Research Article

Profile of Pregnant Women who Underwent Cesarean Section and their Perinatal Outcome at a Tertiary Referral Hospital

Profil Ibu Hamil dengan Indikasi Operasi Caesar dan Luaran Perinatal di Rumah Sakit Rujukan Tersier

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Abstract

Objective: To investigate the effectiveness of referral system, in regard to pregnant women with indication of C-section, and to learn the patients' profile and their baby's perinatal outcome.

Methods: The research uses a retrospective descriptive method utilizing patient medical records with history of C-section at RSCM from January 2016 to December 2019. The target population is all pregnant women who were referred and performed cesarean section to at the hospital.

Result: The most indications of C-section were premature membrane ruptures (16.1%), fetal distress (14.5%) and previous C-section (14.1%). There were 1585 cases (41.9%) coming without referral, 779 cases (20.6%) were bookcase, and 806 (21.3%) non-bookcase without referral. The main reasons for referral were absence of NICU facilities (27.31%), premature membranes rupture (20.81%), and eclampsia/preeclampsia/HELLP syndrome (15.40%). Most babies are born with normal weight (2500-3999 grams) as many as 45.1% and 54.9% are groups of babies with abnormal weight. Most babies have an APGAR score 5 minute of 7-10 (83.6%). As many as 47.8% rooming in and infants requiring perinatological care in both SCN and NICU are 52.1%.

Conclusions: The study found that the effectiveness of RSCM tiered referral system still has much room for improvements. The study also found gap between number of referred cases and the cases eventually underwent for C-section with the same indication. The screening can be done better for an indication of the origin of the reference whether it is appropriate to do the reference or not.

Keywords: cesarean section, perinatal outcome, pregnant women, referral system.

Abstrak

Tujuan: *Untuk mengetahui efektivitas sistem rujukan pada ibu hamil dengan indikasi seksio sesarea, serta mengetahui profil pasien dan hasil perinatal bayinya.*

Metode: *Studi ini menggunakan metode deskriptif retrospektif dengan memanfaatkan rekam medis pasien riwayat seksio sesarea di RSCM dari Januari 2016 sampai Desember 2019. Populasi sasaran adalah semua ibu hamil yang dirujuk dan dilakukan seksio sesarea di RSCM.*

Hasil: *Indikasi seksio sesarea terbanyak adalah ketuban pecah dini (16,1%), gawat janin (14,5%), dan riwayat seksio sesarea sebelumnya (14,1%). Ada 1.585 kasus (41,9%) yang datang tanpa rujukan, 779 (20,6%) bookcase, dan 806 (21,3%) non-bookcase tanpa rujukan. Alasan utama rujukan adalah tidak adanya fasilitas NICU (27,31%), ketuban pecah dini (20,81%), dan eklamsia/preeklamsia/sindrom HELLP (15,40%). Sebagian besar bayi lahir dengan berat badan normal (2500-3999 gram) sebanyak 45,1% dan 54,9% merupakan kelompok bayi dengan berat badan tidak normal. Sebagian besar bayi memiliki skor APGAR 5 menit 7-10 (83,6%). Sebanyak 47,8% rawat inap dan bayi yang membutuhkan perawatan perinatologi baik di SCN maupun NICU sebanyak 52,1%.*

Kesimpulan: *Studi ini menemukan bahwa efektivitas sistem rujukan berjenjang RSCM masih memiliki banyak ruang untuk perbaikan. Studi ini juga menemukan kesenjangan antara jumlah kasus yang dirujuk dan kasus yang akhirnya menjalani seksio sesarea dengan indikasi yang sama. Penapisan dapat dilakukan lebih baik untuk indikasi asal rujukan apakah layak dilakukan rujukan atau tidak.*

Kata kunci: *ibu hamil, luaran perinatal, seksio sesarea, sistem rujukan.*

INTRODUCTION

Indonesia's National Health Insurance (JKN) is a part of the National Social Security System (SJSN) organized by the Health Social Security Organizing Agency (BPJS) through a social health insurance mechanism. The implementation of the referral system in Indonesia has been arranged in a tiered form, that is, the first, second and third level health services, where the implementation is highly interconnected. If the primary health service is unable to perform primary-level medical treatment, then it refers the responsibility to the level of service above it, and so on.

Dr. Cipto Mangunkusumo National Center General Hospital is a national referral hospital and the main clinical training center of the Faculty of Medicine, Universitas Indonesia. As a national referral hospital, it provides tertiary services and serves complex cases, which cannot be carried out by lower level hospitals. But in practice, it also helped to serves cases that should be done at lower level hospitals. This situation makes the tiered referral system not running effectively as mandated in the National Social Security System (SJSN) by the Social Security Organizing Agency (BPJS) and Indonesian Healthy Ministry Regulation (Permenkes) Number 1 of 2012.

