THE RELATION OF DELIVERY TYPE WITH THE INCIDENT OF HYPERBILIRUBINEMIA ON NEWBORN INFANT

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ABSTRAK : HUBUNGAN JENIS PERSALINAN DENGAN KEJADIAN HIPERBILIRUBINEMIA PADA BAYI BARU LAHIR DI RSIA BUNDA ARIF PURWOKERTO

Latar Belakang: Salah satu faktor maternal yang menyebabkan hiperbilirubinemia yaitu jenis persalinan. Persalinan merupakan proses pengeluaran janin yang dapat hidup di luar kandungan melalui jalan lahir atau perut. Jenis persalinan terdiri dari persalinan patologis dan persalinan normal. Beberapa hari kehidupan di usia 0-28 hari yang mengalami perubahan besar dari dalam rahim ke luar rahim disebut bayi baru lahir. Peningkatan kadar bilirubin pada bayi baru lahir >5 mg/dl akan menyebabkan hiperbilirubinemia.

Tujuan: Mengetahui hubungan jenis persalinan dengan kejadian hiperbilirubinemia pada bayi baru lahir di RSIA Bunda Arif Purwokerto.

Metode: Penelitian ini merupakan penelitian survei analitik dengan pendekatan retrospektif. Teknik pengambilan sampel purposive sampling dengan jumlah sampel 89 bayi baru lahir dengan hiperbilirubinemia. Instrumen penelitian menggunakan lembar cheklist. Analisis data menggunakan uji korelasi lambda dan uji chi square.

Hasil: Hasil penelitian menunjukkan jenis persalinan pada bayi baru lahir di RSIA Bunda Arif Purwokerto sebanyak 52,8% mengalami persalinan patologis. Kejadian hiperbilirubinemia pada bayi baru lahir di RSIA Bunda Arif Purwokerto sebanyak 36% mengalami hiperbilirubinemia dalam kategori derajat V. Ada hubungan persalinan patologis terhadap kejadian hiperbilirubinemia pada bayi baru lahir di RSIA Bunda Arif Purwokerto dengan kekuatan sedang nilai p-value sebesar 0.0001 (p-value < α) dan lambda (λ) 0.576.

Kesimpulan: Jenis persalinan memiliki hubungan yang sedang dengan kejadian hiperbilirubinemia pada bayi baru lahir.

Kata Kunci: Jenis Persalinan, Hiperbilirubinemia, Bayi Baru Lahir

ABSTRACT

Background: One of the maternal factors that cause hyperbilirubinemia is the type of delivery. Labor is the process of expelling a fetus that can live outside the womb through the birth canal or stomach. The type of delivery consisted of pathological delivery and normal delivery. A few days of life at the age of 0-28 days that undergo major changes from inside the womb to outside the womb are called newborns. Increased bilirubin levels in newborns > 5 mg/dl will cause hyperbilirubinemia.

Objective: To determine the relationship between type of delivery and the incidence of hyperbilirubinemia in newborns at RSIA Bunda Arif Purwokerto.

Methods: This study is an analytic survey study with a retrospective approach. The sampling technique was purposive sampling with a total of 89 newborns with hyperbilirubinemia. The research instrument used a checklist sheet. Data analysis using lambda correlation test and chi square test.

Results: The results showed that 52.8% of newborns at RSIA Bunda Arif Purwokerto experienced pathological delivery. The incidence of hyperbilirubinemia in newborns at RSIA Bunda Arif Purwokerto was 36% experiencing hyperbilirubinemia in the grade V category. There is a relationship between pathological delivery and the incidence of hyperbilirubinemia in newborns at RSIA Bunda Arif Purwokerto with a moderate strength p-value of 0.0001 (p-value <) and lambda (λ) 0.576.

Conclusion: Type of delivery has a moderate relationship with the incidence of hyperbilirubinemia in newborns.

Keywords: Type of Delivery, Hyperbilirubinemia, Newborn

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INTRODUCTION

One of the metrics used to evaluate the effectiveness of a nation's health services is the infant mortality rate (IMR) (Kemenkes RI, 2021). The number of newborn babies who die before they are exactly one year old in 1000 live births (KH) is known as the infant mortality rate (IMR) (UNICEF, 2022). Based on UNICEF data (2022), it is known that the IMR in the world in 2021 will reach 27.3 per 1000 KH with an average IMR of 22.5 per 1000 KH, where the highest IMR is in Afghanistan at 110.6 per 1000 KH and Indonesia is one of the countries with an IMR above the average is 22.7 per 1000 KH.

