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Late-Pregnancy Varicella Infection Treated With Oral Acyclovir: A Case Report Of Favorable Maternal And Neonatal Outcomes

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Abstract
We report the case of a 42 year old woman at 36 weeks of gestation with primary varicella infection. She is presented with a 2 day history of vesicular rash starting on the face and spreading to the trunk and extremities. The symptoms preceded by fever, headache, pruritus, and malaise. She had no prior similar illness and had recent close contact with her child who had active varicella. Physical examination showed lesions in various stages of evolution, the fetal heart rate was within reassuring range, and the fetus was in transverse lie. Tzanck smear revealed multinucleated giant cells, supporting the diagnosis of varicella. The patient received 7 days of oral acyclovir, paracetamol, loratadine, and topical fusidic acid. The patient showed gradual improvement in fever, pruritus, and lesion healing. At 37 weeks, she underwent cesarean section for transverse lie in labor. The neonate was healthy, with no congenital anomalies or neonatal varicella. This report may also be relevant to other low-resource settings where intravenous antiviral therapy is not available. The findings suggest that oral acyclovir can be considered for varicella management in pregnant women, particularly in contexts with limited access to intravenous antivirals. Furthermore, the case highlights the potential risk of varicella in pregnant women without prior immunity, emphasizing the importance of public education on varicella transmission and pre-pregnancy vaccination as preventive measures.
Keywords: *Varicella, pregnancy, Oral acyclovir, Prevention, Resource-Limited setting*

1. INTRODUCTION

Varicella or chicken pox is an infection caused by primary infection of Varicella-zoster virus (an α-herpes virus with a double-stranded DNA genome) [1]. This disease is highly contagious with attack rate range from 61% to 100%, the transmission primarily occurring through respiratory droplets, aerosols, and also direct contact with skin vesicles that contain a large amount of virus [2]. Although it is typically self-limiting in healthy children, varicella during pregnancy poses significant risks to both the mother and fetus, such as maternal pneumonia, congenital varicella syndrome (if the infection occurs in early pregnancy), and neonatal varicella (if the infection occurs near delivery) [3]. These risks are heightened in women who lack immunity to the virus.

Antiviral therapy such as acyclovir has improved the management of varicella, with intravenous administration often recommended for severe maternal infection [4]. However, in resource-limited settings, where intravenous antivirals are not available, oral antivirals must be administered as an alternative. In such situations, strategic public health preventive measures, such as education on the transmission of the disease and consideration of varicella vaccination before pregnancy, may help reduce the incidence and complications associated with maternal varicella. This study present a case of late-pregnancy varicella infection in woman with no prior history of the disease, successfully managed with oral acyclovir that resulting in favorable maternal and neonatal outcomes.

2. METHOD

2.1 Patient Information

A 42 year old Gravida 3, Para 2 woman at 36 weeks of gestation presented with a two-day history of vesicular skin eruption. The rash initially appeared on the face and then spread to the trunk as well as the upper and lower extremities. The onset of skin lesions was preceded by persisting fever, followed by headache, generalized malaise, and pruritus. The patient also reported intermittent uterine contractions described as abdominal tightening during the course of her illness. The patient stated that she had never experienced a similar condition before. She had no history of previous varicella infection or varicella vaccination. One week before the presentation of her illness, her six-year-old child had been diagnosed with varicella. At that time, some of her son's friends also had varicella. The patient had been in close

contact with her child without taking preventive measures because she was not aware that the disease was contagious.

2.2 **Clinical Findings**

On physical examination, the patient was in composmentis state, Blood pressure 110/75 mmHg, Heart rate 80 times/minute, Respiration rate 19 times/minute, Temperature 38,1 C. Dermatologic examination showed multiple polymorphic lesions in various stages of development including erythematous macules, papules, clear fluid-filled vesicles, and crusts (Figure 1a). The lesions were mainly located on the face and trunk with scattered involvement of the upper and lower extremities. No lesions were seen on the palms, soles or oral mucosa. There were no signs of secondary bacterial infection (Figure 1b). Obstetric examination revealed a single fetus in transverse lie presentation with reassuring fetal heart tone. No other sign of complications.