In this study, the researchers would like to see a whole picture of the profile of pregnant women with an indication of cesarean section in the Dr. Cipto Mangunkusumo tertiary referral hospital. The researchers also want to find out whether the tiered referral system to tertiary hospitals is running well, where cases that could have been done at the primary and secondary service levels were not done at the tertiary service level to improve the efficiency of BPJS standard tariff (INA CBG) rates.

METHODS

The research uses a non-analytic retrospective descriptive method with the main objective of getting a picture or description of a situation retrospectively. It makes use of secondary patients' data derived from patient medical records with history of cesarean section at Dr. Cipto Mangunkusumo Hospital as a tertiary hospital. Cesarean section surgery performed covers both elective and cito. Records were taken from January 2016 to December 2019. The study was conducted at the RSCM as a tertiary referral hospital for obstetric cases with all the complications that required subspecialist expertise. The target population in this study were all pregnant women who were referred and performed cesarean section to at Dr. Cipto Mangunkusumo General Hospital. The reachable population is mothers who performed cesarean section at Dr. Cipto Mangunkusumo General Hospital between January 2016 and December 2019. The study used consecutive sampling method where the study sample is a reachable population that meets the criteria of acceptance and rejection.

RESULTS

From 2016-2019, there were 3785 cesarean section being performed. In 2016 there were 1070 patients, in 2017 there were 1042 patients, in 2018 there were 817 patients, and in 2019 there were 856 patients. The age distribution of patients has a mean of 30 SD ± 6.2. Based on obstetric history, gravida has a median of 2, and maternal parity has a median of 1 range 0-10. While abortion has a median of 0 range 0-10.

Based on the patient origin, most of the cases were patients coming with a referral as many as 2200 patients (58.1%). A total of 783 patients (20.7%) were referred from Primary Health Facilities, 473 patients (12.5%) were referred from type B hospitals, 528 patients (13.9%) were referred from type C hospitals, as many as 326 patients (8.6%) were referred from type D hospitals, and 90 patients (2.4%) were referred patients of type A hospitals / internal referrals. There were 1585 cases (41.9%) coming without referral, 779 cases (20.6%) were bookcase, 806 cases (21.3%) non book case without referral.

Table 1. Patient Distribution based on Referral

Referral	Frequency	Percentage (%)
With Referral	2200	58.1
Primary Health Facilities	783	20.7
Hospital Type D	326	8.6
Hospital Type C	528	13.9
Hospital Type B	473	12.5
Hospital Type A/Internal Referral	90	2.4
Without Referral	1585	41.9
Bookcase	779	20.6
Non Book Case	806	21.3
Total	3785	100

Based on gestational age, there is a postterm condition (≥ 42 weeks) in 9 patients (0.2%), term (37– <42 weeks) in 1685 patients (44.5%), preterm (32 - <37 weeks) in 1425 patients (37.6%). very

preterm (28 - <32 weeks) in 487 patients (12.9%) and extreme preterm in 179 patients (4.8%).

From 2016 to 2019, there were 1255 (33.1%) of primigravida patients underwent caesarean section and the remaining multigravida patients formed 2530 (66.9%). Based on cesarean section indications, premature rupture of membranes occupies the highest position with 611(16.1%) followed by fetal distress totaling 547 patients (14.5%). Other indications are Previous C-Section 535 (14.1%), eclampsia / preeclampsia / HELLP syndrome 471 patients (12.4%), Placenta Previa 248 Patients (6.6%). Malpresentation 247 patients (6.5%), Intrauterine Infection 218 patients (5.8%). Failed labor induction 194 patients (5.1%), dystocia / macrosomia / CPD 183 patients (4.8%), maternal medical disease 117 patients (3.1%), pulmonary edema 79 patients (2.1%), congenital abnormalities 61 patients (1.6%), HIV 52 patients (1.4%), solusio / Abruptio placenta 52 patients (1.4%), multiple pregnancy 47 patients (1.2%), placenta accreta spectrum 41 patients (1.1%), premature 21 patients (0.6%), and other indications 61 patients (1.6%).

Table 2. Indication for Caesarean Section Year 2016-2019 (n=3785)

Indication	Frequency	Percentage (%)
Premature rupture of membranes	611	16.1
Fetal distress	547	14.5
Previous C-Section	535	14.1
Eclampsia / Preeclampsia / HELLP syndrome	471	12.4
Placenta previa	248	6.6
Malpresentation	247	6.5
Intrauterine infection	218	5.8
Failed labor induction	194	5.1
Dystocia / macrosomia / CPD	183	4.8
Maternal medical illness	117	3.1
Pulmonary edema	79	2.1
Congenital abnormalities	61	1.6
HIV	52	1.4
Solusio / Abruptio Placenta	52	1.4
Multiple pregnancies	47	1.2
Placenta accreta spectrum	41	1.1
Premature	21	0.6
ETC	61	1.6
Total	3785	100

