International Islamic Medical Journal
Journal Homepage ://journal2.unusa.ac.id/index.php/IIMJ

Characteristics of PPROM in General Hospital Dr. Soetomo Surabaya Period September 2017 to September 2019

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ARTICLE INFO

Keywords**:**
PPROM, Perinatal, Morbidity, Mortality.

Submission:
November 28th, 2020
Review:
December 7th, 2020
Publish:
July 25th, 2021

ABSTRACT

Background: Preterm Prelabour Rupture of Membranes (PPROM) is one of the causes of perinatal morbidity and mortality. **Objective:** To find out the characteristic of PPROM in Dr. Soetomo Hospital in September 2018 to September 2019**. Method:** A Retrospective Descriptive Study. The data came from the medical records of patients with PPROM who were included in the inclusion criteria. The exclusion criteria is all PPROM cases at Gestational age > 34 weeks. **Result:** The incidence of PPROM during September 2017 to September 2019 was 6.8% (175 patients), of which 152 patients included NBC cases and 23 patients with BC cases. Primipara 76 patients and Multipara 99 patients. For gestational age <26 weeks it was 17.1%, 26-30 weeks 29.7% and 31-34 weeks 53.1%. In this study, PPROM was amused 23.6%, underweight 3.1%, HBsAg 7.5%, HIV 7%, anemia 10.3%, Obesity 5.2%, Pragestational Diabetes 7.4%, Gestational Diabetes. 2,6%, preeclampsia 7,9% and severe preeclampsia 2,2%. The distribution of PPROM patients who received lung maturation was 72%, while the remaining 28% did not get lung maturation. Type of delivery for PPROM cases was vaginal delivery as much as 60% while 40% for cesarean section. Indications for vaginal delivery include fetal distress 25%, abnormal NST 18%, gemeli 17%, BSC 12%, febris 10%, pulmonary edema 5% and breech presentation 5%. The outcome distribution of PPROM infants born with asphyxia at birth was 87%. Weight of babies born with PPROM> 2500 g 4%, 1000-2500 g 73% and <1000 g 23%. The condition of the babies at birth with spontaneous breathing was 36 babies, nasal O2 was 13 babies and CPAP was 70 babies. The causes of death for preterm KPP babies included RDS 9 babies, Sepsis 4 babies and severe asphyxia 19 babies. The length of NICU care for infants who died with KPP Preterm mothers was <24 hours for 15 babies, 1-3 days 13 babies, 4-7 days 3 babies,> 7 days 3 babies and 5 fetuses were IUFD. 12 patients with PPROM received amnioinfusion while 5 patients with amniopatch, Outcome of infants from conservative PPROM who were treated with amniopatch or amnioinfusion obtained 6 babies died at birth, 8 babies with CPAP breath support, 1 baby with PCV breath support, 1 baby with ventilator and 1 infant spontaneously breathed. A total of 3 babies were outpatient after treatment for a maximum of ± 25 days. **Conclusion:** Perinatal care is currently experiencing some rapid progress, but the case of PPROM is still one of the biggest contributors to perinatal morbidity and mortality.

Introduction

Preterm Prelabour Rupture of Membranes (PPROM) is a rupture of the amniotic membrane at <37 weeks of gestation (Shailja, 2020). The incidence of PPROM occurs in 3-8% of pregnancies (Okeke, 2014) and in about 20% of the causes of preterm labor. This can lead to

significant perinatal morbidity. PPROM with gestational age less than 34 weeks can be considered to have a conservative therapy. Indication for PPROM's termination is at <34 weeks of gestational age. However, if there is an emergency in the fetus, chorioamnionitis, preterm in labor or when the gestational age can exceed >34 weeks. (Medina, 2006). There are 3 divided risk factor due to the etiology of the PPROM which are maternal risk factor (such as History of Previous PPROM, Anemia, BMI <20 kg/m2 nutritional deficiencies, low socioeconomic status, too young to get pregnant or U> 35 years, smoke, collagen vascular disorders (ex.SLE)), infant risk factor (such as multiple pregnancy anomalies (malformations, aneuploidies)) and uteroplacental risk factor (for example anomalies in the uterus (uterine septum), placental abruption, history of cervical conization, infection (ex: chorioamnionitis) (Cunningham, 2014).