Based on data from the Indonesian Ministry of Health (2021), it is known that the IMR in 2020 was 20,266 cases, an increase compared to 2019, namely 20,244 cases. The highest IMR in 2020 occurred in Central Java Province with 3,031 cases and the lowest in North Sulawesi Province with 40 cases. The causes of high IMR are LBW (35.2%), asphyxia (27.3%), congenital abnormalities (11.3%) and infection (3.4%). Based on data from the Banyumas District Health Service (2021), it is known that the 2020 IMR was 7.06 per 1000 KH (187 cases) which has not reached the Rencana Pembangunan Jangka Menengah Daerah (RPJMD) target of 7 per 1000 KH.

One of the causes of IMR is infection, which can also cause complications in neonates such as meningitis, seizures, hypothermia, hyperbilirubinemia, respiratory problems and drinking (Halisanti & Wildan, 2021). Hyperbilirubinemia is the only infectious complication that can attack newborns throughout the world and causes the IMR to increase to 23.1% (Lawn et al., 2019). Hyperbilirubinemia in newborns can be a physiological symptom or it can be pathological. The pathological effects on each baby are different, this can be caused by high serum bilirubin levels of >5mg/dL in the blood (Johan & Noorbaya, 2019). Waluyo's research (2016) showed that the incidence of hyperbilirubinemia in babies at Banyumas District Hospital reached 31%.

Jaundice can be physiological or pathological. Physiological jaundice occurs at ≥ 24 hours of life and disappears ≤ 14 days of life with bilirubin levels on the second to fourth day of 5 – 6 mg/dL and decreases to < 2 mg/dL on the fifth to seventh day, while pathological jaundice occurs on the first day of life. (< 24 hours) or more than 14 days of life with bilirubin levels reaching 5 – 10 mg/dL (Auliasari et al., 2019). The incidence of hyperbilirubinemia in BBL can be caused by 3 risk factors including maternal factors, perinatal factors and neonatal factors (Marcdante et al., 2014).

The perinatal factor that influences hyperbilirubinemia is the type of delivery (Rasyd, 2019). Research conducted by Rini (2016) found that there was a relationship between the type of delivery (p=0.001) and the incidence of neonatal jaundice. Research by Madiastuti & Chalada (2016) shows that the incidence of hyperbilirubinemia in normal labor is 46.3% and in abnormal/pathological labor it reaches 68.4%. Childbirth is a normal process that occurs in women physiologically, childbirth can become pathological which can have negative impacts on the mother and child. The type of pathological delivery is delivery by vacuum/forceps and caesarean section (SC) (Saifuddin, 2014).

Babies born with surgery are more likely to experience subsequent respiratory problems. Hepatic hypoperfusion and blockage of the bilirubin conjugation pathway may arise from this. Additionally, babies born via this method do not receive the beneficial bacteria found in the mother's birth canal, which affects how the immune system develops, making them more susceptible to infections. (Berman et al., 2016). Babies born with surgery are more likely to experience subsequent respiratory problems. Hepatic hypoperfusion and blockage of the bilirubin conjugation pathway may arise from this. Additionally, babies born via this method do not receive the beneficial bacteria found in the mother's birth canal, which affects how the immune system develops, making them more susceptible to infections (Madiastuti & Chalada, 2016).

Prematurity, fetal distress, premature rupture of membranes (KPD), and other events that increase bilirubin levels are some of the reasons why SC delivery is performed and how it can affect immunity, abnormalities, and the development of body organs in babies (Pratiwi & Kusumaningtiar, 2021). Babies born using this method may not cry immediately, and this delay in crying causes hemodynamic irregularities that can lead to respiratory depression, whole-body hypoxia, and respiratory/metabolic acidosis, all of which can affect bilirubin metabolism (Faiqah, 2014).Research by Roselina et al., (2016) revealed that 43% of neonates who were delivered by vacuum experienced hyperbilirubinemia (11 out of 32 deliveries)

RESEARCH METHODS

This type of research is quantitative research. The method used in this research is an analytical survey method with a retrospective approach. The location of this research was carried out at RSIA Bunda Arif Purwokerto according to the timeline by conducting an initial survey, literature search,

preparation of proposals, proposal seminars, research, data analysis and preparation of the final report.

