



## **CASE REPORT : A 30-YEAR-OLD FEMALE IN THIRD TRIMESTER PREGNANCY WITH VARICELLA**

Ahmad Fikri Pulungan<sup>1</sup>, Wizar Putri Mellaratna<sup>2</sup>

<sup>1</sup>Faculty of Medicine, Malikussaleh University, Aceh, Indonesia

<sup>2</sup>Department of Dermatology and Venereology, Regional Public Hospital Cut Meutia, Aceh, Indonesia

\*Corresponding Author : E-mail: [ahmad.2006112014@mhs.unimal.ac.id](mailto:ahmad.2006112014@mhs.unimal.ac.id)

### **ABSTRACT**

**Background :** Varicella (chickenpox) is a common childhood disease, but if it develops during pregnancy, it can have serious and undesirable consequences, including congenital varicella syndrome, maternal VZV pneumonia, and neonatal varicella infection; this can lead to feto-maternal morbidity and mortality. Antiviral therapy and appropriate supportive care improve maternal and neonatal outcomes. This case report provides an overview of varicella-zoster virus infection during pregnancy. **Case Presentation:** We present a case. A 30-year-old woman in the third trimester of pregnancy came to the emergency department of Cut Meutia Hospital complaining of a very itchy vesicle on the face and all over the body. The patient also complained of fever, no appetite, itching in the throat, cough, and gastric complaint. **Conclusion:** The patient was diagnosed with varicella caused by varicella zoster virus and treated with acyclovir.

**Keywords:** chickenpox; infection; pregnancy; varicella

### **INTRODUCTION**

Varicella zoster virus (VZV) causes two clinically distinct diseases: varicella (chickenpox) upon initial infection and herpes zoster (shingles) upon viral reactivation during the latent period.<sup>1</sup> Chickenpox causes a rash that forms small, itchy blisters that form scabs. It usually begins on the chest and back, then spreads to the face, lasting 5 to 7 days with fever, fatigue, sore throat, and headache. Chickenpox is an airborne disease that spreads worldwide by coughing, sneezing, and contact with skin lesions. Varicella occurs in all countries and is responsible for the death of 7000 people annually.<sup>2</sup>

Chickenpox is usually mild, but it can turn out to be a serious condition if babies experience it under 12 months of age, teenagers, adults, pregnant women, and people with weakened immune systems.<sup>1</sup> Pregnant women exposed to varicella have a risk of severe complications, like pneumonia, which sometimes can cause death. Numerous studies have shown that pregnant women with varicella in the third trimester develop pneumonia more frequently and severely.<sup>3</sup>

Pregnant women exposed to varicella in the first trimester have a small risk of their babies having congenital varicella syndrome at birth. Congenital varicella syndrome in infants causes skin scarring, abnormalities in the extremities, the brain, and the

eyes, and low birth weight. If a pregnant woman is exposed to varicella zoster virus 2 to 5 days before giving birth, her baby is at risk of neonatal varicella.<sup>3</sup>

The disease is diagnosed based on symptoms and confirmed by PCR testing fluid from a blister or scab. Although reinfection with varicella can occur, this reinfection is usually asymptomatic and much milder than the primary infection.<sup>2</sup> Antivirals can be administered for the treatment of varicella in pregnant women. Acyclovir is one of the drugs from the antiviral class that can be given. Administration of acyclovir 24 to 72 hours after the appearance of skin lesions effectively reduces fetal-maternal mortality and morbidity associated with varicella-zoster virus infection.<sup>4</sup>

### **CASE REPORT**

A 30-year-old woman came to the emergency department at Cut Meutia Hospital, complaining vesicle that had been very itchy on her face and all over her body since a week ago. These vesicles were previously only erythema seven days ago, then became vesicles with erythematous bases the next day. When admitted to the hospital, some of the vesicles were already pustule. These vesicles start from the patient's stomach and then spread to the back, face, and legs. After the appearance of this lesion, the patient complained burn sensation.

Ahmad Fikri Pulungan, Wizar Putri Mellaratna

Patients denied pain from the vesicle. One day before the appearance of the vesicle, the patient had a fever and had no appetite. The characteristic of fever was persistent and not accompanied by chills. The patient also complained of itching in the throat, cough, and gastric complaint. The patient is eight months of gestation. The patient has never experienced the same complaint before. The patient denied a history of hypertension and DM, but she claimed to have history of gastritis. The patient's family did not have similar complaints.