Purpose

General Purpose

Describe the characteristics of pregnant patients who experience conservative PPROM (gestational age <34 weeks) in Dr. Soetomo Hospital for period September 2017 to September 2019.

Specific Purpose

Describes pregnant women with PPROM receiving conservative therapy and the output of infant from September 2017 to September 2019. Trying to find PPROM with gestational age <34 weeks under conservative therapy can reach until > 34 weeks of gestational age.

Benefit

Providing information about the characteristics of pregnancy with PPROM (<34 weeks of gestational age) to patients who visited during the period September 2017 to September 2019 at Dr. Soetomo Hospital in Surabaya

This research can be used as a reference to improve the quality of maternal services for the management of pregnancy with PPROM

Methods

A Retrospective Descriptive Study

- Using Delivery ward's register book, Medical Records and Morning Report's file for period September 2017 to September 2019

Inclusion Criteria

All cases of PPROM (<34 weeks of gestational age) that occurred at Dr. Soetomo Hospital in Surabaya from September 2017 to September 2019

Exclusion Criteria

All cases of PPROM at >34 weeks of gestational age.

Result

Table 1. Incidence of PPROM Dr. Soetomo Hospital in September 2017 to September 2019

Characteristic	Total	%
2018	93	3,6%
2019	82	3,2%

Table 2. Distribution of KPP Preterm patients at RSUD Dr. Soetomo based on the type of reference for the period September 2017 to September 2019

Referral Type	Total	%
NBC	152	86,9%
BC	23	13,1%

Table 3. Distribution of PPROM patients at Dr. Soetomo Hospital based on age from September 2017 to September 2019

Age	Total	%
Year 2018		
<20 th	9	1,5%
21-35 th	64	10,6%
>35 th	20	3,32%
Year 2019		

<20 th	11	2,11%
21-35 th	59	11,3%
>35 th	12	2,3%

Table 4. Distribution of PPROM patients at Dr. Soetomo Hospital based on parity for the period September 2017 to September 2019

Paritas	Total	%	Preterm Cases/2 years
Primipara	76	43%	9,28%
Multipara	99	57%	5,06%

Table 5. Distribution of PPROM patients at Dr. Soetomo Hospital based on the gestational age when rupture of membrane first occurred for the period September 2017 to September 2019

PPROM occur	Total	%
<26 week	30	17,1%
26-30 week	52	29,7%
31-34 week	93	53,1%

Table 6. Distribution of PPROM patients at RSUD Dr. Soetomo who received Lung Maturation from September 2017 to September 2019

Lung Maturation	Total	%
	126	72%

Table 7. Distribution of patients with PPROM Dr. Soetomo Hospital based on risk factors for PPROM from September 2017 to September 2019

Risk Factor	Total	% from preterm cases/2 years
Gemeli	17	23,6 %
Underweight	1	3,1%
HbsAg	6	7,5%
HIV	4	7%
Anemia	46	10,3%
Obesity	40	5,2%
Pragestasional Diabetes	4	7,4%
Gestasional Diabetes	2	2,6%
Preeklampsia	10	7,9%
Severe Preeklampsia	16	2,2%

Table 8. Distribution of PPROM patients at Dr. Soetomo Hospital who received Conservative treatment from September 2017 to September 2019

Conservative	Total	%
Amniopatch	5	26%
Amnioinfusi	14	74%

Table 9. Distribution of conservative PPROM patients with Amnioinfusion Dr. Soetomo in September 2017 to September 2019