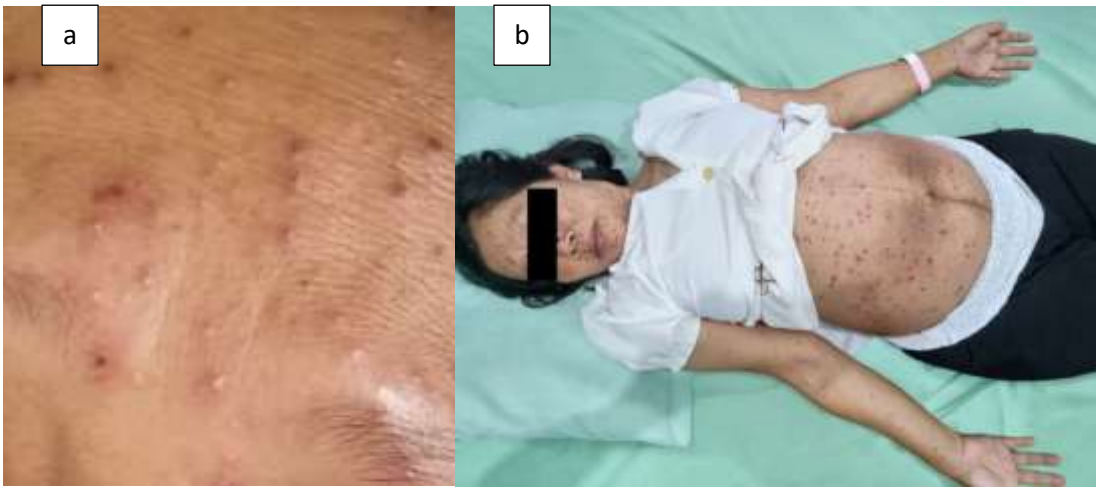

Figure 1. Clinical Manifestation

(a)Dermatologic examination showed multiple polymorphic lesion (b)Distribution of lesions

2.3 Diagnostic assessment

Laboratory examination showed hemoglobin, erythrocytes, and leukocytes within normal range. Tzanck smear examination from a vesicular lesion revealed scattered inflammatory cells, some in clusters, consisting predominantly of neutrophils, lymphocytes, moderate numbers of eosinophils, and a few histiocytes. Multinucleated giant cells were observed among necrotic debris in the background and additional smears also showed scattered squamous epithelial cells, some with reactive changes characterized by enlarged nuclei, regular nuclear membranes, and fine chromatin (Figure 2). These cytopathologic findings supported the clinical diagnosis of varicella (chickenpox). Because of limited resources, virological confirmation, including PCR and serological test for IgM and IgG, was not performed

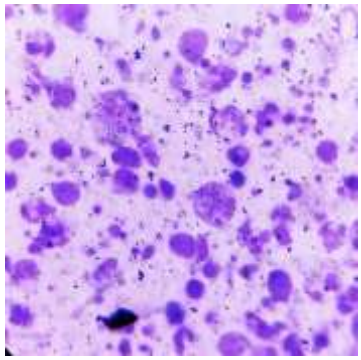

Figure 2 : Tzank test : multinucleated giant cells

2.4 Diagnosis:

The diagnosis of varicella was established based on the characteristic clinical examination and confirmed by Tzanck smear findings