The absence of NICU is the main reason patients were referred to the RSCM as many as 601 patients (27.31%). The second most common reason is premature rupture of membranes in 458 patients (20.81 %). Other reasons are eclampsia / preeclampsia / HELLP syndrome in 339 patients (15.40%), maternal medical illness in 163 patients (7.41%), fetal distress in 103 patients (4.68%), previous C-section in 99 patients (4.50%), preterm labor 91 patients (4.14%), placenta spectrum accrete 53 patients (2.41%), congenital abnormalities 52 patients (2.36%), malpresentation 44 patients (2.0%), dystocia / macrosomia / CPD in 30 patients (1.36%), HIV 21 patients (0.95%), to multiple pregnancies 20 patients (0.91%), pulmonary edema 16 patients (0.73%), solusio placenta 12(0.55%), non-availability of obgyn on 5 cases (0.23%), antepartum hemorrhage 4 patients (0.18%), intrauterine infection in 1 patients (0.05%), and other cases 88 patients (4.00%). Out of cases were referred to RSCM as the main reason absence of NICU only 101 (16.8%) really required NICU while 279 cases were treated at SCN.

Table 3. Patient Distribution based on Referral Indication (n=2200)

Indication	Frequency	Percentage (%)
There is no NICU	601	27.31
Premature rupture of membranes	458	20.81
Eclampsia / Preeclampsia / HELLP syndrome	339	15.40
Maternal medical illness	163	7.41
Fetal distress	103	4.68
Previous C-section	99	4.50
Preterm labor	91	4.14
Placenta accreta spectrum	53	2.41
Congenital abnormalities	52	2.36
Malpresentation	44	2.00
Dystocia / macrosomia / CPD	30	1.36
HIV	21	0.95
Multiple pregnancies	20	0.91
Pulmonary edema	16	0.73
Solutio Placenta	12	0.55
Non-availability of obgyn	5	0.23
Antepartum hemorrhage	4	0.18
Intrauterine infection	1	0.05
Others	88	4.00
Total	2200	100

A total of 3436 (90.78%) patients were treated in the ward, 346 (9.14%) patients were treated in the HCU / ICU room, and 3 (0.08%) patients died. Most of the cesarean section took place without complexity namely 3602 (95.2%) and with complexity 183 (4.8%). A total of 80(2.1%) patients had complexity in the form of placenta accreta, 60 (1.6%) uterine atony patients, 6 (0.2%) uterine myoma patients, 4 (0.1%) hematoma patients, and other complexity 33 (0.9%) patients.

There are 3597 single pregnancy, 179 twin pregnancies, and 9 Triplet pregnancies. In total there are 3982 babies, with 3597 single

pregnancy babies, with addition 358 babies from twin pregnancies and 27 babies from triplet pregnancies. Most of the babies were born with normal weight (2500-3999 grams) as many as 1794 (45.1%). There were 1482(37.2%) patients giving birth to babies with low birth weight (1500-2499 grams), 401(10.1%) patients giving birth to babies with very low birth weight (1000-1999 grams), 221 (5.5 %) patients gave birth to infants with extreme low birth weight babies, and there were 84 (2.1%) patients gave birth to infants with birth weight macrosomia (≥ 4000 grams).

Assessment of infant using APGAR scores indicates that most infants born with a normal fifth minute APGAR score (7-10) were as many as 3327 (83.6%). There were 374 (9.4%) babies born with mild APGAR scores in the fifth minute of asphyxia (4-6). There were 167 (4.2%) babies born with a fifth minute APGAR score <4. A total of 114 (2.9%) babies still birth. There were 63 babies who died after resuscitation before entering the room care.

Most newborns were treated in the rooming in of 1875 (47.8%) and 1595 (40.6) treated at SCN. There were a small number of newborns treated at the NICU of infants 449 (11.5%).

DISCUSSION

The number of cesarean sections performed in RSCM shows a declining trend every year. The decrease in the number of cesarean sections each year may be due to the smaller number of referrals that come with the BPJS system as some patients are managed in the lower health facilities. The rate of cesarean section increases with increasing age of the mother, where nullipara pregnant women aged 35–39 years have a 2-fold risk of doing cesarean section.[1] From this study shows different results indicating cesarean sections that might not only be caused by maternal age and parity, but also due to maternal condition and fetal condition. This study also found that rate of cesarean section in primigravida was 1255 cases (33.1%) smaller than in multigravida. This is similar to other study in that found rate of cesarean section was higher in mutigravida (57%) than 43% in primigravida.[2]