No	Name	Parity	Gestational Age	Baby gender	Birth Weight	Apgar score	Breathing
1.	LIS	Primi	24/25 week	P	630 g	3-5	CPAP
2.	WIN	Primi	24/25 week	L	550 g	0	Died
3.	TIK	Gravida 2	26/27 week	L	800 g	1-3-5	Died
4.	SIH	Primi	27/28 week	L	1300 g	1-0	Died
5.	WAH	Gravida 2	24/25 week	L	600 g	3-5-7	CPAP
6.	PUT	Primi	23/24 week	L/L	540g /500g	1-0/0	Died
7.	LIS	Primi	28 week	L	950 g	1-1-3-5	PCV
8.	HIL	Primi	21/22 week	Hard to tio evaluate	500 g	1-1-0	
9.	RAF	Gravida 2	29/30 week	P	1200 g	5-6	CPAP
10.	DIA	Gravida 4	24/25 week	L	950 g	1-1-3	Ventilator
11.	RAK	Primi	31/32 week	P	1000 g	7-8	CPAP
12.	DEL	Gravida 3	30/31 week	P	1390 g	5-7	CPAP

Table 10. Distribution of conservative PPROM patients with Amniopatch Dr. Soetomo Hospital in September 2017 to September 2019

No	Name	Parity	Gestational Age	Baby Gender	Birth Weight	Apgar Score	Breathing
1.	EKA	Gravida 4	33/34 week	P	2000 g	5-6	Spontaneous
2.	DIP	Primi	27/28 week	P	1300 g	5-7	CPAP
3.	DEV	Primi	30/31 week	L	1500 g	6-7	CPAP
4.	TKW	Gravida 4	23/24 week	L	500 g	0	Died
5.	FIR	Gravida 3	30/31 week	L	1000 g	5-7	CPAP

Table 11. Distribution of Mode of Delivery for Patients with PPROM Dr. Soetomo Hospital in September 2017 to September 2019

Mode of Delivery	Total	%
Vaginal Delivery	92	61%
Cesarean Section	60	39%

Table 12. Distribution of Caesarean Section Indication in Patients with PPROM Dr. Soetomo Hospital in September 2017 to September 2019

CS Indication	Total	%
Fetal Distress	15	25 %
Abnormal NST	11	18 %
Gemeli	10	17 %
BSC	7	12 %
Fever	6	10 %
Breech presentation	3	5 %
Severe Preeclampsia & Lung Oedema	3	5 %
	5	8 %

Table 13. Baby Outcomes from PPROM at birth Dr. Soetomo in September 2017 to September 2019

Outcome baby	Total	%
Asfiksia (+)	90	87 %
Asfiksia (-)	14	13 %

Table 14. Distribution of baby outcomes from PPROM based on Birth Weight at Dr. Soetomo Hospital in September 2017 to September 2019

Birth Weight	Total	%
>2500 g	6	4 %
1000-2500 g	110	73 %
<1000 g	34	23 %

Table 15. Distribution on the Breathing Aid of PPROM's baby at birth in September 2017 to September 2019

Breathing Aid	Jumlah
Spontaneous	36
O2 nasal	13
CPAP	70
Ventilator	8
Death	38

Table 16. Distribution the causes of infant mortality in PPROM Patients in September 2017 to September 2019

Causes of death	total	%
IUFD	5	13 %
RDS	9	24 %
Sepsis	4	11 %
Low Birth Weight	1	3 %
Severe Asfiksia	19	50 %

Table 17. Distribution the length of day in NICU among infants who died Dr. Soetomo Hospital in September 2017 to September 2019

The Length of Day in NICU	Total	%
< 24 hours	14	37 %
1-3 Day	13	34 %
4-7 Day	3	8 %
>7 Day	3	8 %

Table 18. Distribution of Survival babies receiving Amniopatch / Amniosynthesis Treatment for PPROM in September 2017 to September 2019

No	Name	Gestational Age	Conservative Treatment	Birth Weight/ Apgar Score	Diagnosis	Length of Stay in NICU
1.	EKA	33/34 week	Amniopatch	2000g/AS 5-6	Bacterial Sepsis	7 hari
2.	DEV	33/34 week	Amniopatch	1500g/AS 5-7	BBLR, Bacterial Sepsis	22 hari
3.	DEL	30/31 week	Amnioinfusi	1390/AS 5-7	Anemia,Trombositopenia, BBLR	25 hari

Discussion

The sample in this study was dominated by mothers in reproductive age, mostly the age of 21-35 years from September 2017 to September 2019. The results of this study are in accordance with research conducted by Tengku et al which stated that the case of PPROM in Prof. Dr. R. D. Kandou Menado in 2018 mostly aged 20-35 years. This is supported by another study conducted in India by Mohan et al, which states that most cases are in the 20-30th age of mothers. (Mohan *et al.*, 2017)

The number of PPROM patients with gestational age <34 weeks from September 2017 to September 2019 were 175 patients, where NBC cases were 86.9% and BC cases were 13.1%. These results are consistent with the research conducted by Khade et al in India where Non Booked Cases were bigger than Booked Cases. This is due to inadequate Antenatal care which results in a lack of identification of risk factors in early pregnancy.