2.5 Therapeutic interventions:
The patient received a 5-day course of treatment consisting of paracetamol 500 mg three times daily, loratadine 10 mg once daily, oral acyclovir 800 mg five times daily, and topical fusidic acid cream.
2.6 Follow-up and outcome of interventions:
After completing the 5-day regimen, the skin lesions showed marked improvement. On day 7, at 37 weeks of gestation, the patient presented in early labor with a transverse fetal lie and cervical dilation, a cesarean section was performed, resulting in the delivery of a healthy neonate with no congenital anomalies and no evidence of neonatal varicella. During 14 days of follow-up, the baby also did not experience neonatal varicella.
2.7 Patient Perspective:
The patient, a 42-year-old woman at 36 weeks of gestation, experienced her first episode of varicella after caring for her 6-year-old child who had been recently diagnosed with the disease. She was unaware that varicella could be transmitted through respiratory droplets and the infection could pose a significant risk during pregnancy. Initially, she developed fever, headache, malaise, and itching, followed by the appearance of vesicles that began on her face and progressively spread to her trunk and extremities. Concerned about the rapid progression, she sought medical care.
During treatment with oral acyclovir, paracetamol, loratadine, and topical fusidic acid, she reported gradual improvement in her symptoms; the fever subsided, headaches diminished, itching became less severe, and the blisters slowly dried and crusted over. She expressed relief when, at 37 weeks of gestation, she delivered via cesarean section due to fetal transverse lie and onset of labor. The patient relief her newborn was healthy, with no evidence of congenital varicella or neonatal infection, and she also recovered well
2.8 Informed Consent:
The patient agreed to the use of her clinical details for academic and scientific purposes, with assurance that her identity would remain confidential

3. RESULT AND DISCUSSION
This case report concerns a varicella infection in a pregnant woman that occurred in the late third trimester, at 36 weeks of gestation, which then required a cesarean section at 37 weeks. Varicella infection during pregnancy poses unique challenges, as it may lead to serious maternal complications such as pneumonia, and complications in the fetus vary depending on the gestational age at infection [3]. Infection during the first and early second trimester is associated with congenital varicella syndrome, which is characterized by skin scarring, limb hypoplasia, chorioretinitis, microcephaly, and other anomalies [5]. Peripartum infections, which occurs 5 days before to 2 days after delivery may lead to severe neonatal varicella of around 17%-30% with neonatal mortality of around 31% [6]. The manifestations in infants will appear shortly before delivery and up to 10 to 12 days after birth[3]. In addition, the risk of pneumonia in pregnant women who suffer from varicella in the late trimester is around 5%-20%, with mortality rate of 20%-45%; however, the risk can be reduced to 0%-14% with appropriate therapy [6].
Under these circumstances, the diagnosis was based on a physical examination and supporting tests, such as the Tzank test. Laboratory confirmation with PCR or serology was not performed due to equipment limitations. The clinical presentation of varicella is characterized by a pruritic vesicular rash predominantly involving the trunk, head, and face, while the extremities are relatively less affected. The lesions appear as multiform eruptions, emerging in successive crops and progressing from papules to vesicles before crusting within a few days[7]. Viral culture is considered the gold standard for confirming the diagnosis of varicella, but it is difficult to perform, especially in remote areas. The Tzanck smear test can detect the cytopathic effects of herpesvirus infection morphologically; when stained with Giemsa-Wright, hematoxylin-eosin, or Papanicolaou, multinucleated giant cells, syncytia, and ballooning cell degeneration can be observed. Although this test is simple and inexpensive, its sensitivity is limited to only 40%–50% compared with cell culture, and it cannot differentiate lesions caused by HSV from those caused by VZV [8].
In this context, the patient sought treatment on the second day of symptom onset and received oral acyclovir 5×800 mg alongside supportive treatments, with improvement in fever, rash, and general symptoms for 7 days. The safety of systemic acyclovir therapy in pregnant women has not been proven because there are no adequate controlled studies. Therefore, the FDA classifies acyclovir use in pregnant women as Category C. However, in cases of serious virus-mediated complications such as pneumonia,

