

RESEARCH ARTICLE

Clinical Characteristics, Laboratory, Maternal and Fetal Outcomes in Pregnancy with Covid-19 at RSUP dr. M. Djamil Padang

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Abstract

Introduction : The data obtained from various studies about covid-19 conducted in several hospitals in the world are currently considered not sufficient to provide a clinical picture that occurs in pregnancies with Covid-19 infection. The aims to provide an overview of the clinical, laboratory, maternal and fetal outcomes in pregnancy with Covid-19 infection at dr. M. Djamil Padang.

Methods: This study used a descriptive design with data collection starting from March 01, 2020 - March 31, 2021 based on medical record data. Carried out in a single center at RSUP dr. M. Djamil Padang in pregnant patients with confirmed Covid-19 by PCR examination.

Results: Total 136 pregnant patients confirmed Covid-19 by PCR examination. Most of the symptoms were asymptomatic (47.1%) and without any comorbidities (76.5%). There were 3 patients who experienced critical symptoms (2.2%). Maternal mortality was found at 2.3% and fetal death 4.7%. The values of d-dimer and NLR were found increasing significantly, 2025.35 ± 1392.18 for d-dimer and 6.39 ± 4.43 for NLR. Pregnancy terminations done for 77.9% patients with cesarean section is the most method (83%). There were 4 cases (3.8%) of babies infected with Covid-19 from mothers who had pregnancy terminations.

Conclusions: Most cases had asymptomatic clinical symptoms (47.1%). There are 2.3% cases of maternal death and 4.7% cases of fetal death. Most of the pregnancy terminations were performed by cesarean section (88%). On laboratory examination, there was a significant increase in maternal d-dimer ($2,025.35 \pm 1.392.18$) and NLR (6.39 ± 4.43) in pregnancies with Covid-19.

Keywords: Clinical Characteristics, Covid-19, Laboratory, Maternal, Fetal Outcomes

INTRODUCTION

From BNPB data on March 20, 2021, in Indonesia, Covid-19 cases were reported to have infected more than 1.4 million people with a death rate of more than 39,000 people spread across 34 provinces in Indonesia.^{1,2} The question in many medical circles, especially in the field of obstetrics, raises fear in the community is whether SARS-CoV-2 can be transmitted vertically from mother to fetus via intrauterine. The data obtained from various studies conducted in several hospitals in the world are currently considered not sufficient to provide a clinical picture that occurs in pregnancies with Covid-19 infection.^{3,4}

Method

This study used a descriptive design with a retrospective study, namely the research describing the characteristics of obstetric patients with Covid-19 infection at Dr. RSUP. M. Djamil Padang. Held at RSUP dr. M. Djamil Padang for a period of March 1st 2020 to March 31st 2021. Data collection starts from March 2020 – March 2021 through medical record data. Sampling was carried out by total sampling, namely taking all research samples that met the criteria. The sample of the study was all pregnant patients with confirmed Covid-19 who were being treated at RSUP dr. M. Djamil Padang. The sample criteria in this study were pregnant patients who were confirmed to have Covid-19 by means of a quantitative Reverse Transcriptase Polymerase Chain Reaction (qRT-PCR) laboratory examination, either previously done at the Puskesmas at 37 weeks of age according to the government program or based on a swab test at the hospital after being treated at the RSUP. dr. M. Djamil from March 1st 2020 to March 31st 2021, all of which were included as samples. The tools and materials used are medical records which include initial assessments, patient demographics, pregnancy conditions and all laboratory tests performed. Operational limitations in this study were pregnant women with confirmed Covid-19 who were treated at dr. M. Djamil. Data is presented in the form of a distribution based on maternal age (<20, 20-35, and > 35), gestational age (1st trimester, 2nd trimester, and 3rd trimester), maternal BMI (<18.5, 18.5-24.9, 25-29.9, and ≥30), parity (primipara, multipara, nulipara), maternal symptoms (asymptomatic, mild, moderate, severe, and critical), comorbidities (no comorbid, preeclampsia/eclampsia, obesity, asthma, and diabetes), laboratory features, maternal outcomes (alive, pass away, treatment, and delivery method), infant outcomes including the infant's COVID status. The gestational age in question is the gestational age when the patient is confirmed to have COVID-19 based on the PCR swab test and the baby's covid status based on the newborn swab test taken a maximum of 24 hours after birth at the hospital.