The population in this study were 186 newborns with hyperbilirubinemia. The sample in this study was 89 newborns with hyperbilirubinemia. All samples were taken from RSIA Bunda Arif's medical record data for 2021. The sampling technique was purposive sampling. The instrument in this research uses a checklist sheet. The analysis used in this research used the lambda correlation test and chi square test.

RESEARCH RESULTS
Types of delivery for newborns at RSIA Bunda Arif Purwokerto

Table 1 shows that 47 respondents (52.8%) had pathological types of labor, including 1 respondent (1.1%) with VE, 46 respondents (51.1%) with SC and 0 respondents with forceps, while 42 respondents (47.2%) had normal types of labor)

Table 1
Types of Delivery in Newborn Babies at RSIA Bunda Arif Purwokerto

Type of Delivery	Frequency (f)	Percentage (%)
Pathological Labor	47	52.8
a. Vacum Ekstrasi (VE)	1	1.1
b. Sectio Caesarea (SC)	46	51.7
c. Forceps	0	0
Normal Delivery	42	47.2

The incidence of hyperbilirubinemia in newborns at RSIA Bunda Arif Purwokerto

Table 2 shows that 22 respondents experienced grade I hyperbilirubinemia (24.7%), 15 respondents had grade II (16.9%), 8 respondents had grade III (9%), 12 respondents had grade IV (13.4%) and V as many as 32 respondents (36%).

Table 2
Incidence of Hyperbilirubinemia in Newborns at RSIA Bunda Arif Purwokerto

Hyperbilirubinemia Occurrence	Frequency (f)	Percentage (%)
Degree I	22	24.7
Degree II	15	16.9
Degree III	8	9
Degree IV	12	13.4
Degree V	32	36

Relationship between type of delivery and the incidence of hyperbilirubinemia in newborns at RSIA Bunda Arif Purwokerto

Table 3
Relationship between type of delivery and incidence of hyperbilirubinemia in newborns at RSIA Bunda Arif Purwokerto

Types of Labor Hyperbilirubinemia	Hiperbilirubinemia									
	D. I		D. II		D. III		D. IV		D. V	
	f	%	f	%	f	%	f	%	F	%
Pathological	1	1.1	2	2.2	1	1.1	12	13.4	31	34.9
Normal	21	23.6	13	14.6	7	7.9	0	0	1	1.1

Type of Delivery	Total		p value
	F	%	
Pathological	47	52.8	0.0001
Normal	42	47.2	

Table 3 shows that respondents with pathological labor mostly had hyperbilirubinema in the grade V category, 31 respondents (34.9%) and respondents with normal labor mostly had

hyperbilirubinema in the grade I category, 21 respondents (23.6%). From the results of the analysis, it was found that the lambda correlation value (λ) was 0.576, which means that the level of correlation between the type of delivery and the incidence of hyperbilirubinemia was moderate, while the chi square test results obtained a p-value of 0.0001 (p-value < α) which means there is a significant relationship. between the type of delivery and the incidence of hyperbilirubinemia in newborns

DISCUSSION

The research results showed that the majority of respondents had a pathological type of delivery (VE, forceps, SC) as many as 47 respondents (52.8%) (table 4.1). These results indicate that surgical delivery is the mother's choice for giving birth. The most frequently performed delivery is SC delivery. This can happen because the data used is 2021 data, which at that time was still during the Covid-19 pandemic. Research by Risnawati et al., (2021) shows that the majority of birth types during the Covid-19 pandemic were SC deliveries (64%).

The choice of delivery method must also consider the availability of resources, facilities at the hospital (including the availability of a negative pressure operating room), the layout of the hospital treatment room, the availability of personal protective equipment, performance capabilities, human resources, and the risk of exposure to medical personnel and other patients. (POGI, 2020).

The type of birth in the results of this study is the desire of the birthing mother and family. This is in accordance with the literature review conducted by Christanto (2020) which states that until now there has been no strong clinical evidence that recommends one method of delivery so that delivery is carried out based on obstetric indications taking into account the wishes of the mother and family, except for mothers with respiratory problems who require immediate delivery in the form of SC, or vaginal surgery.

