Pregnancy and COVID-19 :
Policy and Strategy

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ABSTRACT
COVID-19 has led to a global emergency because of its infectivity to the general population, especially the vulnerable population, pregnant women. Changes in the immune system of pregnant women made them more vulnerable to developing adverse complications COVID-19. This study evaluates pregnant women with COVID-19 hospitalized in RS Universitas Mataram. We retrospectively collected the data from 89 pregnant patients who confirmed COVID-19 on RT-PCR between May and December 2020 in Universitas Mataram Hospital. The age range was 19-42 years, predominantly 26-30 years (33.7%). Most of the clinical manifestation was asymptomatic (77.04%), which projected an urgency to implement health protocol more disciplined manner. Most of them were in the 3rd trimester (85.39%). It may be related to the COVID-19 screening policy that required expecting mothers to be screened for COVID-19 before proceeding into any obstetric treatment and/or procedure. Several policies can be implemented to protect pregnant women who are a vulnerable group. Screening for COVID-19 can be carried out every trimester of pregnancy despite whether or not the symptom is present because pregnant women are more likely to be asymptomatic carriers. Therefore, early case findings can prevent massive transmission.

Keywords: *Pregnancy, Screening, Coronavirus, COVID-19*

1. INTRODUCTION

The unknown origin of pneumonia was first reported in December 2019 in Wuhan City, Hubei Province, China. After further investigations, the clinicians found the etiology of that high contagious pneumonia is novel beta coronavirus, SARS-CoV-2. Within a couple of months, infection of SARS-CoV-2 has led a global pandemic emergency with vary clinical manifestations from asymptomatic to symptomatic severe respiratory failure [1].

There were 2 type of coronavirus that causing severe respiratory illness in human and emerging the outbreak: the Severe Respiratory Syndrome Coronavirus (SARS-CoV) and the Middle East Respiratory Syndrome Coronavirus (MERS-CoV). SARS-CoV-2 was identified as the third coronavirus that can lead severe respiratory illness. In a short period, SARS-CoV-2 has caused higher morbidity and mortality than were reported for MERS and SARS [2].

Pregnant women are vulnerable to develop adverse complications from respiratory vital infection due to immunological adaptations [3]. Unique immunological adaptations occur in three stages in pregnancy: 1st trimester, proinflammatory state that ensures adequate trophoblastic invasion without recognition of the paternal antigen; 2nd trimester, anti-inflammatory state that ensures adequate fetal growth; and 3rd trimester, shifting to proinflammatory state for delivery. This equilibrium can be disturbed by viral infection, leading further maternal and fetal complications [4].

The purpose of this study to evaluate pregnant women with Covid-19 who are hospitalized in maternal referral hospital. This study also provides information about clinical characteristics of pregnant women with Covid-19.

2. MATERIAL AND METHODS

This is a descriptive study of pregnant women with Covid-19 in Mataram University Hospital (West Nusa Tenggara, Indonesia). The diagnosis confirmation of Covid-19 was based on reserve transcription-polymerase chain reaction (RT-PCR). The data was collected from medical records from pregnant women that admitted to Mataram University Hospital from May until December 2020.

3. RESULTS

There were 89 cases of Covid-19 in pregnant women that admitted in Mataram University Hospital during research period. The clinical characteristic of pregnant women shows in table 1. The range of women ages are 19 to 42 years, and the majority are 26-30 years (33.7%). Patients with multigravida (68.53%) are dominated than primigravida (40.57%). Most cases are 3rd trimester (85.39%). However, most cases are asymptomatic (77.04%).

Table 1 Characteristics of pregnant women with COVID-19

Variabel	Total	
	n	%
Age		
16-20	9	10.11%
21-25	14	15.73%
26-30	30	33.70%
31-35	18	20.22%
36-40	12	13.48%
41-45	6	6.74%
Parity		
Primigravida	28	40.57%
Multigravida	61	68.53%
Gestational age		
Trimester-1	6	6.74%
Trimester-2	7	14.60%
Trimester-3	76	85.39%
Clinical manifestation		
Symptomatic	24	26.96%
Asymtomatic	65	73.04%

4. DISCUSSION

Maternal immune system is a complex state because it needs to protect mother from infections while creating immune tolerance for paternal antigens and trophoblast. Changes of cardiorespiratory and immune systems during pregnancy increase a woman's vulnerability and susceptibility to infection and hypoxia, but may also delay diagnosis and disease control in pregnant women with only innocuous upper respiratory tract symptoms such as sore throat and nasal congestion [5]. Pregnancy is also hypercoagulable state that characterized with increase of intravascular inflammation and higher levels of circulating coagulation and fibrinolytic factors, such as plasmin. These may explain that pregnant women have higher risk of thromboembolic events with associated mortality that nonpregnant women [6].

