD in gastroschisis to be 4.5% (South *et al.*, 2013). Enforcement of diagnosis, in this case, is still not optimal due to emergency cases that need immediate treatment. Gastroschisis should be upheld prenatally using obstetric ultrasound, so clinicians need to do appropriate early detection in order to prevent the morbidity and mortality of the mother and fetus.

CONCLUSION

PPROM and gastroschisis are related to the occurrence of IUFD. Hence, early detection and comprehensive management are needed for this case. Besides, the economic status of Indonesia is by far one of the reasons obstetric health services have not been optimal. The authors suggest the development of further analytic studies regarding the relationship between PPROM and gastroschisis with the events of IUFD.

PATIENT INFORMED CONSENT

Written informed consent obtained from the patient to publish this case report and any accompanying images.

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