intravenous acyclovir should be considered[6]. Acyclovir is a nucleoside analog antiviral that selectively inhibits the replication of herpes simplex virus types 1 and 2 (HSV-1, HSV-2) and varicella-zoster virus (VZV). For adults, the recommended antiviral therapy is valacyclovir 1 gram three times daily for seven days or acyclovir 800 mg five times daily for seven days [9]. Oral acyclovir can be given after gestational age >20 weeks if varicella infection appears within 24–72 hours [6,9]. In this case, the timing of symptom onset and initiation of antiviral therapy are critical factors, as acyclovir is most effective when administered within 24–72 hours of the onset of skin lesions[6,9]. Administering antivirals before 72 hours has been shown to reduce fever duration, number of new lesions, time to crusting, symptom severity, and reduce maternal and fetal morbidity and mortality due to VZV infection, especially when administered intravenously.[5,7,9]. Symptomatic therapy may depend on the patient's symptoms, patients can be given antihistamines to prevent pruritus, antipyretics such as paracetamol can be given for fever, and to prevent secondary infection in skin lesions patients can be given antibiotics such as fusidic acid. Obstetric management was guided by fetal position (transverse lie) and cervical dilation, leading to cesarean delivery at 37 weeks. The newborn was healthy, with no signs of congenital anomalies or neonatal varicella and during 14 days of follow-up, the baby also did not experience neonatal varicella.

Acyclovir administration showed improvement, but it is important to note that valacyclovir exhibits higher bioavailability compared to acyclovir. Oral acyclovir has a bioavailability of around 15–30%, while valacyclovir has an oral bioavailability of 54% (3–4 times higher than the oral uptake of acyclovir)[10]. While intravenous acyclovir remains the recommended standard for severe or complicated varicella in pregnancy, in situations where intravenous acyclovir is not available, especially in low-resource areas, oral acyclovir may be considered instead of no antiviral therapy at all. In this case, the patient received oral acyclovir at a dosage of 800 mg five times daily for seven days. On the eighth day, at 37 weeks of gestation, a cesarean section was performed. The infant was delivered in good health and showed no signs of neonatal varicella. Even if the neonate does not present with neonatal varicella, infants born to mothers who develop chickenpox within 5 days before delivery to 2 days after delivery should receive varicella-zoster immunoglobulin (VZIG) immediately after birth or as soon as maternal symptoms appear [3,6]. Administration of VZIG to neonates with severe varicella can reduce mortality from 31% to 7%[9]. In such cases, the infant should be closely monitored, and early initiation of intravenous acyclovir at a dosage of 10–15 mg/kg every 8 h intravenously for 5–7 days is recommended if varicella infection develops [9]. However, in this case, due to unavailability of these agents, the infant did not receive VZIG.

In this case, the mother was infected by her child who was diagnosed with varicella. In Indonesia, public awareness regarding varicella transmission and prevention remains limited, particularly among women of reproductive age. Misconceptions about disease severity and lack of information about potential complications in pregnancy may contribute to transmission, delayed diagnosis and treatment. Strengthening public education, especially about the modes of transmission and the benefits of preventive measures such as preconception varicella vaccination, could play an important role in reducing maternal varicella and its associated risks. Moreover, in Indonesia varicella vaccination is not included in the national mandatory immunization program and is offered only as an optional vaccine in selected healthcare facilities, as a result vaccine coverage remains low. A program for administering the varicella vaccine to women of childbearing age in Indonesia might be considered because this vaccine is a live vaccine so it is contraindicated in pregnant women. After the varicella vaccine became a routine vaccine in Japan, there was a significant decrease in the incidence of varicella and administration of two doses of varicella vaccine was 98% effective in preventing infection, so women without evidence of immunity were encouraged to receive the vaccine [11].

4. CONCLUSION

This case highlights the potential risks of varicella infection in pregnant women who lack immunity, particularly in late gestation when management decisions may be more complex. Oral acyclovir 5x800 mg for seven days therapy appeared to contribute to clinical improvement, suggesting that it may be a reasonable option in resource-limited settings where intravenous formulations are not readily available. Early recognition, prompt antiviral therapy, and appropriate obstetric management are essential to reduce maternal and neonatal complications. Preventive measures, including public education on varicella transmission and consideration of varicella vaccination before pregnancy, could help reduce the burden of disease in this population.

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