Physical examination showed the patient was in *compos mentis* state, with heart rate 76 times/minute, and respiratory rate 20 times/minute. The patient's dermatological status of the facial region, superior extremities, inferior extremities, and abdomen showed vesicles with a rounded shape, well-defined, irregular arrangement, lenticular size, generalized distribution, and crusted (+). Another examination was within normal range. No other signs of complications, including pneumonia, were noted. Laboratory examination showed hemoglobin, erythrocytes, and leukocytes within normal range.



**Figure 1.** Dermatological status shows vesicles, well-defined, lenticular size, generalized distribution, and crusted on face, abdomen, and extremities.

Based on the history and examination results, the patient was diagnosed with varicella caused by the varicella-zoster virus. The patient received several treatments, including ceftriaxone 1 gr/12 hours/IV, omeprazole 40 mg/12 hours/IV, acyclovir 5x800mg, cetirizine 1x1, paracetamol 3x500mg. Topical therapy was fucilex cream (containing fusidic acid).



Ahmad Fikri Pulungan, Wizar Putri Mellaratna

## DISCUSSION

A pregnant female, 30 years old patient complains that initially, a red, itchy spot appears, then turns into a vesicle filled with clear fluid, and within a few days, it becomes pustules. The incubation period for varicella lasts 14 to 21 days. Clinical symptoms begin with prodromal symptoms, namely fever, malaise, and headache, followed by skin eruptions in the form of erythematous papules, which within a few hours, turn into vesicles. These vesicles' shape characteristically resembles tear drops on an erythematous base. The vesicles will turn cloudy to resemble pustules and then crust.

The incidence of varicella is highest in preschool (ages 1 to 4) or early elementary school (ages 5 to 9), with annual incidence exceeding 100 per 1,000 children. As a result, over 90% of people become infected before puberty, and only a minority of adults (less than 5 – 10%) remain susceptible. In tropical countries, the incidence of chickenpox occurs at a higher age (e.g., 14.5 years in Sri Lanka) and a higher proportion of adult cases.<sup>5</sup> Research at Sanglah General Hospital, Denpasar from 2015 to 2016 found that the prevalence of varicella was mostly children aged 0-15 years.<sup>6</sup> Prevalence by sex is generally the same according to studies conducted in the Middle East.<sup>2</sup>

The causative agent of chickenpox is the varicella-zoster virus (VZV). Varicella zoster virus belongs to the Alpha herpes viridae family and is a double-stranded DNA virus.<sup>7</sup> The varicella-zoster virus enters the body through the mucous membranes of the upper respiratory tract and oropharynx.<sup>8</sup> The virus can also be transmitted through direct contact with conjunctival fluid or saliva.<sup>9</sup> Varicella is a highly contagious disease. The high viral titers in follicular lesions allow infection by direct contact with the follicles. After entering the respiratory tract, the virus multiplies in the regional lymph nodes of the upper respiratory tract for 2 to 4 days after the initial infection. The virus then spreads through blood and lymph vessels, causing primary viremia 4 to 6 days after infection. A second round of replication occurs in internal organs, particularly the liver and spleen, followed by secondary viremia 14 to 16 days after infection. This secondary viremia characterizes diffuse viral entry into capillary endothelial cells and the epidermis. VZV infection of Malpighian epithelial cells causes intracellular edema and

vesicles.<sup>10</sup> Vesicles filled with clear fluid then turn cloudy due to the influx of inflammatory cells, which transform the vesicles into pustules, dry out that start from the center, and then become crusted.<sup>11</sup>

Patient skin lesions first appear on the abdomen, then spread to the back, face, and legs. Based on the literature, the spread of varicella is mainly in the body area, then spreads centrifugally to the face and extremities, and can attack the mucous membranes of the eyes, mouth, and upper respiratory tract.<sup>8</sup> Variola also has manifestations of vesicle skin lesions, one of which distinguishes it from varicella is the distribution of the lesions. In variola, the appearance of skin lesions begins on the arms or face and then spreads throughout the body, with the palms and soles often affected. Lesions are primarily on the extremities and face, with fewer lesions on the trunk.<sup>12</sup>