The type of delivery in this study is related to the respondent's gestational age. Gestational age is one of the important things that must be considered in the decision to terminate a pregnancy, because it is related to the fetus's ability to survive outside the uterus (Soewarto, 2016). The results of this study are in line with research conducted by Yaeni (2013) which found that 95% of the gestational ages at the time of the CS procedure were term pregnancies, whereas for some respondents, delivery was carried out at preterm gestational age, which is related to the indication for emergency Sectio Caesarea. to save the lives of the mother and fetus.

The research results showed that the majority of respondents had hyperbilirubinemia in the grade V category, 32 respondents (36%) (table 4.2). Hyperbilirubinemia is one of the infectious complications in babies born throughout the world which can cause IMR to reach 23.1% (Lawn et al., 2019). Hyperbilirubinemia in newborns can be a physiological symptom or it can be pathological. The pathological effects on each baby are different, this can be caused by high serum bilirubin levels of >5mg/dL in the blood (Johan & Noorbaya, 2019). Waluyo's research (2016) showed that the incidence of hyperbilirubinemia in babies at Banyumas District Hospital reached 31%.

Bilirubin in newborns increases due to damage to red blood cells. Bilirubin will increase normally after 24 hours and reach its peak in 3-5 days, this will gradually decrease to near normal values within a few weeks (Maternity et al., 2018). According to Maryunani & Sari (2013), hyperbilirubinemia in newborn babies mostly occurs because the liver function is not yet perfect in removing bilirubin from the bloodstream.

Bilirubin levels are a waste product of metabolism that occurs in the liver. If conjugated bilirubin levels are reabsorbed, they will deposit in the body and become a condition of hyperbilirubinemia (Moncrieff, 2018). Bilirubin levels that continue to increase and remain in the body for too long can cause kernicterus or brain damage caused by the adhesion of bilirubin to the surrounding brain, especially in the corpus striatum, thalamus, subthalamic nucleus, hippocampus, red nucleus, and nucleus at the base of the ventricle (Dewi , 2016). If it is not treated immediately, it will have an impact on the baby's condition, namely experiencing speech problems and hearing problems (Mulyati, 2019).

The most severe impact of hyperbilirubinemia in babies if it is not treated quickly is bilirubin encephalopathy which can lead to kernicterus and brain damage. Hyperbilirubinemia can also cause sequelae in the form of cerebral palsy, paralysis and dental dysplasia which greatly affect the baby's quality of life. Apart from that, it can also cause seizures, deafness, speech disorders, mental retardation, and can even have an impact on infant death (Heriyanti et al., 2020). The relationship between type of delivery and the incidence of hyperbilirubinemia in newborns at RSIA Bunda Arif Purwokerto. The results of the study showed that respondents with pathological labor mostly had hyperbilirubinema in the grade V category, 31 respondents (34.9%) and respondents with normal labor mostly had hyperbilirubinema in the grade I category, 21 responses.

CONCLUSION

Based on the results of the research that has been carried out, the following conclusions can be drawn:

1. Types of labor for newborns at RSIA Bunda Arif Purwokerto: 52.8% experienced pathological labor and 47.2% experienced normal labor.
2. The incidence of hyperbilirubinemia in newborns at RSIA Bunda Arif Purwokerto was 24.7% experiencing hyperbilirubinemia in grade I category, 16.9% in grade II category, 9% in grade III category, 13.4% in grade IV category and 36% in grade V category.
3. There is a relationship between the type of delivery and the incidence of hyperbilirubinemia in newborns at RSIA Bunda Arif Purwokerto with a p-value of 0.0001 (p-value < α).
4. There is a moderate level of correlation between the type of delivery and the incidence of hyperbilirubinemia with a lambda (λ) value of 0.576.

SUGGESTION

Types of labor for newborns at RSIA Bunda Arif Purwokerto: 52.8% experienced pathological labor and 47.2% experienced normal labor. The incidence of hyperbilirubinemia in newborns at RSIA Bunda Arif Purwokerto was 24.7% experiencing hyperbilirubinemia in grade I category, 16.9% in grade II category, 9% in grade III category, 13.4% in grade IV category and 36% in grade V category. There is a relationship between the type of delivery and the incidence of hyperbilirubinemia in newborns at RSIA Bunda Arif Purwokerto with a p-value of 0.0001 (p-value < α). There is a moderate level of correlation between the type of delivery and the incidence of hyperbilirubinemia with a lambda (λ) value of 0.576.

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