In the PPROM cases from September 2017 to September 2019, there were more patients with multiparous (99 patients) than mothers with primiparous (76 patients). The study conducted by Khade et al showed the same result, mostly multiparous (52%) were higher than primiparous (48%). The incidence of PPROM was found in many multiparous mothers because frequent pregnancies can affect embryogenesis so that the formed amniotic membrane will be thinner and prone to rupture, and amniotic infection is easier to occur due to damage to the cervical structure in previous deliveries. Distribution of PPROM patients with Gemeli pregnancy for the period of September 2017 to September 2019, there were 17 patients, which if calculated as a whole with the number of preterm deliveries, 23.6% of preterm deliveries were obtained. Whereas in the case of PPROM with underweight mothers, there was only 1 patient during a 2 year period. There were 6 patients with HBsAg and 4 patients with HIV. The results showed that a total of 7% of HIV patients with preterm KPP. This is consistent with a study conducted by Chidebere *et al* in KwaZulu-Natal, South Africa, which found that the incidence of preterm KPP was not high in patients with HIV (Chidebere, 2017).

PPROM before 26 weeks can delay lung development and can cause pulmonary hypoplasia (Van Teeffelen, 2014). Pulmonary hypoplasia is a term to describe an altered pulmonary development characterised by a reduction in the number of pulmonary alveoli or in bronchial branching. In fetal lung development a critical interval, the canalicular phase, exists between 16 and 28 weeks gestation. Gestational age at rupture of membranes has been shown to be inversely related to the risk of pulmonary hypoplasia. (Porat *et al.*, 2012). In this study, the distribution of PPROM patients who received lung maturation for preventing pulmonary hypoplasia was 72%, while the remaining 28% did not get lung maturation.

Type of delivery for PPROM cases was vaginal delivery as much as 60% while 40% for cesarean section. Indications for vaginal delivery include fetal distress 25%, abnormal NST 18%, gemeli 17%, BSC 12%, febris 10%, pulmonary edema 5% and breech presentation 5%. The outcome distribution of PPROM infants born with asphyxia at birth was 87%. Weight of babies born with PPROM> 2500 g 4%, 1000-2500 g 73% and <1000 g 23%. The condition of the babies at birth with spontaneous breathing was 36 babies, nasal O2 was 13 babies and CPAP was 70 babies. The causes of death for preterm KPP babies

included RDS 9 babies, Sepsis 4 babies and severe asphyxia 19 babies.

The length of NICU care for infants who died with KPP Preterm mothers was <24 hours for 15 babies, 1-3 days 13 babies, 4-7 days 3 babies,> 7 days 3 babies and 5 fetuses were IUFD. Amnioinfusion might improve fetal outcome by preventing pulmonary hypoplasia (Hofmeyr, 2014), by preventing neurological complications, increasing time to delivery interval, and improving fetal biophysical profile through prevention of umbilical cord compression. It also might prevent fetal deformity (Porat *et al.*, 2012). 12 patients with PPROM in this study received amnioinfusion while 5 patients with amniopatch, The outcome of infants from this conservative PPROM who were treated with amniopatch or amnioinfusion obtained 6 babies died at birth, 8 babies with CPAP breath support, 1 baby with PCV breath support, 1 baby with ventilator and 1 infant spontaneously breathed. A total of 3 babies were outpatient after treatment for a maximum of ± 25 days.

Conclusion

Premature infant puts immense burden on the economy and health care resources of the country. Therefore, management of PPROM requires accurate diagnosis and evaluation of the risk factors and benefits of continued pregnancy or expeditious delivery.

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