Before skin lesions appear, patients complain of fever, weakness, headache, and no appetite. These clinical symptoms are called prodromal symptoms, which are not too high fever, malaise, and headache, followed by the appearance of skin lesions. These symptoms occur after the virus replicates beyond the ability of the body's defense system in the reticuloendothelial system to cause secondary viremia.<sup>8</sup>

The patient is pregnant at eight months of gestation. These findings are supported by literature showing that pregnant women have a decreased immune system, thereby increasing the risk of infection.<sup>13</sup> Pregnant women with no immunity to varicella are at high risk of severe varicella, including immunocompromised patients, like HIV or AIDS. Pregnant women with varicella in the first or second trimester have a lower risk of having a baby with congenital varicella syndrome (0.4 to 2%). The baby may have skin scars, limb, brain, eye abnormalities and low birth weight. Newborns are at risk of neonatal varicella if a pregnant woman is exposed to chickenpox 2 to 5 days before delivery. Neonatal mortality from varicella is reported to be as high as 30%, but the availability of VZV immunoglobulin and intensive supportive care has reduced mortality to 7%.<sup>3</sup>

Pregnant women diagnosed with varicella have a risk for serious complications, including pneumonia.<sup>14</sup> Several studies stated pneumonia is high in third trimester patients with varicella.



Ahmad Fikri Pulungan, Wizar Putri Mellaratna

Symptoms of pneumonia usually appear 1 to 6 days after VZV infection. Symptoms include coughing, fever, and shortness of breath. This patient had symptoms of cough and fever but no symptoms of shortness of breath. The patient's oxygen saturation is 98%, and breath sounds are vesicular and there are no additional sounds such as wheezing or rhonchi.<sup>2</sup>

This patient was given acyclovir 5x800mg tablets. Acyclovir is in a class of antiviral drugs. Acyclovir is a nucleoside analog that selectively inhibits the replication of herpes simplex virus types 1 and 2 (HSV-1, HSV-2) and varicella-zoster virus (VZV).<sup>15</sup> Acyclovir and penciclovir are guanosine analogs selectively phosphorylated by VZV thymidine kinase. Cellular enzymes convert acyclovir monophosphate and penciclovir monophosphate to triphosphate, interfering with viral DNA synthesis by inhibiting DNA polymerase. Two drugs, namely valaciclovir and famciclovir, are better and more absorbed than oral acyclovir. Therefore, this drug has more antiviral activity in the circulatory system than acyclovir.<sup>11</sup> Antivirals can be given to children, adults, patients infected by household members, and neonates from mothers who suffer from varicella two days before and four days after giving birth. The dose of acyclovir that can be given for adults is 5x800 mg/day for seven days or valaciclovir 3x1 gram/day for seven days. In pregnant women, giving acyclovir needs to be considered the risks and benefits of giving it. Oral acyclovir can be given to pregnant women aged >20 weeks with onset of varicella <24 hours. Administration of acyclovir before 20 weeks of gestation needs to be considered the risks and benefits.<sup>16</sup> Acyclovir has not been prospectively studied in many pregnant women and does not have Food and Drug Administration (FDA) approval for use during pregnancy. Some literature states that using acyclovir in pregnant women in the first trimester does not increase the risk of birth defects.<sup>17</sup>

Cetirizine is a class of second-generation H1 antihistamines. Antihistamines work by binding to histamine receptors to prevent pruritus. PERDOSKI recommends the use of antihistamines which have a sedative effect. Sedative antihistamines are highly lipid soluble to penetrate the blood-brain barrier. These drugs can help sleep and break the itch-scratch-itch cycle. Examples of drugs are diphenhydramine, clemastine, triprolidine, and hydroxyzine.<sup>18</sup>

Symptomatic therapy for varicella can be in the form of antipyretics, which can be given for fever. This patient was given paracetamol. Secondary infection in skin lesions can complicate Varicella. To treat secondary infections, injection of ceftriaxone 1 gr/12 hours and fucilex cream (containing fusidic acid) was given. Omeprazole is given for gastric complaints felt by the patient.