As a referral hospital, if the referral system runs well and effective, RSCM will only accepts referrals from type B hospitals and type A hospital. However, this study found that most patients were referred from Primary Health Facilities. It also found 806 (21.3%) non bookcase

cases without referral came to RSCM. This shows that the referral system is not working well. In addition, it could also be due to many of Primary Health Facilities are located closer to RSCM than any of type D, type C, or type B hospitals. From previous research it was found that the referral center is a direct referral destination both from regional hospitals, community health centers, and private practice.[3] This is in line with research which states that the referral system has not been effective because the majority of patients are referred directly from the primary level to the hospital. This is caused by demographic conditions and indications of maternal referrals.[4]

In this study the absence of NICU is the main reason patients were referred to the RSCM as many as 601 patients (27.31%). The second most common reason is premature rupture of membranes in 458(20.81%). Other reasons are eclampsia / preeclampsia / HELLP syndrome in 339(15.40%). Out of 601 cases were referred to RSCM as the main reason absence of NICU only 101 (16.8%) really required NICU 279 cases were treated at SCN. This finding shows that referral to RSCM with NICU as the main reason might not really requires the facility. However, it might be due to NICU limited capacity at RSCM, pushing the cases to be treated at SCN or Level 2 perinatology, or the condition of baby which does not need any care unit.

The study also found discrepancy between referral indication and the indication of cesarean section. There were 20.81% of cases referred due to premature rupture of membrane but there were 16.1%cases of cesarean section with the same indication. Meanwhile referred cases due to preeclampsia/eclampsia/ HELLP were found on 15.40% of cases. However, there was only 12.4% cases of cesarean section performed with this indication. From this data the screening can be done better for an indication of the origin of the reference whether it is appropriate to do the reference or not.

The study shows that the most common indications for cesarean sections are premature rupture of membranes 16.1%, fetal distress 14.5%, and Previous C-section 535 (14.1%) In another study, indications of fetal distress shown a similiar percentage, which is 12.46%. and, Previous CS (10.25%).[5] Other studies in developing countries were conducted in Macedonia who stated the rate of cesarean section with indications in premature ruptured of amniotic membrane was 28% of the cases, other

indications are fetal distress, malpresentation, CPD, and failure of induction.[6] These conditions are in accordance with this study. Other Research at Hasan Sadikin Hospital in 2017 states that the incidence of PROM in Indonesia ranges from 4.5% to 7.6% of all pregnancies, and at Hasan Sadikin Hospital itself, the incidence of PROM is 13.9% of all deliveries.[7] The most common reason for PROM is ascending infection of the vagina and cervix. While the most frequent vaginal infections are bacterial vaginosis, while cervicitis is mostly caused by Chlamydia trachomatis.[8]

The second most common indication is fetal distress in line as the most indicative cesarean section.[6] In the United States, 1 in 3 women undergoing cesarean delivery in 2011. The most common indication for cesarean sections in the United States is dystocia at 34%, followed by fetal distress 23% and malpresentation 17%. Cesarean sections due to preeclampsia were performed only as much as 3% .[9] This shows that preeclampsia in developed countries is not much widespread. In contrast to Indonesia where hypertension in pregnancy, including preeclampsia, is one of the most common causes of maternal death.

In this research also found a number of babies with birth weight below normal (<2500 grams) were found to be high as many as (52.8%) This is because the referrals decision the need for perinatological care for the baby to be born. Unlike the birth data in England in 2018 where the most births having a birth weight range of 2500 - 3999 grams with a percentage of 52.1%.[10] This might be due to high number of babies born at less than 37 weeks' gestation at RSCM, which is one of the risk factors for babies born with low body weight.[11] The research obtained figures of 55.1% while in the UK only occurred in 7.9% of the population. It could also be due to poorer nutritional status and weight gain patterns in the mother during pregnancy, alcohol use and cigarette smoke exposure which are common in developing countries such as Indonesia.[11]

In this study, the highest 5-minute APGAR score was obtained in the population, which was 83.6% but it is lower than data obtained from studies in other developing countries, like Brazil, in 2011-2015 which found a rate of 99.56% in hospital births. However, the study in Brazil only included data from low risk births, with gestational times between 37 and 41 weeks, babies weighing 2,500-4,000 grams, maternal ages between 20-40 years, and the absence of congenital anomalies.[12] Similar to our study, in

Ethiopia also obtained a distribution of 88.5% for newborns with an APGAR score of more than 7.[13] The study also found that 12% of babies must be treated in the NICU room and 40.3% treated in SCN (level 2 perinatology). Different from other studies in California, United States in 2015 which found 12.3% of live births treated at the NICU and the rest were treated in the rooming in.[14]

CONCLUSIONS

The study found gap in number of referred cases and the cases eventually underwent for caesarean section with the same indication. The findings confirmed that the effectiveness of tiered referral system to the RSCM has much room for improvements. This data is important for the health facilities as a feedback for improving the referral system.

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