Result

A total of 136 pregnant patients were confirmed positive for Covid-19 using the RT-PCR method who were treated at dr. M. Djamil Padang obtained general characteristics of patients as listed in table 1 below.

Table 1. General Characteristics

Characteristics	(mean \pm SD)	
	N (136)	(%)
Age (years)	30.60\pm5.31	
<20	1	0.7
20-35	104	76.5
>35	31	22.8
Maternal BMI	22.98\pm2.65	
<18.5	6	4.4
18.5 – 24.9	101	74.3
25 – 29.9	26	19.1
\geq 30	3	2.2
Parity		
Primipara	45	33.1
Multipara	84	61.8
Nulipara	7	5.1
Gestational Age	34.01\pm7.73	
1st trimester	9	6.6
2nd trimester	36	26.5
3rd trimester	91	66.9

In general, patients had a mean age of 30.60 \pm 5.31 years and only 22.8% of patients were >35 years of age. The body mass index obtained an average of 22.98 \pm 2.65 where most of the patients were in the normal BMI range (18.5-24.9) which was 74.3%. Most of the patients were multiparous, that was 61.8% with an average gestational age of 34.01 \pm 7.73 weeks. This gestational age is in the third trimester, which is 66.9% and only 6.6% is included in the first trimester.

From table 2, maternal and comorbid symptoms found in pregnancy with Covid-19 at RSUP dr. M. Djamil. Most of the Covid-19 cases in pregnancy at dr. M. Djamil was an asymptomatic or asymptomatic case was 47.1%, 38.2% mild symptoms, 11% moderate symptoms, 1.5% severe symptoms and 2.2% critical symptoms. In addition, most of the patients had no comorbidities was 76.5%.

Table 2. Maternal Symptoms

Parameter	N	(%)
Degree of Clinical Symptoms		
Asymptomatic	64	47,1
Mild	52	38,2
Moderate	15	11,0
Severe	2	1,5
Critical	3	2,2
Comorbid		
No Comorbid	104	76,5
Preeclampsia/Eclampsia Obesity	19	14
Asthma	3	2,2
Diabetes	6	4,4
	4	2,9

In addition to clinical symptoms and maternal comorbidities, laboratory parameters were also examined which included routine hematological examinations and clinical chemistry as listed in table 3.

Table 3. Overview of Maternal Laboratories Confirmed by Covid-19

Parameter	Mean \pm SD	Nilai Normal*
Hematology		
Hemoglobin	11.5 \pm 1.46	9.5 – 15
Leukocytes	11,672,43 \pm 5,357.1	5,900 – 16,900
Hematocrit	34.04 \pm 4.07	28 – 40
Platelets	237,373.5 \pm 64,508.5	146,000 – 429,000
Count Type		
Basophils	0.00 \pm 0.0	0 – 0.1
Eosinophils	0.77 \pm 1.19	0 – 0.6
Stem Neutrophils	0.25 \pm 1.88	
Segment Neutrophils	76.40 \pm 9.1	3.9 – 13.1

Lymphocytes	16.11±7.1	1 – 3.6
Monocytes	6.51±3.3	0.1 – 1.4
Neutrophil/lymphocyte ratio (NLR)	6.39±4.43	<3.13
Clinical Chemistry		
Albumin	3.41±0.52	2.3 – 4.2
SGOT	24.92±33.88	4 – 32
SGPT	16.42±23.31	2 – 25
Ureum	14.92±7.10	3 – 11
Creatinine	0.89±1.95	0.4 – 0.9
RBG	94.85±37.69	<120
Sodium	137.76 ±3.13	130 – 148
Kalium	3.76±0.43	3.3 – 5.1
Chloride	107.12±2.81	97 – 109
PT	9.66±0.53	9.6 – 12.9
APTT	25.57±3.92	22.6 – 35
D-dimer	2,025.35±1,392.18	130-1,700