## CONCLUSION

Chickenpox is a common disease in childhood, but when it occurs during pregnancy, it is associated with severe adverse outcomes such as congenital varicella syndrome, maternal VZV pneumonia, and neonatal varicella infection, leading to fetal and maternal morbidity and mortality. In the following case, a pregnancy woman in the third trimester, came to the emergency department at Cut Meutia Hospital complaining vesicle with clear and cloudy fluid erythematous base that was very itchy on the face and all over the body. The patient also complained of fever, no appetite, itching in the throat, cough, and gastric complaint. Physical and laboratory examination within normal limits. Patients were treated with ceftriaxone 1 gr/12 hours/IV, omeprazole 40 mg/12 hours/IV, acyclovir 5x800mg, cetirizine 1x1, paracetamol 3x500mg, and fucilex cream..

## ETHICAL APPROVAL

There is no ethical approval.

## CONFLICTS OF INTEREST

The authors declare no conflict of interest

## FUNDING

There is no specific funding was provided.

## AUTHOR CONTRIBUTIONS

Investigation, Ahmad Fikri Pulungan; data collecting and writing—original draft preparation, Ahmad Fikri Pulungan; writing—review and editing, Wizar Putri Mellaratna.

## REFERENCES

1. CDC. Vaksin Varicella (Cacar Air). [https://www.immunize.org/vis/indonesian\\_varicella.pdf](https://www.immunize.org/vis/indonesian_varicella.pdf). 2018.



Ahmad Fikri Pulungan, Wizar Putri Mellaratna

2. Folusakin Ayoade, Sandeep Kumar. Varicella Zoster. <https://www.ncbi.nlm.nih.gov/books/NBK448191/>. 2021.
3. CDC. Chickenpox. <https://www.cdc.gov/chickenpox/hcp/index.html>. 2021.
4. Ronald F. Lamont, Jack D Sobel. Varicella Zoster Virus (Chickenpox) Infection in Pregnancy. 2011;118(10).
5. Anne Gershon, Judith Breuer. Varicella Zoster Virus Infection. 2015;2(1).
6. Ni Putu Tiza Murtia Margha. Karakteristik Penderita Cacar Air (Varicella) di Rumah Sakit Umum Pusat Sanglah, Denpasar Periode April 2015 - April 2016. 2021;
7. Meenu Priyadarshini Nanthakumar. Varicella Zoster in pregnancy. *Journal of Obstetrics and Gynecology and Reproductive Biology*. 2021;258.
8. Prof. Dr. dr. Adhi Djuanda. Ilmu Penyakit Kulit dan Kelamin. Jakarta; 2017.
9. John T. Denny, Zoe M. Roche. Varicella Pneumonia: Case Report and Review of a Potentially Lethal Complication of a Common Disease. *J Investig Med High Impact Case Rep*. 2018;
10. Anthony Papadopoulos. Chickenpox. <https://emedicine.medscape.com/article/1131785-overview>. 2020.
11. Sewon Kang, Masayuki Amagai, Anna L. Bruckner, Alexander H. Enk, David J. Margolis, Amy J. McMichael, et al. *Fitzpatrick's Dermatology*. 9 Th. Vol. 1. New York: McGraw-Hill Education; 2019.
12. Kari Simonsen. Smallpox. <https://www.ncbi.nlm.nih.gov/books/NBK470418/>. 2021.
13. Bahaa Abu Raya. Maternal Immunological Adaptation During Normal Pregnancy. *Journal Immunology*. 2020;
14. Yuji Nishihara, Ryota Hase. A case of maternal varicella: Expected role of primary care physicians in confirming immune status for varicella in women at childbearing age. *J Gen Fam Med*. 2019;21(2).
15. Shamaila Kausar, Fahad Said Khan. A review: Mechanism of action of antiviral drugs. *Journal Immunology and Pharmacology*. 2021;3(1).
16. PERDOSKI. Panduan Praktik Klinis. 2017;
17. Pasternak B. Use of Acyclovir, Valacyclovir, and Famciclovir in the First Trimester of Pregnancy and the Risk of Birth Defects. *JAMA*. 2010 Aug 25;304(8):859.
18. Khashayar Farzam. Antihistamines. <https://www.ncbi.nlm.nih.gov/books/NBK538188/>. 2021.