A study by Zigham et al reported the most presenting symptoms were fever (68%), following by cough (34%), malaise (13%), dyspnea (12%), and diarrhea (6%). This presentation seems to be similar with nonpregnant patients. In this study, we found most pregnant women with Covid-19 were asymptomatic (73.04%). This was certainly similar with the result study by Wiyati et al, most patients were asymptomatic (54.3%) [7]; but slightly different with the result study by Santhosh et al, they identified 27% patients were asymptomatic, 57% had mild illness, 6,7% had moderate illness, and 1,7% had critically ill [8]. A study was conducted by Santhosh et al. in tertiary hospital, that was a COVID-19 referral centre hospital. Study by Santhosh et al was conducted in a hospital which accepted many symptomatic patients than asymptomatic patients [8]. It must become our attention that we must implement health protocols to prevent transmission because people without symptoms have the potential to transmit the virus to other person [9].

The reasons of why pregnant women with Covid-19 have better clinical outcome than other population is remain unclear. Some potential answers might be explained. During pregnancy, immunologic changes of pregnancy may suppress virus virulence, interfere virus pathophysiology by modulating expression of ACE-2 receptor, and produce extra steroid hormone for interfering the fat content of virus envelope to prevent severe lung injury [10].

In this study, we found the majority of the pregnant women suffers from Covid-19 in 3rd trimester of pregnancy (85.39%). This result study is similar to other study from Saimin et al, they identified most of pregnant women suffers from Covid-19 at 3rd trimester (87.8%) [10]. Most of pregnant women who come to hospital because of obstetric complaints, example giving birth or with complications in her pregnancy. Before getting treatment at the hospital, patients are screened for Covid-19. Because most pregnant women are asymptomatic, many of them are diagnosed with Covid-19 at the time of delivery. It is not yet certain whether the pregnant woman got this infection before delivery or before it, because the majority of the RT-PCR examinations were carried out before delivery.

Several policies can be implemented to protect pregnant women who are a high risk group, including their families and babies. The examination for Covid-19 screening can be carried out every trimester of pregnancy without waiting for symptoms because pregnant women are more asymptomatic. Early case finding can prevent massive transmission. Determining the status of covid in pregnant women before delivery can make it easier for clinicians to prepare facilities and infrastructure for pregnant women who are going to give a birth. Vaccination has been recommended by the Indonesian Society of Obstetrics and Gynaecology for high risk pregnant women can protect SARS-CoV-2 infection.

We must prevent the transmission of Covid-19 by carrying out the health protocols that have been promoted by the government policy with doing 6M (wearing masks, washing hands, physical distance, limiting mobility, avoiding crowds, avoiding eating together) is an obligation to break the chain of transmission of Covid-19.

5. CONCLUSION

Clinical manifestation in majority of pregnant women with Covid-19 are asymptomatic, with most patients in 3rd trimester gestational age. The reason of why pregnancy with Covid-19 have better clinical outcome is unclear. The unique immunologic changes of pregnancy may suppress virus virulence and prevent severe manifestation. Because of pregnant women are more asymptomatic, the Covid-19 screening can be carried out every trimester of pregnancy without waiting for symptoms. Early case finding can prevent massive transmission of COVID-19.

AUTHORS' CONTRIBUTIONS

Ario Danianto was responsible for the study design, planning data collection, and writing manuscript.

Putu Diah Ananda Putri Atmaja contributed to data collection, data management and writing manuscript.

Muhammad R Jumsa responsible for critical review of manuscript.

Intan Wahyu Lasiaprillianty contributed to manuscript writing and review manuscript.

Meilisva Audila Anggraini contributed to manuscript and publishing data.

All authors has agreed for final version of the manuscript.

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