*William Obstetri, 25th Edition

From the laboratory parameters, it was found that there were significant changes in the values of NLR and d-dimer. There was an increase in the results of the examination on both parameters where the average NLR was 6.39±4.43 increased from the normal threshold. Likewise, the value of d-dimer has a significant increase where the average value is 2,025.35±1,392.18. 136 pregnant women who were confirmed to be Covid-19 at RSUP dr. M. Djamil Padang assessed maternal and infant outcomes. There were 3 cases of maternal death (2.3%). Most of the patients had been performed pregnancy termination, which was 77.9% and 19.9% had expectant procedures. The most preferred method of delivery was cesarean section, which was 88%. Maternal outcome data can be seen in table 4.

Table 4. Maternal Outcomes

Parameter	N	(%)
Alive	133	97.7
Pass away	3	2.3
Treatment		
Expectative	27	19.9
Pregnancy termination Curettage	106	77.9
	3	2.2
Delivery Method		
Vaginal Birth	18	17.0
Caesarean section	88	83.0

A total of 106 pregnancy termination procedures resulted in 5 cases of intrauterine infant mortality (4.7%). Most of the babies born were 80.2% of gestational age at term and 19.8% preterm. There were 4 cases of babies infected with Covid-19 (3.8%). The sex of the babies born was 51.9% male and 48.1% female. Babies have an average birth weight and birth length of $2,791.61 \pm 690.58$ grams and 46.73 ± 4.32 cm. APGAR scores at 1 and 5 minutes were obtained 6.63 ± 1.94 and 7.94 ± 1.98 , respectively. Outcomes of babies born briefly can be seen in table 5.

Table 5. Baby Outcomes

Parameter	Mean \pm SD	
	N (106)	(%)
Baby's Condition		
Alive	101	95.3
Pass Away (IUFD)	5	4.7
Gestasional age	36.74 \pm 3.37	
Preterm	21	19.8
Term	85	80.2
Covid Status		
Positive	4	3.8
Negative	102	96.2

Gender		
Boy	55	51.9
Girl	51	48.1
Birth Weight	2,791.61±690.58	
Birth Body Length	46.73±4.32	
APGAR score minute 1	6.63±1.94	
APGAR score minute 5	7.94±1.98	

DISCUSSION

A total of 136 pregnant patients with confirmed Covid-19 based on RT-PCR examination were collected and described based on various parameters. Demographic and clinical characteristics data (table 1) showed that most of the patients' ages were in the range of 20-35 years, i.e. n = 104 (76.5%) this is the recommended reproductive age. From the patient's body mass index before pregnancy, it was found that most patients were still classified as normal weight (BMI 18.5-24.9) as many as 101 people (74.3%) and only 26 patients (19.1%) were overweight. (BMI 25-30). Most cases occurred in the third trimester (66.9%) and had entered term gestational age. Most of the patients had no symptoms or were asymptomatic n=64 (47.1%) and only 3 patients experienced critical symptoms (2.2%). Most of the patients had no comorbidities (76.5%). The same thing was found in a study conducted by Bachani where most of the Covid-19 cases in pregnancy were asymptomatic or gave mild clinical symptoms.⁵ The same results are supported by a study conducted by Yang in which out of 114 pregnant patients with Covid-19 19 there were 2 patients without symptoms and 110 others (96.5%) showed mild symptoms and as many as 2 patients showed severe symptoms.^{6,7}

Ashraf and colleagues reported a high rate of cesarean delivery (CS) where out of 90 pregnancies with Covid-19, 81 patients were performed cesarean delivery and the rest were performed vaginally. Indications for delivery by caesarean section are indications of Covid-19 infection without any obstetric indications.⁸ The same thing was found in this study where from 106 deliveries carried out by caesarean section n = 88 (83%) and the remaining n = 18 (17%) were performed with vaginal birth. Indications for cesarean delivery are mostly due to COVID-19 infection and the rest are indications of a history of previous cesarean section, fetal distress and preeclampsia. At the beginning of the pandemic, there was no recommendation for a method of delivery for pregnancies with COVID-19, so most clinicians decided to do it by cesarean section because of the fear of the possible risk of transmission from mother to fetus at the time of delivery. Based on the recommendations and the latest clinical evidence regarding the risk of mother-to-child transmission that still cannot be proven, vaginal delivery is permissible. However, in emergency conditions where the mother's condition has severe respiratory symptoms, it is recommended to do a cesarean delivery.^{9,10}

The data obtained in this study obtained an average NLR value of 6.39 ± 4.43 which indicates a decrease in the lymphocyte value (lymphopenia). The same thing was reported in a study conducted by Ortiz and Zaigham.^{11,12} This is in line with the results of a study reported by Koc, which found a significant increase in the value of red cell distribution width (RDW), Neutrophil/Lymphocyte Ratio (NLR), and Monocyte/Lymphocyte Ratio (MLR).¹³

The results of the d-dimer examination showed an increase from the highest reference value according to the third trimester of pregnancy. The mean value of d-dimer obtained from this study was $2,025.35 \pm 1,392.18$ ($> 1,700$).¹⁴ Research conducted by Kadir and colleagues showed that the physiological d-dimer value increased during pregnancy. Some literatures have set a maximum threshold of d-dimer value in each trimester of pregnancy. An increase in the d-dimer value above the reference threshold indicates a coagulopathy process and can be used as a predictor of mortality, especially in non-pregnant Covid-19 patients.¹⁵

There were 3 cases of maternal death and from these 3 cases there was only 1 patient who had a comorbidity with type 2 diabetes mellitus.^{16,17} Clinically the patient had severe symptoms from the beginning of the patient's admission to the hospital which had led to ARDS (acute respiratory distress syndrome) with oxygen saturation below 90%. From the results of laboratory tests, it was found that there was a significant increase in d-dimer and NLR levels in the three patients who died.^{12,18} An increase in d-dimer levels above the maximum threshold in pregnancy is associated with an increase in coagulation conditions so that it also plays a role in aggravating the patient's condition.^{4,19} Maternal mortality is reported to range from 0-11% from various literatures and case reports. In this study, the maternal mortality rate was 2.3%. The presence of comorbid disease factors will exacerbate clinical symptoms which increasing maternal mortality.^{20,21}

A total of 4 babies born to mothers who were confirmed to have Covid-19 based on the results of RT-PCR were infected with Covid-19. The four babies were born by cesarean section with indications that the mother was infected with Covid-19. Babies of mothers infected with COVID-19 are not initiated early and admitted to hospital, so infected babies are in particular concern. The source of infection in babies born is still not certain. All infants who have confirmed COVID-19 are asymptomatic or asymptomatic. This requires further detailed study. Infants infected with COVID-19 from the delivery of mothers infected with COVID-19 from various studies have not been able to prove intrauterine vertical transmission.^{8,22}

SIMPULAN

Most of the pregnant women with Covid-19 who were treated at dr. M. Djamil starting from March 1st 2020 to March 31st 2021, has asymptomatic clinical symptoms to mild symptoms. Only a minority of cases have severe to critical symptoms. Fetal outcome showed good results. Most of the Covid-19 cases were carried out by caesarean section. From maternal laboratory parameters, it was found that the d-dimer and NLR values were clearly increased in pregnancies with Covid-19. Further research is needed to assess the long-term effects of Covid-19 infection on the mother and fetus, as well as the possibility of vertical transmission from mother to fetus.

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